CA INTERMEDIATE

FINANCIAL MANAGEMENT AND STRATEGIC MANAGEMENT

- ICAI Study Material Questions Covered
- RTP/MTP Questions Covered
- Previous Year Questions Covered

CA Sunil Keswani

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Email: publication@pw.live

PREFACE

A highly skilled professional team of CA Wallah works arduously to ensure that the students receive the best content for their CA-Intermediate exams.

A plethora of CA Study Material is available in the market but CA Wallah professionals at PW are continuously working to provide supreme quality study material for the CA-Intermediate students.

From the beginning, the content team comprising Subject Matter Experts, Content Creators, Reviewers, DTP operators, Proof-readers, and others are involved in shaping the material to their best knowledge and experience to produce powerful content for the students.

CA Wallah Faculties have adopted a novel style of presenting the content in easy-to-understand language and have provided the content team with expert guidance and supervision throughout the creation and curation of this book.

PW's CA Wallah strongly believes in conceptual and fun-based learning. CA Wallah provides highly exam-oriented content to bring quality and clarity to the students.

This book adopts a multi-faceted approach to mastering and understanding the concepts by having a rich diversity of questions asked in the CA-Intermediate examination and equipping the students with the knowledge for this highly competitive exam.

The main objective of this book is to provide an edge to your preparation with short & crisp yet high-quality content.

BOOK FEATURES

This book, especially designed & amended for CA-Intermediate aspirants, contains:

- Syllabus coverage strictly as per ICAI study Material
- All ICAI Study Material Questions
- Latest RTP & MTP Questions
- Covers Past Year Questions
- Detailed Theory in tabular format
- Separation of class work and homework questions
- Elaborated Solutions of homework questions

ABOUT THE AUTHOR

Sir, CA Sunil Keswani is a highly accomplished professional in the field of finance and accounting. He is a fellow member of the Institute of Chartered Accountants of India (ICAI), having qualified in 2010. Sunil Keswani furthered his education by completing the Master of Financial Analysis Program from the Institute of Chartered Financial Analyst of India University, earning the prestigious title of Chartered Financial Analyst. He also obtained a Bachelor of Commerce degree from Delhi University in 2007.

As a practitioner, Sunil Keswani has amassed valuable experience in various roles. He worked as a Regional Credit Manager at ICICI Bank, where he honed his skills in credit management and risk assessment. He also served as a speaker at the Comptroller and Auditor General of India (CAG), sharing his expertise and insights with a wider audience. Thus, he has excelled as a Financial Planner for the past twelve years, helping individuals and organizations effectively manage their finances and achieve their goals.

With a passion for teaching, Sunil Keswani Sir has dedicated over 13 years to educating students in the fields of Cost Accounting, Management Accounting, and Financial Management. He has extensive experience in both face-to-face and online coaching methods, imparting knowledge and guiding students towards success. He has also served as a faculty member of ICAI, where he conducted classes on cost accounting and financial management in Delhi. His exceptional teaching abilities have been recognized, and he has been awarded as the best faculty by NIRC-ICAI.

His impact extends to his students, with 70 of them securing All India Ranks in the CA Examination. Notable achievers include Swati Bansal (AIR-1, CA Foundation, May 2018), Deepa Jain (AIR-1, May 2018), Parth Gupta (AIR-3, May 2018), Raghvendra Prasath (AIR-3, May 2019), and Swati Bansal (AIR-4, Nov 2019) among others. Additionally, 150 students have achieved perfect scores in the subjects of cost accounting, management accounting, and financial management at their graduation level, a testament to Sir Sunil Keswani's effective teaching methods and guidance.

Warm regards,

Sunil Keswani

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PART

A

Financial Management

CHAPTER 1

Scope and Objectives of Financial Management

THEORY

Meaning of Financial Management	"Financial management is concerned with the efficient use of an important economic resource, namely capital funds". In other words, financial management answers the following questions: (*a*) Where to invest? i.e. Investment Decisions (*b*) From where to raise funds? i.e. Financing Decision (*c*) How much earning to be retained and how much to be distributed? i.e. Dividend Decision (*d*) How to manage working capital? i.e. Working Capital Management
Characteristics of Financial Management	(*a*) Essential part of Business Management (*b*) Continuous Administrative Function (*c*) Scientific and Analytical (*d*) Centralized Nature (*e*) Different from Accounting Function
Functions of Financial Management	(*a*) **Procurement of funds:** Funds can be obtained from different sources like equity, debt, debentures, preference shares etc. The cost of funds should be at the minimum level and for that a proper balancing of risk and control factors must be carried out. (*b*) **Effective Utilization of Funds:** The funds are to be invested in a manner such that they generate returns higher than the cost of capital to the firm.
Evolution of Financial Management	(*a*) **Traditional Phase:** During this phase, financial management was considered necessary only during occasional events such as takeovers, mergers, expansion, liquidation, etc. (*b*) **Transitional Phase:** During this phase, the day-to-day problems that financial managers faced were given importance e.g. problems related to funds analysis, planning etc. (*c*) **Modern Phase:** Modern phase is still going on. The scope of financial management has greatly increased now. It is important to carry out financial analysis for a company. This analysis helps in decision making.

Importance of Financial Management

It is a key to successful business. Its importance can be understood by the tasks involved in it which are as follows:

(*a*) Preparing budget to provide appropriate targets to various departments

(*b*) Setting short term sales and cost targets for various departments

(*c*) Managing the cash flow needs of the organization

(*d*) Ensuring appropriate investment in fixed assets and working capital

(*e*) Ensuring correct pricing decisions for the products or services

(*f*) Tax planning to minimize tax burden of the organization

Objective of Financial Management

(*a*) **Profit Maximization:** Based on this objective, the investment, financing and dividend policy decisions of a firm should be oriented to the maximization of profit. This objective leads to efficient allocation of resources, as resources tend to be directed to uses which in terms of profitability are most desirable.

Limitations of profit maximization:

(1) Ignores risk; (2) Ambiguity; (3) Ignores the time value of money

(*b*) **Wealth Maximization:** Wealth/Value maximisation means that the primary goal of a firm should be to maximize its market value and implies that business decisions should seek to increase the net present value of the economic profits of the firm

i.e. wealth = Present value of benefits: present value of costs.

Superiority of Wealth Maximization Over Profit Maximization

Basis	Wealth Maximization	Profit Maximization
Cash Flows	Consider all cash flows and effect on EPS, dividend, etc.	Don't consider effect on EPS, dividend, etc.
Dividend	Firms may pay regular dividends to shareholders.	Firms may refrain from dividend payments
Preference by shareholders	Shareholders prefer increase in wealth	Shareholders may consider increasing profit flow against increase in wealth.
Ambiguity	No ambiguity in measurement of cash flows	Lot of ambiguity exists in measurement of accounting profit.

Financial Management Decisions for Achievement of Wealth Maximization	(*a*) **Investment Decision:** It relates to the selection of assets in which funds will be invested by a firm. Only that investment proposal is to be accepted which is expected to yield at least so much return as is adequate to meet its cost of financing. (*b*) **Financing Decision:** The finance manager has to maintain a proper balance between long-term (capital employed) and short-term funds (working capital). The optimum financing mix will increase return to equity shareholders and thus maximise their wealth. (*c*) **Dividend Decision:** Finance Manager assists in deciding as to what portion of the profit should be paid to the shareholders by way of dividends and what portion should be retained in the business. An optimal dividend pay-out ratio maximises shareholders' wealth.
Inter-Relationship between Investment, Financing and Dividend Decisions	The decision to invest in a new project needs the finance for the investment. The financing decision, in turn, is influenced by and influences dividend decision because retained earnings used in internal financing deprive shareholders of their dividends. The optimal joint decision is possible by evaluating each decision in relation to its effect on the shareholder's wealth.
Risk-Return Trade Off	❑ In financial management, the risk is defined as the variability of expected returns from an investment. Risk and Return go together. The rate of return required by a firm, to a great extent, depends upon the risk involved. ❑ A finance manager cannot avoid the risk altogether nor can make a decision by considering the return aspect only. In order to maximise the firm's shares a balance must be maintained between risk and return which is called Risk-Return Trade off.
Functions of Finance Manager	(*a*) Estimating the requirement of funds (*b*) Decision regarding capital structure (*c*) Investment Decision (*d*) Dividend Decision (*e*) Evaluating financial performance (*f*) Financial negotiation (*g*) Cash Management
Role of Finance Manager or Chief Financial Officer (CFO)	❑ The traditional role of the finance manager was confined just to raising of funds from a number of sources. ❑ The recent development in the socio-economic and political scenario throughout the world has placed him in a central position in the business organization. ❑ He is now responsible for shaping the fortunes of the enterprise, and is involved in the most vital decision of allocation of capital like merger, acquisitions, strategic planning, risk management, pricing analysis, profitability analysis etc.

Agency Problem	❑ In modern organization, there is separation of ownership and management. ❑ The management acts on behalf of owners and is their agents. Consequently management should act in such a manner so as to maximize wealth of their principals i.e. owners. ❑ However this may not happen because owners and management have different interests. ❑ Due to these different interest and separation of management from ownership, management may behave in a manner which is inconsistent with the interest of owners. These behavioural problems on the part of management lead to agency problems.
Agency Costs	❑ These are the costs that are directed to reduce the impact of agency problems. These costs may be direct or indirect. ❑ Example of the direct agency costs are salary, bonuses and perks paid to employees etc. ❑ There are also certain indirect agency costs, for example management may not take certain risky projects with high returns.
Financial Distress and Insolvency	❑ There are various factors which needs to be managed on continuous basis e.g. price of product, demand, price of inputs, proportion of debt etc. ❑ If these are not managed properly than it may lead to financial distress where cash inflows are inadequate to meet current obligations of firm. ❑ If financial distress continues for longer time, it may lead to sale assets and may lead to insolvency situation where firm is not able to repay various debts.

2 CHAPTER

Types of Financing

THEORY

Sources of Finance	There are several sources of finance available to any company. Some of the parameters that need to be considered while choosing a source of finance are: ❑ Cost of source of finance ❑ Time period ❑ Leverage ❑ Financial condition ❑ Risk profile of the company and industry
Categories of Source of Finance	❑ **Long Term Finance:** These types of funds should be procured for capital projects, plant & machinery, land & buildings. Generally, these are required for a period exceeding 5: 10 years. Example: equity shares, preference shares, debentures, bonds, venture capital financing, international financing etc. ❑ **Medium Term Finance:** Generally these funds are required for a period exceeding one year but not exceeding 5 years. Example: preference shares, debentures, external commercial borrowings etc. ❑ **Short Term Finance:** These short-term loans are procured for providing temporary working capital requirement. These are for maximum period of 1 year. Example - commercial papers, trade creditors, packing credit etc.
Principle for Funding	❑ **Early Stage** ○ In case of high uncertainty, equity from angel fund can be used ○ In case of high to moderate uncertainty, equity, venture capital and debt can be used ❑ **Growth Stage** ○ Moderate to low uncertainty, debt, venture capital and private equity can be used ❑ **Stable Stage** ○ Low uncertainty, debt can be used

Commercial Paper	▫ It represents short term unsecured promissory notes issued by firms which enjoy a fairly high credit rating. ▫ The maturity period of commercial paper usually ranges between 90 to 360 days. ▫ It is issued at a discount and is redeemed at face value. ▫ It is issued directly by the firm to the investors or through banks. **Eligibility Criteria:** ▫ **Listing:** The issuing company should be listed in atleast one recognized stock exchange. ▫ **Credit Rating:** The issuing company should obtain the necessary credit rating from agencies like ICRA, CRISIL etc. ▫ **Working Capital:** The fund based working capital should be maximum of Rs. 5 crores. ▫ **Current Ratio:** The minimum current ratio should be 1.33 : 1. ▫ **Standard Asset:** In addition to credit rating, the issuing company should be classified as "standard assets" by bankers/lending financial institutions. ▫ **Net Worth:** The issues should have a minimum tangible net worth of Rs. 5 crores as per recent audited balance sheet.
Treasury Bills	Treasury Bills or T-Bills are a type of securities to raise short term funds by the Central Government. These are issued with maturities ranging between 7 to 364 days by the Government of India.
Certificate of Deposit	Certificate of Deposit is a time deposit or basically a saving certificate with a fixed maturity date and interest rate. It is generally offered by banks and credit unions. It can be issued by big corporations as well.
Factoring	It is a financial service, which involves meaning, financing and collecting receivable. It is a method of converting non-productive assets (receivables) into productive assets (Cash). **Advantages of factoring:** (*a*) Prompt payments and credits (*b*) Improves scope for operating leverage (*c*) Reduction of administrative cost of burden (*d*) Increase in return to the client. (*e*) It avoids increased debts (*f*) Current assets are efficiently managed thus reducing working capital requirement. **Disadvantages of factoring:** (*a*) Image of the client may suffer as engaging of a Factoring Agency is not considered a good sign of efficient management. (*b*) Factoring may not be of much use where companies have nation-wide network of branches. (*c*) Financial evaluation may not be accurate.

Difference Between Factoring and Bill Discounting	❑ Factoring is called as "Invoice Factoring" whereas Bills discounting is known as "Invoice discounting". ❑ In Factoring, the parties are known as the client, factor and debtor whereas in Bills discounting, they are known as drawer, drawee and payee. ❑ Factoring is a sort of management of book debts whereas bills discounting is a sort of borrowing from commercial banks. ❑ For factoring there is no specific Act, whereas in the case of bill discounting, the Negotiable Instruments Act is applicable.
Trade Credit and Accruals as Source of Working Capital	❑ It refers to credit facility given by suppliers of goods during the normal course of trade. ❑ The major advantages of trade credit are: easy availability, flexibility and informality. ❑ It involves implicit cost. ❑ Generally, the supplier passes on these costs to the buyer by increasing the price of the goods or alternatively by not extending cash discount facility.
Facilities Provided by Bank for Short-Term Funding	❑ **Short term loans:** Such kind of loans are provided by banks against some securities like fixed deposits, life insurance policies, shares etc. Generally, the entire loan amount is disbursed in a one time to the account of the borrower. The borrower has to pay the interest on this loan. Repayment under the loan may be the full amount at the end of the period or by way of schedule repayments agreed upon in case of term loan. ❑ **Overdraft:** Such kind of loans are provided against some collateral like property, fixed deposit etc. Under this facility, a fixed credit limit is allowed to the borrower within which the borrower is allowed to overdraw his account. Interest is charged on the daily balance overdrawn in the account. Generally, such facilities are granted for one year and are repayable on demand but they continue for long period by annual renewal of the limits. ❑ **Clean Overdraft:** This facility is just like overdraft with a difference that there is no collateral taken by the institution providing the funds. The financial institution totally relies on the personal financial security of the borrower. Thus, these kinds of loan are entertained only from financially sound and reputed parties. The institution providing loan puts various checks before granting the limit to the borrower like, past records of loan taken, turnover of the client, credit period enjoyed with clients, level of stock maintained, personal net-worth etc. ❑ **Cash Credit:** This facility is granted by the financial institution against some collateral like property, stock, trade receivables etc. This facility is granted primarily to meet the working capital requirement of the business. The credit limit granted is generally a percentage of the value of collateral being offered by the borrower. The borrower is allowed to overdraw his account upto the credit limit and can deposit the surplus fund in the account. Interest is charged on the daily balance overdrawn in the account. Generally, such facility is granted for one year and are repayable on demand but they continue for long period by annual renewal of the limits.

	❑ **Advance against goods**: Under this facility, the financial institution providing credit accept goods from the borrower as collateral. Such goods can be industrial or agricultural produce, semi-finished goods, raw material, finished goods and other items of merchandise. Under this facility, financial institution providing funds create pledge or hypothecation on the goods to be taken as collateral. Such goods have high turnover and are considered safe and liquid source of repayment in case of default by the borrower. This facility forms part of working capital finance required by the borrower. ❑ **Bills purchased or discounted:** It is generally, selling of bill to financial institution or bill discounting company before the due date of payment at a value which is less than the invoice amount. It acts as a source of working capital finance for the seller of the goods. The financial institution or bill discounting company evaluates the credit worthiness of the borrower and in addition to the rights against the parties liable on the bills, they can also exercise a pledge's rights over the goods covered by the documents. ❑ **Financing of export trade by banks:** Refer Next point ❑ **Inter corporate deposit:** Under this facility, the borrowing company can take funds from other company having surplus funds for a short period of time. The rate of interest on inter corporate deposit varies depending upon the amount involved and time period. ❑ **Certificate of Deposit (CD):** Certificate of Deposit is a time deposit or basically a saving certificate with a fixed maturity date and interest rate. It is generally offered by banks and credit unions. It can be issued by big corporations as well. ❑ **Public Deposits:** These are form of unsecured loan from the public in general for a period of six months to three years. They are primarily to be taken for short and medium-term needs of the company. These are to be taken by complying all the regulations issued by Reserve Bank of India from time to time. These funds in general should not be used for acquiring fixed assets because the funds are to be repaid within maximum period of 3 years.
Financing of Export Trade by Banks	The banks provide finance for export facilities in the form of: (1) Pre-shipment finance i.e. before shipment of goods (2) Post-shipment finance i.e. after shipment of goods
Pre-Shipment Finance (Before Shipment of Goods)	❑ It is generally in the form of packaging credit. ❑ It is an advance made available by banks to an exporter who is having at hand a firm export order placed with him by his foreign buyer on an irrevocable letter of credit opened in his favour. ❑ An advance so taken by an exporter is required to be liquidated within 180 days from the date of its commencement by negotiation of export bills or receipt of export proceeds in an approved manner.

	▫ **Types of Packing Credit:** ○ **Clean Packing credit:** This is an advance made available to an exporter only on production of a firm export order or a letter of credit without exercising any charge or control over raw material or finished goods. ○ **Packing credit against hypothecation of goods:** Export finance is made available on certain terms and conditions where the exporter has pledgeable interest and the goods are hypothecated to the bank as security with stipulated margin. ○ **Packing credit against pledge of goods:** Export finance is made available on certain terms and conditions where the exportable finished goods are pledged to the banks with approved clearing agents who will ship the same from time to time as required by the exporter. The possession of the goods so pledged lies with the bank and is kept under its lock and key. ○ **E.C.G.C. Guarantee:** Any loan given to an exporter for the manufacture, processing, purchasing, or packing of goods meant for export against a firm order qualifies for the packing credit guarantee issued by Export Credit Guarantee Corporation. ○ **Forward exchange contract:** Another requirement of packing credit facility is that if the export bill is to be drawn in a foreign currency, the exporter should enter into a forward contract with the bank, thereby avoiding risk involved in a possible change in the rate of exchange.
Post-Shipment Finance (After Shipment of Goods)	This facility is granted once the shipment of the goods has been done by the exporter. It can be in the following forms: ▫ **Purchase/discounting of documentary export bills:** Finance is provided to exporters by purchasing export bills drawn payable at sight or by discounting usance export bills covering confirmed sales and backed by documents including documents of the title of goods such as bill of lading, post parcel receipts or air consignment notes. ▫ **E.C.G.C. Guarantee:** An exporter is advised to take contracts shipment or comprehensive risk policy covering both political and commercial risks. The corporation, on acceptance of the policy, will fix credit limits for individual exporters and the Corporation's liability will be limited to the extent of the limit so fixed for the exporter concerned irrespective of the amount of the policy. ▫ **Advance against export bills sent for collection:** Finance is provided by banks to exporters b way of advance against export bills forwarded through them for collection, taking into account the creditworthiness of the party, nature of goods exported, usance, standing of drawee etc. after keeping an appropriate margin. ▫ **Advance against duty draw backs, cash subsidy etc.:** To finance export losses sustained by exporters, bank advance against duty draw-back, cash subsidy etc. receivable by them against export performance. Such advances are of clean nature; hence necessary precaution should be exercised.

Seed Capital Assistance	▫ It is a scheme designed by the IDBI for professionally or technically qualified entrepreneur. ▫ The project cost should not exceed Rs. 2 crores. The maximum assistance under this scheme will be: ○ 50% of the promoters required contribution, or ○ Rs. 15 lacs, which-ever is lower ▫ The assistance is initially interest free but carries a service charge of 1% p.a. for the first five years and at increasing rate thereafter. ▫ The repayment schedule is fixed depending upon the repaying capacity of the unit with an initial moratorium of upto 5 years.
Internal Cash Accruals	▫ The companies can use their accumulated reserves or cash profits for creation of capital assets as part of their expansion or diversification plan. ▫ Such funds entail almost no risk. ▫ Further, control of present owners is also not diluted by retained profits. ▫ Usage of these funds leads to creation of capital assets at zero debt.
Unsecured Loans	▫ Unsecured loans are generally provided by promoters to meet either sudden requirement of funds or for meeting the promoter's contribution norm. ▫ These loans are unsecured in nature and are subordinate to all other loans i.e. these are to paid after payment of interest and principal of all other loans. ▫ Interest rate on such loans is generally equal or less than the rate of interest on institutional loans. ▫ From the perspective of financial institutional for providing loans, such unsecured loans are considered as part of equity for the purpose of calculating debt equity ratio.
Deferred Payment Guarantee	▫ Deferred Payment Guarantee is used generally while acquiring fixed assets for the company. ▫ This method of finance is preferred for profit making company only. ▫ The entire cost of the assets is financed and company is not required to pay any amount initially towards acquisition of assets. ▫ The supplier of the assets takes bank guarantee from the company for providing such facility. ▫ Such kind of finance deal, doesn't have any moratorium period for repayment.
Capital Incentive as Source of Finance for the Company	▫ Generally, Government identifies certain backward areas for development and introduce backward area development incentive schemes. ▫ These incentives are mix of lump sum subsidy and exemption from direct and indirect taxes. ▫ The lump sum subsidy is generally provided as a percentage of fixed capital investment by the company subject to an overall ceiling. ▫ This amount of lump sum subsidy forms the part of long-term source of the company.

	▫ The subsidy or exemption received in direct and indirect taxes is covered with revenues and expenses. ▫ The subsidy or exemption are released to the units only after they have complied with all the conditions of the relevant scheme.
Floating Rate Bonds	These are the bonds where the interest rate is not fixed and is allowed to float depending upon the market conditions. These are ideal instruments which can be resorted to by the issuers to hedge themselves against the volatility in the interest rates.
Deep Discount Bond	▫ It is a form of zero-interest bond ▫ These bonds are sold at a discounted value and on maturity face value is paid to the investors ▫ In such bonds, there is no interest payout during lock in period ▫ IDBI was the first to issue a deep discount bond in India in January, 1992
Secured Premium Notes (SPNs)	▫ These are issued along with detachable warrants. ▫ These are generally redeemable after a notified period of say 4 to 7 years. ▫ It was first introduced by TISCO, which issued the SPNs to existing shareholders on right basis.
Zero Interest Fully Convertible Debentures	▫ These are the form of debentures which doesn't carry any interest. ▫ These are fully convertible into equity shares after a specified period of time. ▫ The holder gets the equity shares at the predetermined price after a specified period of time. ▫ From company's point of view these are beneficial as the company is not required to pay any interest on it.
Zero Coupon Bond	▫ As the name suggest, it doesn't carry interest. ▫ It is sold by the issuing company at a discount. ▫ The difference between discounted value and maturing or face value represents the income to be earned by the investor of such bonds.
Option Bonds	These are cumulative and non-cumulative bonds where interest is payable on maturity or periodically. Redemption premium is also offered to attract investors. These were recently issued by IDBI, ICICI etc.
Inflation Bonds	These bonds are issued to provide inflation adjusted interest income to the investor. In these bonds, interest rate is adjusted for inflation effect e.g. if interest rate on bond is 9% and inflation is rate is 4% than investor will get in total 13% interest thereby the investor is protected against inflation.
Venture capital financing	▫ It refers to capital investment made in a business, which carries elements of risks and insecurity and the probability of business hazards. ▫ The investments are made through private placement with the expectation of risk of total or huge returns. ▫ The main object of investing equity is to get high capital profit at saturation stage.'

Method of Venture Capital Financing	❑ **Equity financing:** The venture capital undertakings generally required funds for a longer period but may not be able to provide returns to the investors during the initial stage. Therefore, the venture capital finance is generally provided by way of equity share capital. ❑ **Conditional Loan:** A conditional loan is repayable in the form of a royalty after the venture is able to generate sales. No interest is paid on such loans. Some venture capital financers give a choice to the enterprise of paying a high rate of interest (which could be well above 20%) instead of royalty on sales once it becomes commercially sound. ❑ **Income Note:** It is a hybrid security which combines the features of both conventional loan and conditional loan. The entrepreneur has to pay both interest and royalty on sales but at substantially low rates. ❑ **Participating debenture:** Such security carries charges in three phases: in the start up phase, no interest is charged - next stage a low rate of interest is charged up to a particular level of operation after that a high rate of interest is required to be paid.
Debt Securitization	❑ It is a method of recycling of funds. ❑ It is a process of transforming the assets of a lending institution into negotiable instrument for generation funds
Process of Debt Securitization	❑ **Origination Function:** A borrower seeks a loan from a finance company, bank etc. The credit worthiness of borrower is evaluated and contract is entered into with repayment schedule structured over the life of the loan. ❑ **Pooling Function:** Similar loans on receivables are clubbed together to create an underlying pool of assets. The pool is transferred in favour of Special purpose Vehicle (SPV), which acts as a trustee for investors. ❑ **Securitization Function:** SPV will structure and issue securities on the basis of assets pool. The securities carry a coupon and expected maturity which can be asset-based/mortgage based. These are generally sold to investors through merchant bankers. Generally investors are pension fund, mutual funds, insurance funds.
Advantage of Debt Securitization	❑ It converts the debt into securities ❑ It converts the illiquid assets into liquid ones ❑ The assets are shifted from the balance sheet, giving the borrower an opportunity of balance sheet funding. ❑ It thus helps in better balance sheet management ❑ It enhances the borrower's credit rating ❑ It opens up new investment avenues.
Bridge Finance	❑ It is a short term loan ❑ It bridges the time gap between the date of sanctioning of the loan and its disbursement ❑ The reason for such delay is due to procedure formalities ❑ The rate of interest on such loan is usually high ❑ These loans are usually repaid as and when term loans are disbursed

Lease Financing	❑ Under the lease agreement, the lessor purchases an assets which is leased to the user (lessee) which pays a specified rent at periodical intervals. ❑ It can be of following categories: ○ Operating lease ○ Financial lease ○ Sales and lease back ○ Leveraged lease ○ Sales-aid lease ○ Close ended and open ended lease
Operating Lease	❑ In this case only right to use the assets is provided and all risk belongs to lessor. ❑ Lessor gives a fixed amount of lease rentals to the lessor ❑ Generally, lessor bears the cost of insurance, maintenance and repair etc. ❑ Generally these are callable lease and are cancelable with proper notice. ❑ Lease period is short and entire cost of assets is not recovered in initial period so the assets is leased more than once. ❑ This is best for companies which needs to continuously update or replace equipment.
Finance Lease	❑ In this case, right to use the assets and all risk belongs to the lessee while the lessor remains the legal owner of the assets. ❑ These are non-cancellable lease. ❑ Lease period is long and is generally the full economic life of the assets. ❑ It is also called capital lease, which is nothing but a loan in disguise.
Sales and Lease Back	❑ Under this type of lease, the owner of an asset sells the asset to the buyer, who in turn leases back the same asset to the owner in consideration of lease rentals. ❑ Under this arrangement, the assets are not physically exchanged but it all happen in records only. ❑ The main advantage of this method is that the lessee can satisfy himself completely regarding the quality of an asset and after possession of the asset convert the sale into a lease agreement.
Leveraged Lease	❑ Under this lease, a third party is involved besides lessor and lessee who is known as lender. ❑ The lessor borrows a part of the purchase cost (say 80%) of the asset from the lender and asset so purchased is held as security against the loan. ❑ Such arrangement is made through tripartite agreement between the lender, lessor and lessee. ❑ The lender is paid off from the lease rentals directly by the lessee and the surplus after meeting the claims of the lender goes to the lessor. ❑ The lessor is entitled to claim depreciation allowance.

	❑ If the lessee stops making payments to the lessor, then the lessor stops making payments to the lender. This allows the lender to repossess the property. ❑ This arrangement is generally entered for high value transactions as it is quite complicated.
Sales-Aid Lease	❑ Under this lease contract, the lessor enters into a tie up with a manufacturer for marketing the latter's product through his own leasing operations, it is called sales-aid lease. ❑ In consideration of the aid in sales, the manufacturers may grant either credit or a commission to the lessor.
Closes Ended and Open-Ended Lease	❑ In the close ended lease, the assets get transferred to the lessor at the end of lease, the risk of obsolescence, residual values etc. remain with the lessor being the legal owner of the assets. ❑ In the open-ended lease, the lessee has the option of purchasing the assets at the end of lease period.
Ploughing back of profits	❑ It is a technique of self-financing. ❑ It is a source of finance which contributes towards the fixed as well as working capital needs of the company. ❑ Under this phenomenon, a part of the total profit is transferred to various reserves such as general reserve, reserve for repair and renewal, secret reserves etc. ❑ The funds so created, entails almost no risk and the control of the owners is also not diluted.
Equity Share Capital as an Instrument of Raising Funds	Equity share capital has the following characteristics: ❑ It is a permanent source of capital ❑ Equity shareholders are the ultimate owners of the company ❑ Dividend to equity shareholders is considered as appropriation of profit and not as charge against profit **Advantages of raising funds by issue of equity shares:** ❑ It is a permanent source of finance. Since such shares are not redeemable, the company has no liability of cash outflows associated with its redemption. ❑ Equity capital increases the company's financial base and thus helps further the borrowing powers of the company. ❑ The company is not obliged legally to pay dividends. Hence in times of uncertainties or when the company is not performing well, dividend payments can be reduced or even suspended. ❑ The company can make further issue of share capital by making a right issue. **Disadvantages of raising funds by issue of equity shares:** ❑ The cost of equity shares is high due to higher flotation cost of issue. ❑ These are considered more riskier by the investors due to uncertainty of dividend and capital gains.

	❑ New issue of equity shares reduces the earning per share of existing shareholders unless profits increase proportionately. ❑ With the new issue of equity shares, control and ownership of the existing shareholders gets diluted.
Preference Share Capital as an Instrument of Raising Funds	As the name suggests, Preference shares are the shares which enjoys certain preferential rights over the equity shareholders in regards to:- (*a*) Payment of dividend at a fixed rate (*b*) Repayment of capital on the winding up of the company **Advantages:** ❑ It provides a long-term capital to the company ❑ There is no dilution of EPS ❑ As is bears a fixed charge, there is a leveraging advantage ❑ It can be redeemed after a specified time period ❑ It does not carry voting rights hence there is no dilution of control. ❑ It enhances the credit worthiness of the company **Disadvantages:** ❑ Preference dividend is not tax deductible as is in case of interest on debt, so cost of preference dividend is higher than debt. ❑ Generally, preference dividends are cumulative in nature i.e. if dividend is not paid in a period than it will cumulate and the company has to pay the same in the later period.
Debentures as an Instrument of Raising Funds	Debenture financing is a way of long-term financing and has following characteristics: (*a*) Debentures can be issued with face value of Rs. 100 to Rs. 1,000 with different interest rates (*b*) Debentures can be secured or unsecured (*c*) Interest payable on debentures is charged against profit so benefit of tax saving on interest arises to organization (*d*) Interest has to be paid whether there are profits or not in the organization. **Advantages of debenture financing:** ❑ Cost of debenture is lower as compared to cost of preference and equity shares ❑ Debenture financing doesn't result in dilution of control ❑ The fixed monetary cash flow decreases in real terms due to inflation effect. **Disadvantages of debenture financing:** ❑ Debenture interest and capital repayment are obligatory payments ❑ Debenture financing increases the financial risk of the organization ❑ At the time of maturity, large amount of cash outflow is needed to meet the obligation.

Types of Bonds Based on Call	❑ **Callable Bond:** The bonds where the issuer of the bond gets the right to redeem it before maturity at a predetermined price is known as callable bond. The predetermined price is generally at a premium and is also known as call price. ❑ **Puttable Bond:** The bonds where the investor or purchaser of the bond get the right to sell it back to the issuer before maturity at a predetermined price is known as puttable bond. The predetermined price is also known as put price.
Types of Indian Bonds	❑ **Masala Bonds:** These bonds are denominated in Indian Rupees and are issued outside India. Masala is an Indian name used for spices. NTPC raised the funds through masala bonds for its capital expenditure in year 2016. ❑ **Municipal Bonds:** These bonds are issued to finance the urban infrastructure bodies particularly in the state governments. These bonds are increasingly evident in India. ❑ **Government or Treasury Bond:** These bonds are issued by Government of India or Reserve Bank of India or State Government or any other Government department to raise funds for various projects. Generally, these are issued for long-term financing.
Types of Foreign Bonds	❑ **Foreign Currency Convertible Bond (FCCB):** These bonds are issued in foreign currency by the issuer to get long term financing. These bonds carry a low rate of interest as compared to other bonds. The issuer has to make the interest payment on the decided periods and at the maturity it has to be redeemed by paying the full amount. If the bond was issued with convertible option than investors has the option of either taking the full amount back or get his amount converted in the specified number of shares of the issuing company. ❑ **Plain Vanilla Bond:** These are the most basic form of bond and that's why got the name as plain vanilla bond. These bonds carry basic structure of interest and principal. The issuer would pay the principal along with interest. These bonds don't carry any other option. ❑ **Convertible Floating Rate Notes (FRN):** A floating rate note is a type of debt security which has a floating rate of interest. A convertible FRN gives an advantage to the investor to convert the floating rate notes into fixed rate notes with a specified coupon rate. It protects the investor against falling interest rates in the market. These can be sold in the market and the investor can earn profit. ❑ **Drop Lock Bond:** A floating rate bond is a type of debt security which has a floating rate of interest. In case of drop lock bond, the floating rate bond would be automatically converted to a fixed rate bond if interest falls below a pre-determined level. The new rate remains till the maturity of the bond. It is different from convertible floating rate notes in a manner that under this the bonds get compulsorily converted into fixed rate bond whereas under convertible FRN, the investor has the option to get it converted.

	❑ **Variable Rate Demand Obligations:** The holder of these floating rate notes gets the option of returning or selling the obligation back to the trustee or the issued at par along with accrued interest. It gives the investor an option to exist immediately, so these are more liquid than the normal FRN. ❑ **Yield Curve Note (YCN):** It is a debt security that is structured in manner so that its yield increases when prevailing interest rate declines and its yield decreases when prevailing interest rate increases. This type of security is preferred by investor to hedge the interest rates. This works like a inverse floater. ❑ **Yankee Bond:** These bonds are issued in USA and denominated in dollars. These can be issued by non-US banks or non-US corporations. These bonds are required to be registered with the Securities and Exchange Commission (SEC). They are generally issued in tranches and it generally its interest rate is dollar LIBOR (London Interbank Offered Rate). ❑ **Euro Bond:** These are the debt instruments that is denominated in a currency other than the home currency of the country or the market in which it is issued. For example, a British company may issue euro bonds in Germany denominating it in US dollars. ❑ **Samurai Bond:** These are the yen denominated bonds issued in Tokyo by a non-Japanese company and subject to Japanese regulations. These are used to fund the Japanese operations through the use of capital available in Japanese market. It can also be used to hedge foreign exchange risk. ❑ **Bulldog Bond:** These are the British Pound/Sterling denominated bonds issued in United Kingdom by a non-UK company and subject to UK regulations. These are used to fund the UK operations through the use of capital available in UK market.
External Commercial Borrowings (ECB)	❑ ECBs refer to commercial loans availed from non-resident lenders with minimum average maturity of 3 years. ❑ It can be in the form of bank loans, buyers credit, suppliers credit etc. ❑ Borrowers can raise ECBs through internationally recognized sources like (i) international banks, (ii) capital markets, (iii) multilateral financial institutions like IFC, ADB, IBRD etc. (iv) export credit agencies, (v) foreign collaborators, and (vi) foreign equity holders. ❑ ECBs can be accessed under automatic and approval route depending upon the purpose and volume. ❑ In automatic route there is no need for any approval from RBI/Government.
Euro Bonds	❑ Euro bonds are debt instruments which are not denominated in the currency of the country in which they are issued. ❑ For example, Yen note floated in Germany. ❑ Such bonds are generally issued in a bearer form rather than registered bonds and in such cases they do not contain the investor's name or the country of their origin.

Foreign Bonds	❑ These are debt instruments issued by foreign corporation or foreign Governments. ❑ Such bonds are exposed to default risk, especially the corporate bonds. ❑ These bonds are denominated in the currency of the country where they are issued, however, in case these bonds are issued in a currency other than the investors home currency, they are exposed to exchange rate risks. ❑ For example, A British firm placing Dollar denomination bonds in USA.
Fully Hedged Bonds	❑ The debt instruments issued by foreign corporation or foreign Governments are exposed to currency risk. ❑ Under fully hedged bonds such risk is eliminated by selling in forward markets the entire stream of principal and interest payments.
Medium Term Notes (MTN)	❑ Certain issuers need frequent financing through the bond route including that of the Euro bond. ❑ However, it may be costly and ineffective to go in for frequent issues. ❑ Under MTN program, several lots of bonds can be issued, all having different features e.g. different coupon rates, different currencies etc. ❑ The timing of each lot can be decided keeping in mind the future market opportunities. ❑ The entire documentation and various regulatory approvals can be taken at one point of time.
Floating Rate Notes (FRN)	❑ These are issued up to seven years maturity. Interest rates are adjusted to reflect the prevailing exchange rates. ❑ They provide cheaper money than foreign loans.
Euro Commercial Papers (ECP)	❑ ECPs are short term money market instruments. ❑ They are for maturities less than one year. ❑ They are usually designated in US Dollars.
Foreign Currency Option (FC)	❑ A FC Option is the right to buy or sell, spot, future or forward a specified foreign currency. ❑ It provides a hedge against financial and economic risks.
Foreign Currency Futures	❑ Foreign currency futures are obligations to buy or sell a specified currency in the present for settlement at a future date.
Foreign Euro Bonds	❑ In domestic capital markets of various countries, the Bonds issues referred to above are known by different names such as Yankee Bonds in the US, Swiss Frances in Switzerland, Samurai Bonds in Tokyo and Bulldogs in UK.
Euro Convertible Bond	❑ It is a Euro Bond with the characteristics of convertibility attached to it. ❑ It gives the bond holders an option to convert them into equity shares at premium. ❑ These bonds carry a fixed rate of interest and may include a call option or a put option.

	❑ Under call option, the issuing company has the option to buy or call the bonds prior to maturity date for its redemption. ❑ Under a Put Option the holder has the option to put or sell his bonds to the issuing company at a predetermined date and price.
Euro Convertible Zero Bond	❑ These bonds are structured as a convertible bond. ❑ No interest is payable on the bonds, but conversion of bonds takes place on maturity at a per-determined price. ❑ Usually there is a five years maturity period and they are treated as a deferred equity issue.
Euro Bonds with Equity Warrants	❑ These bonds carry a coupon rate determined by market rates. ❑ The warrants are detachable. Pure bonds are traded at a discount. ❑ Fixed income funds management may kike to invest for the purposes of regular income.
Environmental, Social and Governance -linked bonds (ESG)	❑ ESG-linked bonds are financial instruments designed to promote responsible and sustainable business practices. ❑ They incentivize companies to meet specific ESG targets and provide investors with a way to support projects and initiatives that align with their values and sustainability goals. ❑ They can be further classified as project based or target based.
Project-based ESG Bonds	❑ **Green Bonds:** These are a financial tool that channels investment capital into projects and activities aimed at mitigating environmental issues and promoting sustainability. They offer a structured and transparent way for investors to support green initiatives while seeking financial returns, contributing to a more environmentally responsible future. Ghaziabad Municipal Corporation (GMC) becomes the first municipal corporation to raise ₹150 crore from green bond in year 2021. ❑ **Social Bonds:** These are financial instruments that provide a structured and transparent way to fund projects and programs that have a positive impact on social concerns e.g. human rights, equality animal welfare etc.
Target-based ESG Bonds	❑ **Sustainability-linked bonds (SLBs):** These are a financial instrument that encourages issuers to meet specific sustainability targets, fostering a stronger commitment to ESG goals. They are combination of green bond and social bonds. E.g. Ultratech cement raises US$ 400 million through India's first sustainability-linked bonds in year 2021 with an aim to reduce carbon emissions through the life of bond of 10 years.
American Depository Receipts (ADRs)	❑ ADRs are securities offered by non-US companies who want to list on any of the US exchanges. ❑ The company can use the ADR route either to get international listing or to raise money in international capital market. ❑ It is a derivative instrument. It represents a certain number of company's shares. ❑ ADRs allow US investors to buy shares of these companies without the cost of investing directly in a foreign stock exchange.

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ADRs are issued by an approved New York Bank or Trust company against the deposit of the original shares.
It facilitates integration of global capital markets.

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<tr><td>Global Depository Receipt (GDRs)</td><td>

It is a negotiable certificate denominated in US dollars which represents a Non-US company's publically traded local currency equity shares.
GDRs are created when the local currency shares of an Indian company are delivered to Depository's local custodian Bank against which the Depository bank issues depository receipts in US dollars.
The GDRs may be traded freely in the overseas market like any other dollar-expressed security either on a foreign stock exchange or in the over-the-counter market or among qualified institutional buyers.
By issue of GDRs Indian companies are able to tap global equity market to raise foreign currency funds by way of equity.
It has distinct advantage over debt as there is no repayment of the principal and service costs are lower.

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<tr><td>Difference Between ADRs and GDRs</td><td>
<table>
<tr><th>Basis</th><th>GDRs</th><th>ADRs</th></tr>
<tr><td>1. Meaning</td><td>The depository receipts in the world market</td><td>The depository receipts in the US market is called ADR</td></tr>
<tr><td>2. Voting Right</td><td>GDRs do not have voting rights</td><td>ADRs may be with or without voting rights</td></tr>
<tr><td>3. Scope</td><td>GDRs are traded world-wide</td><td>ADRs are traded only in US</td></tr>
<tr><td>4. Preference</td><td>GDRs are more pre-ferred due to their easy operation</td><td>ADRs provide certain stringent rules to be followed which makes them less preferred</td></tr>
<tr><td>5. Cost involved</td><td>The cost involved in operation of GDR is less than that of ADR</td><td>The cost involved in operation of ADR is comparatively high due to formalities to be fulfilled under US GAPP & SEC.</td></tr>
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<tr><td>Indian Depository Receipts (IDRs)</td><td>

The concept of the depository receipt mechanism which is used to raise funds in foreign currency has been applied in the Indian Capital Market through the issue of Indian Depository Receipts (IDRs).
Foreign companies can issue IDRs to raise funds from Indian market on the same lines as an Indian company uses ADRs/GDRs to raise foreign capital.
The IDRs are listed and traded in India in the same way as other Indian securities are traded.

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<tr><td>Contemporary Sources of Funding</td><td>

Crowd funding
Equity funding
Peer-to-peer (P2P) lending
Start-up funding
Donation-based crowdfunding

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Crowd Funding	❑ It is a method of raising funds through online platforms, where a large number of individuals, often referred to as "crowd," collectively contribute small amounts of money to support a project, cause, or business. ❑ It enables entrepreneurs, artists, nonprofits, and others to access capital and engage with a broader audience. ❑ It can be done in exchange of equity (known as equity funding) loans (known as P2P lending) or nothing at all (known as donation). ❑ There are three parties i.e. fund raiser, mediator and fund investor in this process where mediator (platform) may also charge certain fee.
Equity Funding	❑ In this case investor gets securities of the organization where he invest depending on the amount of investment. ❑ In this case, crowdfunding is used to target large number of investors with small contributions. ❑ This is mostly adopted by startups.
Peer-2Peer (P2P) Funding	❑ In this case, lenders match with the borrower's requirement to provide unsecured loans through online platform. ❑ Funds invested by lender are paid back by borrower with interest. ❑ In this case risk of defaults exist which needs to be accessed.
Start-Up Funding	❑ Start-up needs fund before starting any project and it is difficult to raise funds through conventional sources, so crowdfunding is one of the option to raise funds. ❑ It can be in the form of equity funding or P2P lending or both.
Donation-Based Crowdfunding	❑ In this case, large group of people donate money for some cause with no expectation of ownership or debt.

3 CHAPTER

Ratio Analysis

THEORY

Meaning of Ratio	❑ It is a mathematical expression or relationship between two or more things. ❑ Financial Ratio means mathematical expression or relationship between two or more financial values.
Meaning of Ratio Analysis	❑ It is the process of identifying the financial strengths and weaknesses of the enterprise by logically establishing relationship between the items of Balance Sheet or Income Statement or both and interpreting the results thereof in order to derive meaningful conclusions. ❑ In other words, it is the comparison of different numbers from balance sheet, income statement, cash flow statement against the figures of previous year, other companies, the industry, or even the economy in general for the purpose of financial analysis.
Advantages of Ratio Analysis	❑ **Simplicity:** Ratios are simple to calculate and understand. ❑ **Forecasting:** Trends can be established from ratios which help in forecasting. ❑ **Liquidity position:** It helps in drawing conclusions regarding the liquidity position of a firm. ❑ **Clues to further investigation:** It acts as a messenger which can indicate the areas to be invested further. ❑ **Inter-firm comparison:** It helps in finding variance by comparing either with industry average or those of competitors. The firm can seek to identify probable reasons and take remedial measures. ❑ **Operating efficiency:** It helps in computing the degree of efficiency in the management and utilization of its assets & capital employed.

Importance of Ratio Analysis	❑ **For Management:** It helps management to determine the operating efficiency and for forecasting. Production manager uses input-output ratio, raw material consumption ratio etc. Sales manager uses turnover ratios, expenses ratio etc. Financial manager uses profitability ratios, turnover ratios etc. CEO, GM uses all ratios. ❑ **For Investors:** It helps investors to determine the magnitude and direction of movement in firm's earnings and thereon deciding whether to hold, sell or purchase the shares. They uses profitability ratios, capital structure ratios, solvency ratios and turnover ratios. ❑ **For Short Term Creditors:** It helps short term creditors like bankers and suppliers of material to determine the firm's ability to meet its current obligations. They uses liquidity ratios and short term solvency ratios. ❑ **For Long Term Creditors:** It helps long term creditors to determine the firm's long term financial strength and survival with help of leverage or capital structure ratios. They uses coverage ratios, solvency ratios, turnover ratios and profitability ratios. ❑ **For employees:** they will be interested to know the overall financial wealth of the organization. They uses liquidity ratios, profitability ratios, etc. ❑ **For Regulator or Government:** They will analyse the financial statements to determine taxations and other dues payable to the government. They uses profitability ratios. ❑ **Facilitates Intra, Inter and Pattern Comparison:** It helps in comparing data and if at variance either with the industry average or with those of the competitors, the firm can seek to identify the probable reasons and, in the light take remedial measures. ❑ **Serve as barometer for future:** It helps to indicate the direction in which adjustment should be made in budget or in performance to bring them closer to one another.
Limitations of Ratio Analysis	❑ **Only quantitative analysis and not qualitative analysis:** It ignores the qualitative factors which in certain cases may overtake the quantitative factors. ❑ **Price-level changes to be considered:** Ratios can be accurately interpreted only if the effect of change in prices which may have take place, is adjusted in the figures. ❑ **Historical analysis:** Generally it is computed on the basis of historical financial statements and thus are historic in nature. ❑ **Not free from bias:** The financial statements are not free from bias and as a result, ratio analysis also cannot be said be free from bias. ❑ **Only symptoms and not cure:** Ratios are only symptoms and it becomes the duty of the management to unearth underlying causes. ❑ **Reality behind the statements to be considered:** The relationship between the two figures can be well interpreted only after studying the reality behind the statements on the basis of which the ratio has been established.

	❑ **Accuracy of the accounts to be considered:** The quality of the ratios very much depends upon the quality of the accounts on the basis of which these are established. ❑ **Difference in accounting policies:** Differences in accounting policies and accounting period make the accounting data of the two firms or two periods non-comparable. ❑ **Diversified product lines:** In case of firms having diversified product lines, of different industries, the ratios calculated on the basis of aggregate data cannot be used for inter-firm comparison. ❑ **Effect of season factors:** Seasonal factors may also influence financial data. Year-end figure may not be the average picture of the business.
Ratios in Different Industries	❑ **Telecom Industry** ○ Ratio related to call ○ Revenue and expenses per customer ❑ **Banks** ○ Loan to deposit ratios ○ Operating expenses and income ratios ❑ **Hotel** ○ Room occupancy ratio ○ Bed occupancy ratio ❑ **Transport** ○ Passenger-kilometre ○ Operating cost per passenger kilometre
Types of Ratios	❑ **Liquidity Ratios:** These ratios measures the ability of the enterprise to meet short-term obligations as and when they become due. Short term creditors such as bankers and suppliers are particularly interested in assessing liquidity ❑ **Solvency Ratios:** These ratios measure the ability of the company to survive over a long period of time. Long-term creditors like debenture-holders are particularly interested in long term solvency of the enterprise since their claims are to be met in the long run. ❑ **Activity Ratio:** These ratios measure the effectiveness with which a firm uses its available resources. It helps in commenting on the efficiency of the enterprise in managing its assets. ❑ **Profitability Ratios:** These ratios measures management's overall effectiveness as shown by the returns generated on sales and investment. The long term survival of a business enterprise depends on satisfactory income earned by it.

Liquidity Ratios	
	❑ **Current Ratio:** This ratio establishes a relationship between current assets and current liabilities. The objective of computing this ratio is to measure the ability of the firm to meet its short-term obligations and to reflect the short-term financial strengths/solvency of a firm. In other words, the objective is to measure the safety margin available for short-term creditors. This ratio is computed by dividing the current assets by the current liabilities. This ratio may be expresses as follows: $$\text{Current Ratio} = \frac{\text{Current Assets}}{\text{Current Liabilities}}$$ ❑ **Quick Ratio/ Liquid Ratio/ Acid Test Ratio:** This ratio establishes a relationship between quick assets and current liabilities (or quick liabilities). The objective of computing this ratio is to measure the ability of the firm to meet its short-term obligations as and when due without relying upon the realization of stock. This ratio is computed by dividing the quick assets by the current liabilities. This ratio is usually expresses as a pure ratio e.g. 1 : 1. The ratio may be expressed as follows: $$\text{Quick Ratio} = \frac{\text{Quick Assets}}{\text{Current Liabilities}}$$ The term quick assets refer to those current assets which can be converted in to cash immediately or at a short notice without loss of value. Quick Assets = Current Assets – Inventory – Prepaid Expenses + Realizable value of inventory (if any) ❑ **Absolute Cash Ratio:** This ratio measures a relationship between cash & marketable securities and current liabilities. The objective of computing this ratio is to measure the ability of the enterprise to meet its short-term obligations as and when due without relying upon the realization of stock and debtors. This ratio is computed by dividing the cash and marketable securities by current liabilities. This ratio is usually expressed as a pure ratio e.g. 1:1. The ratio may be expressed as follows: $$\text{Absolute Cash Ratio} = \frac{\text{Cash \& Marketable Securities}}{\text{Current Liabilities}}$$ ❑ **Basic Defense Internal / Interval Measure Ratio:** This ratio measures a relationship between quick assets and average daily operating expenses. The objective of computing this ratio is to measure the average period for which quick assets are available to meet average daily operating expenses. This ratio is computed by dividing the quick assets by average daily operating Expenses his ratio is usually expressed in terms of days/weeks/months. This ratio may be expresses as follows: $$\text{Basic defense interval} = \frac{\text{Quick assets}}{\text{Daily operating expenses}}$$

$$= \frac{\text{Current assets} - \text{Prepaid expenses} - \text{Inventories}}{\text{Daily operating expenses}}$$

$$= \frac{\text{Cash \& Bank} + \text{Net receivables} + \text{Marketable securities}}{\text{Operating expenses} \div \text{No. of days}}$$

- **Net Working Capital:** It is more a cash flow than ratio.

  Net working capital = Current assets – Current liabilities (excluding short term bank borrowing)

Solvency Ratios

(A) Capital Structure Ratios

- **Equity Ratio:** It indicates the share of owner's fund to total fund invested in the business. Higher ratio indicate lower risk for lenders.

$$\text{Equity Ratio} = \frac{\text{Shareholder's Equity}}{\text{Net Assets}}$$

- **Debt Ratio:** It indicates the proportion of total debt or outside liabilities used to fund total assets. A ratio greater than 1 indicates assets are funded more by debt and vice versa.

$$\text{Debt Ratio} = \frac{\text{Total debt}}{\text{Net Assets}}$$

- **Debt – Equity Ratio:** This ratio establishes a relationship between long-term debts and shareholder's funds. The objective of computing this ratio is to measure the relative proportion of debt and equity in financing the assets of a firm. This ratio is computed by dividing the long-term debts by the shareholder's funds. This ratio is usually expressed as a pure ratio e.g. 2:1. This ratio may be expressed as follows:

$$\text{Debt to Equity Ratio} = \frac{\text{Total outside liabilities}}{\text{Shareholders' equity}}$$

$$\text{Debt to Equity Ratio} = \frac{\text{Total Debt}}{\text{Shareholders' equity}} = \frac{\text{Long term debt}}{\text{Shareholders' equity}}$$

$$\text{Debt to Equity Ratio} = \frac{\text{Long term debt}}{\text{Shareholders' equity}}$$

Where,

Total debt = Current liabilities + Non-current liabilities

long term debts means long term loans (whether secured or unsecured and Shareholder's fund = Equity share capital + Preference share capital + Reserves & surplus – Fictitious assets

- **Debt to Total Assets Ratio:** This ratio establishes a relationship between total assets and total long term debts. It measures the extent to which assets are being financed with debt. This ratio is computed by dividing the total debt by the total assets. This ratio is usually expressed as a pure ratio e.g. 2:1. This ratio may be expressed as follows:

$$\text{Debt to total assets Ratio} = \frac{\text{Total outside liabilities}}{\text{Total assets}} = \frac{\text{Total debt}}{\text{Total assets}}$$

- **Proprietory Ratio:** This ratio measures a relationship between equity and the total assets. The objective of computing this ratio is to measure the proportion of total assets financed by the Equity or Proprietor's fund. This ratio is computed by dividing the Proprietor's fund by total assets. It is expressed as a percentage. This ratio may be expressed as follows:

$$\text{Proprietory Ratio} = \frac{\text{Proprietor's Fund}}{\text{Total Assets}} \times 100$$

- **Capital Gearing Ratio:** This ratio establishes a relationship between funds bearing fixed financial payments and equity shareholder's funds. The objective of computing this ratio is to measure the relative proportion of funds bearing fixed financial payments to equity shareholder's funds This ratio is computed by dividing the funds bearing fixed financial payments by equity shareholder's funds. This ratio is usually expressed as a pure ratio e.g. 3:1. This ratio may be expressed as follows:

$$\text{Capital Gearing Ratio} = \frac{\text{Funds bearing fixed financial payments}}{\text{Equity Shareholder's Fund}}$$

$$= \frac{\text{Preference share capital} + \text{Debentures} + \text{Other borrowed funds}}{\text{Equity share capital} + \text{Reserve \& Surplus} - \text{Losses}}$$

(B) Coverage Ratios

- **Interest Coverage Ratio:** This ratio establishes a relationship between net profits before interest and taxes and interest on debt. The objective of computing this ratio is to measure the debt servicing capacity of a firm so far as fixed interest on debt is concerned. This ratio is computed by dividing the net profits before interest and taxes by interest on debt. This ratio is usually expressed as 'x' number of times. This ratio may be expressed as follows:

$$\text{Interest Coverage Ratio} = \frac{\text{Earning Before Interest \& Tax}}{\text{Interest}}$$

	▫ **Preference Dividend Coverage Ratio:** This ratio establishes a relationship between net profits after interest and taxes and Preference Dividend on Preference Shares. The objective of computing this ratio is to measure the Preference Shares servicing capacity of a firm so far as fixed dividend on preference shares is concerned. This ratio is computed by dividing net profits after interest and taxes by preference dividend on Preference Shares. This ratio is usually expressed as 'x' number of times. This ratio may be expressed as follows: $\text{Preference Dividend Coverage Ratio} = \frac{\text{Net profit after interest and tax}}{\text{Preference dividend on preference shares}}$ $\text{Equity Dividend Coverage Ratio} = \frac{\text{Earnings after tax} - \text{Preference dividend}}{\text{Equity dividend}}$ ▫ **Debt Service Coverage Ratio:** This ratio measures the relationship between net profits before interest and tax and interest plus principal portion of installment. The objective of computing this ratio is to determine the firm's capacity to pay off both the interest and principal portion of the installment. This ratio is computed by dividing the net profit before interest and tax by the aggregate of interest and principal potion of installment. It is usually expressed in number of times. This ratio may be expressed as follows: $\text{Debt Service Coverage Ratio} = \frac{\text{Earnings available for debt service}}{\text{Interest} + \text{Installments}}$ Where, Earnings available for debt service = Net profit after tax + non-cash expenses + Interest + Other adjustments like loss of assets etc. $\text{Fixed charges coverage ratio} = \frac{\text{EBIT} + \text{Depreciation}}{\text{Interest} + \text{Repayment of loan}}$
Activity Ratios	▫ **Capital Turnover Ratio:** This ratio establishes a relationship between net sales and capital employed. The objective of computing this ratio is to determine the efficiency with which the capital employed is utilized. This ratio is computed by dividing the net sales by the capital employed. This ratio is usually expressed as 'x' number of times. This ratio may be expressed as follows: $\text{Capital Turnover Ratio} = \frac{\text{Net Sales}}{\text{Capital Employed}}$ ▫ **Fixed Assets Turnover Ratio:** This ratio establishes a relationship between net sales and fixed assets. The objective of computing this ratio is to determine the efficiency with which the fixed assets are utilized. This ratio is computed by dividing the net sales by the net fixed (operating) assets. This ratio is usually expressed as 'x' number of times. This ratio may be expressed as follows:

$$\text{Fixed Assets Turnover Ratio} = \frac{\text{Net Sales}}{\text{Net Fixed (Operating) Assets}}$$

- **Current Assets Turnover Ratio**: This ratio establishes a relationship between net sales and current assets. The objective of computing this ratio is to determine the efficiency with which the current assets are utilized. This ratio is computed by dividing the net sales by the current assets. This ratio is usually expressed as 'x' number of times. This ratio may be expresses as follows:

$$\text{Current Assets Turnover Ratio} = \frac{\text{Net Sales}}{\text{Current Assets}}$$

- **Total Assets Turnover Ratio:** This ratio establishes a relationship between net sales and total assets. The objective of computing this ratio is to determine the efficiency with which the total assets is utilized. This ratio is computed by dividing the net sales by the total assets. This ratio is usually expressed as 'x' number of times. This ratio may be expressed as follows:

$$\text{Total assets turnover ratio} = \frac{\text{Net Sales}}{\text{Total assets}}$$

- **Stock Turnover Ratio**: This ratio establishes a relationship between cost of goods sold and average inventory of finished goods. The objective of computing this ratio is to determine the efficiency with which the inventory is converted into sales. This ratio is computed by dividing the cost of goods sold by the average inventory. This ratio is usually expressed as 'x' number of times. This ratio may be expressed as follows:

$$\text{Stock Turnover Ratio} = \frac{\text{Cost of Goods Sold}}{\text{Average Inventory}}$$

- **Stock Velocity:** This velocity indicates the period for which sales can be generated with the help of an average stock maintained and is expressed in terms of period. This velocity may be calculated as follows:

$$\text{Stock Velocity} = \frac{\text{Average Stock}}{\text{Average Cost of Goods Sold per day}}$$

$$= \frac{\text{12 months / 52 weeks / 365 days}}{\text{Stock Turnover Ratio}}$$

- **Debtors Turnover Ratio:** This ratio establishes a relationship between net credit sales and average trade debtors (or receivables). The objective of computing this ratio is to determine the efficiency with which the trade debtors are converted into cash. This ratio is computed by dividing the net credit sales by average trade debtors. This ratio is usually expressed as 'x' number of times. This ratio may be expressed as follows:

$$\text{Debtors Turnover Ratio} = \frac{\text{Net Credit Sales}}{\text{Average Debtors}}$$

	❑ **Average Debt Collection Period or Debtor's Velocity:** This period shows an average period for which the credit sales remain outstanding or the average credit period actually enjoyed by the debtors. It measures the quality of debtors. It indicates the rapidity of slowness with which the money is collected from debtors. This period may be calculated as follows: $\text{Debt Collection Period} = \frac{\text{Average Debtors}}{\text{Average Net Credit Sales per day}}$ $= \frac{\text{12 months / 52 weeks / 365 days}}{\text{Debtors Turnover Ratio}}$ ❑ **Creditors Turnover Ratio:** This ratio establishes a relationship between net credit purchases and average creditors (or payables). The objective of computing this ratio is to determine the efficiency with which the creditors are managed and paid. This ratio is computed by dividing the net credit purchases by average trade creditors. This ratio is usually expressed as 'x' number of times. This ratio may be expressed as follows: $\text{Creditors Turnover Ratio} = \frac{\text{Net Credit Purchases}}{\text{Average Creditors}}$ ❑ **Debt Payment Period or Creditor's Velocity:** This period shows an average period for which the credit purchases remain outstanding or the average credit period actually availed of. This period may be calculated as follows: $\text{Debt Payment Period} = \frac{\text{Average Creditors}}{\text{Average Net Credit Purchases per day}}$ $= \frac{\text{12 months / 52 weeks / 365 days}}{\text{Creditors Turnover Ratio}}$
Profitability Ratios in Relation to Sales	❑ **Gross Profit Ratio:** This ratio measures the relationship between gross profit and net sales. The main objective of computing this ratio is to determine the efficiency with which production and/or purchase operations and selling operations are carried on. It is used to compare profitability department-wise or product-wise. This ratio is computed by dividing the gross profit by the net sales. It is expressed as percentage. This ratio may be expressed as follows: $\text{Gross Profit Ratio} = \frac{\text{Gross Profit}}{\text{Net Sales}} \times 100$ ❑ **Expenses Ratio:** This ratio measure the relationship between various expenses and net sales. The main objective of computing this ratio is to determine the efficiency with which theses expenses are being incurred. This ratio is computed by dividing the various expenses by the net sales. It is expressed as percentage. This ratio may be expressed as follows: $\text{Cost of Goods sold Ratio} = \frac{\text{Cost of Goods Sold}}{\text{Sales}} \times 100$

$$\text{Operating Expenses Ratio} = \frac{\text{Adm. OHs + S\& D OHs}}{\text{Sales}} \times 100$$

$$\text{Operating Ratio} = \frac{\text{COGS + Operating expenses}}{\text{Sales}} \times 100$$

$$\text{Financial Expenses Ratio} = \frac{\text{Financial expenses}}{\text{Sales}} \times 100$$

$$\text{Administration expenses Ratio} = \frac{\text{Administration expenses}}{\text{Sales}} \times 100$$

$$\text{Selling \& Distribution expense Ratio} = \frac{\text{S\& D expenses}}{\text{Sales}} \times 100$$

$$\text{Fixed Expense Ratio} = \frac{\text{Fixed expenses}}{\text{Sales}} \times 100$$

$$\text{Variable Expense Ratio} = \frac{\text{Variable expenses}}{\text{Sales}} \times 100$$

- **Operating Profit Ratio:** This ratio measures the relationship between operating profit and net sales. The main objective of computing this ratio is to determine the operational efficiency of the management. This ratio is computed by dividing the operating profit by the net sales. It is expressed as a percentage. This ratio may be expressed as:

$$\text{Operating Profit Ratio} = \frac{\text{Operating Profit}}{\text{Net Sales}} \times 100$$

- **Net Profit Ratio:** This ratio measures the relationship between net profit and net sales. The main objective of computing this ratio is to determine the overall profitability due to various factors such as operational efficiency, trading on equity etc. This ratio is computed by dividing the net profit by the net sales. The figure of net profit may be taken either before tax or after tax. It is expressed as a percentage. This ratio may be expressed as follows:

$$\text{Net profit ratio} = \frac{\text{Net Profit after tax}}{\text{Net Sales}} \times 100$$

$$\text{Pre-tax profit ratio} = \frac{\text{Net Profit before tax}}{\text{Net Sales}} \times 100$$

Profitability Ratios in Relation to Investment

- **Return on Investment (ROI):** This ratio measures a relationship between the net profit and investment. The objective of computing this ratio is to find out how efficiently the long term funds supplied by the creditors and shareholders have been used. It is expressed as a percentage. In the form of formula, this ratio may be expressed as follows:

$$\text{Return on Investment} = \frac{\text{Profit / Earnings}}{\text{Investment}} \times 100$$

- **Return on Total Assets:** This ratio measures a relationship between net profit after interest and tax, and total assets. The objective of computing this ratio is to find out how efficiently the total assets have been used by the management. This ratio is computed by dividing the net profit after interest and tax by total assets. This ratio is expressed as a percentage. This ratio may be expressed as follows:

$$\text{Return on total assets (ROTA)} = \frac{\text{Net profit after tax}}{\text{Average total / tangible / fixed assets}}$$

Sometimes, this ratio is also computed before interest but after tax as assets are also financed by lenders.

$$\text{Return on total assets (ROTA)} = \frac{\text{Net profit after tax + Interest}}{\text{Average total / tangible / fixed assets}}$$

$$= \frac{\text{EBIT}(1-t)}{\text{Average total / tangible / fixed assets}}$$

$$\text{Return on Net Assets (RONA)} = \frac{\text{EBIT}(1-t)}{\text{Average Net assets}}$$

- **Return on Capital Employed (ROCE):** This ratio measures a relationship between the net profit and capital employed. The objective of computing this ratio is to find out how efficiently the long term funds supplied by the creditors and shareholders have been used. It is expressed as a percentage. In the form of formula, this ratio may be expressed as follows:

$$\text{Return on Capital Employed} = \frac{\text{Earnings before interest \& tax}(\text{EBIT})}{\text{Capital Employed}} \times 100$$

$$\text{Return on Capital Employed} = \frac{\text{EBIT}(1-t)}{\text{Capital Employed}} \times 100$$

$$\text{Return on Capital Employed} = \frac{\text{PAT + Interest}}{\text{Capital Employed}} \times 100$$

- **Return on Equity (ROE):** This ratio measures a relationship between net profit after interest and tax available for equity shareholders' and equity shareholder's fund. The objective of computing this ratio is to find out how efficiently the funds supplied by the equity shareholders have been used. This ratio is computed by dividing the earnings available for equity by equity shareholder's funds. It is expressed as a percentage. In the form of formula, this ratio may be expressed as follows:

$$\text{Return on Equity} = \frac{\text{PAT + Interest}}{\text{Capital Employed}} \times 100$$

Profitability Ratios in Relation to Equity Shareholder's Fund

- **Earning Per Share (EPS):** This ratio measures the earnings available to an equity shareholder on a per share basis. The objective of computing this ratio is to measure the profitability of the firm on per equity share basis. This ratio is computed by dividing the net profit after interest, tax and preference dividend by the number of equity shares. It is expressed as an absolute figure. In the form of formula, this ratio may be expressed as follows:

$$\text{Earning Per Share} = \frac{\text{Net Profit After Interest, Tax and Preference Dividend}}{\text{No. of Equity Shares}}$$

- **Dividend Per Share:** This ratio measures the dividend distributed per equity share. The objective of computing this ratio is to measure the dividend distributed per equity share. This ratio is computed by dividing the profit distributed as equity dividend by the number of equity shares. It is expressed as an absolute figure. In the form of a formula, this ratio may be expressed as follows:

$$\text{Dividend Per Share} = \frac{\text{Profit Distributed as Equity Dividend}}{\text{No. of Equity Shares}}$$

- **Price Earning Ratio (P/E Ratio):** This ratio measures the relationship between the market price per share and earning per share. The objective of computing this ratio is to find out expectations of the shareholders about the earnings of the firm. This ratio is computed by dividing market price per share by the earning per share. It is usually expressed as a pure number. In the form of formula, this ratio may be expressed as follows:

$$\text{Price Earning Ratio} = \frac{\text{Market Price Per Share}}{\text{Earning Per Share}}$$

- **Dividend Payout Ratio:** This ratio measures the portion of earning per share distributed as dividend. The objective of computing this ratio is to measure the portion of EPS distributed as dividend. This ratio is computed by dividing the DPS by EPS. It is usually expressed as a percentage. In the form of formula, this ratio may be expressed as follows:

$$\text{Dividend Payout Ratio} = \frac{\text{Dividend Per Share (DPS)}}{\text{Earning Per Share (EPS)}}$$

- **Earning Yield:** This ratio measures the relationship between Earning Per Share (EPS) and Market Price Per Share (MPS). The objective of computing this ratio is to measure the performance of earnings in relation to market price per share. This ratio is computed by dividing the EPS by market price per share. It is usually expressed as a percentage. In the form of a formula, this ratio may be expressed as follows:

$$\text{Earning Yield} = \frac{\text{Earning Per Share (EPS)}}{\text{Market Price Per Share (MPS)}} \times 100$$

	❑ **Dividend Yield:** This ratio measures the relationship between Dividend Per Share (DPS) and Market Price Per Share (MPS). The objective of computing this ratio is to measure the performance of dividend in relation to market price per share. This ratio is computed by dividing the DPS by market price per share. It is usually expressed as a percentage. In the form of a formula, this ratio may be expressed as follows: $\text{Dividend Yield} = \frac{\text{Dividend Per Share (DPS)}}{\text{Market Price Per Share (MPS)}} \times 100$ ❑ **Market value/ book value per share:** This ratio measures a relationship between Market Value per share and Book Value per share. The objective of computing this ratio is to measure market response to the book value of a share. This ratio is computed by dividing the Market Price per share by Book Value per share. This ratio may be expressed as follows: Market value/Book Value per share (MV/BV) = (Average share price)/ (Net worth ÷ No. of equity shares) $= \frac{\text{Average share price}}{\text{Net worth} \div \text{No. of equity shares}} = \frac{\text{Average share price}}{\text{Book value per shares}}$ $= \frac{\text{Closing share price}}{\text{Book value per shares}}$ ❑ **Q Ratio :** This ratio measures a relationship between Market Valuation and intrinsic value. If Q ratio = 1, then it is equilibrium. It is less than 1, it means stock is undervalued and if it is more than 1, it means stock is overvalued. This ratio may be expressed as follows: $\text{Q Ratio} = \frac{\text{Market value of equity and liabilities}}{\text{Estimated replacement cost of assets}}$ $= \frac{\text{Market value of company}}{\text{Assets' replacement cost}}$
Du Pont Model	The DU Pont Company of USA pioneered a system of financial analysis which has received widespread recognition and acceptance. The analysis takes into account important inter-relationships on the basis of information available in the financial statements. The usefulness of DU Pont chart lies in the fact that it presents the overall picture of the performance of a firm and enables the management to identify the factors which have a bearing on its profitability.
Return on Investment (ROI) using the DU Pont Analysis	Return on Investment (ROI) represents the earning power of the company. ROI depends on two ratios: (a) Net Profit Ratio; and (b) Capital Turnover Ratio. A change in any of these ratios will change the firm's earning power. These two ratios are affected by many factors. A change in any of these factors will change these ratios also. The analysis has been presented by Du-Pont company of USA through a chart popularly known as Du-Pont Chart.

Return on Total Assets (ROTA) using the DU Pont Analysis	The purpose of Du-Pont Chart is to provide management with a measure of performance in the form of return on Total Assets. It brings together the activity ratios and net profit margins on sales and shows how these ratios interact to determine the profitability of assets. The Du-Pont chart can be used to find out ways and means of improving the return on total assets.
Return on Equity (ROE) using the DU Pont Analysis	There are three components in the calculation of return on equity using the traditional Du-Pont model; (a) the net profit margin; (b) assets turnover ratio; and (c) the equity multiplier. By examining each input individually, the sources of a company's return on equity can be discovered and compared to its competitors.

PRACTICAL QUESTIONS

1. Following information are available for SK ltd. along with various ratio relevant to the particulars industry it belongs to. Appraise your comments on strength and weakness of SK ltd. comparing its ratios with the given industry norms. **[SM]**

SK Ltd. Balance Sheet as at 31.3.2022

Liabilities	Amount (₹)	Assets	Amount (₹)
Equity Share Capital	48,00,000	Fixed Assets	24,20,000
10% Debentures	9,20,000	Cash	8,80,000
Sundry Creditors	6,60,000	Sundry Debtors	11,00,000
Bills Payable	8,80,000	Stock	33,00,000
Other Current Liabilities	4,40,000		
	77,00,000		77,00,000

Statement of Profitability for the year ending 31.3.2022

Particulars	Amount (₹)	Amount (₹)
Sales		1,10,00,000
Less: cost of goods sold	–	–
Material	41,80,000	–
Wages	26,40,000	0
Factory Overhead	12,98,000	81,18,000
Gross profit	–	28,82,000
Less: Selling & Distribution Cost	11,00,000	–
Administrative cost	12,28,000	23,28,000
Earnings before interest and taxes	–	5,54,000
Less: Interest charges	–	92,000
Earnings before tax	–	4,62,000
Less: Taxes @ 50%	–	2,31,000
Net Profit (PAT)	–	2,31,000

Industry Norms

Ratios	Norm
Current Ratio	2.5
Receivables turnover ratio	8.0
Inventory turnover Ratio (based on sales)	9.0
Total Assets Turnover ratio	2.0
Net Profit Ratio	3.5%
Return on Total Assets	7.0%
Return on Net Worth (Based on net profit)	10.5%
Total Debt/Total Assets	60.0%

[**Sol.** Actual ratios = 2.67; 10; 3.33; 1.43; 2.10%; 3.60%; 4.81%; 37.66%]

2. SK Ltd. has made plans for the next year. It is estimated that the company will employ total assets of ₹8,00,000, 50% of the assets being financed by borrowed capital at an interest rate of 16% per year. The direct costs for the year are estimated at ₹4,80,000 and all other operating expenses are estimated at ₹80,000. The goods will be sold to customers at 150% of the direct costs. Income tax rate is assumed to be 50%. You are required to calculate: **[Similar Nov 2020]**

(a) Net profit margin

(b) Return on capital employed

(c) Assets turnover

(d) Return on owner's equity

[**Sol.** (a) 6.67%; (b) 20%; (c) 0.90 times; (d) 12%]

3. The total sales (all credit) of a firm are ₹6,40,000. It has a gross profit margin of 15% and a current ratio of 2.5. The firm's current liabilities are ₹96,000; inventories ₹48,000 and cash ₹16,000. **[SM]**

(a) Determine the average inventory to be carried by the firm, if an inventory turnover of 5 times is expected? (Assume a 360 day year)

(b) Determine the average collection period if the opening balance of debtors is intended to be ₹80,000? (Assume a 360 day year)

[**Sol.** (a) ₹1,08,800; (b) 72 days]

4. The following figures are related to the trading activities of M Ltd.: [Nov 2022] **[Nov 2022]**

Total assets	-	₹10,00,000
Debt to total assets	-	50%
Interest cost	-	10% per year
Direct cost	-	10 times of the interest cost
Operating expenses	-	₹1,00,000

The goods are sold to customers at a margin of 50% on the direct cost. Tax rate is 30%. You are required to calculate:

(a) Net profit margin (b) Net operating profit margin

(c) Return on assets (d) Return on owner's equity

[**Sol.** (a) 10%; (b) 20%; (c) 15%; (d) 14%]

5. The capital structure of SK ltd. is as follows: **[SM]**

Equity share capital of ₹10 each	8,00,000
9% Preference share capital of ₹10 each	3,00,000
	11,00,000

Additional information: Profit (after tax at 35 percent), ₹2,70,000; Depreciation ₹60,000; Equity dividend paid 20 percent; Market price of equity shares ₹40. You are required to compute the following, showing the necessary workings:

(a) Dividend yield on the equity shares (b) Cover for the preference and equity dividend

(c) Earnings per share (d) Price-earning ratio

[**Sol.** (a) 5%; (b) 10 times; 1.52 times; (c) ₹3.0375; (d) 13.17 times]

6. SK Private. Ltd. gives you the following information relating to the year ending 31st March, 2022: **[SM]**

(1)	Current Ratio	2.5 : 1
(2)	Debt-Equity Ratio	1 : 1.5
(3)	Return on Total Assets (After Tax)	15%
(4)	Total Assets Turnover Ratio	2
(5)	Gross Profit Ratio	20%
(6)	Stock Turnover Ratio	7
(7)	Net Working Capital	₹13,50,000
(8)	Fixed Assets	₹30,00,000
(9)	1,80,000 Equity shares of	₹10 each
(10)	60,000 9% Preference Shares of	₹10 each
(11)	Opening stock	₹11,40,000

You are required to calculate:

(a) Quick ratio

(b) Fixed assets turnover ratio

(c) Proprietary ratio

(d) Earnings per share

[**Sol.** (a) 1.10 times; (b) 3.5 times; (c) 49.71%; (d) ₹4.075]

7. Following figures and ratios are related to a company of Q Ltd.: **[May 2019]**

Sales for the year (all credit)	₹30,00,000
Gross profit ratio	25%
Fixed assets turnover ratio (based on cost of goods sold)	1.5
Stock turnover ratio (based on cost of goods sold)	6
Liquid ratio	1:1
Current Ratio	1.5
Receivables (Debtors) collection period	2 months
Reserves & surplus to share capital	0.60:1
Capital gearing ratio	0.5
Fixed assets to net worth	1.20:1

You are required to calculate:

Closing stock, Fixed Assets, Current Assets, Debtors and Net Worth.

[**Sol.** ₹3,75,000; ₹15,00,000; ₹11,25,000; ₹5,00,000; ₹12,50,000]

8. Following information has been provided from the books of SK Ltd. for the year ending on 31st March, 2022: **[SM, MTP Nov 2018]**

Net Working Capital	₹4,80,000
Bank Overdraft	₹80,000
Fixed Assets to Proprietary Ratio	0.75
Reserve and Surplus	₹3,20,000
Current Ratio	2.5
Liquid Ratio (Quick Ratio)	1.5

You are required to prepare a summarised balance sheet as at 31st March, 2022 assuming that there is no long term debt.

[**Sol.** BS total = ₹22,40,000]

9. Following is the abridged Balance Sheet of SK Ltd: **[SM]**

Liabilities	Amount (₹)	Assets		Amount (₹)
Share Capital	1,00,000	Land & Buildings		80,000
Profit & Loss Account	17,000	Plant & Machinery	50,000	
Current Liabilities	40,000	Less: Depreciation	15,000	35,000
				1,15,000
		Stock	21,000	
		Receivables	20,000	
		Bank	1,000	42,000
	1,57,000			1,57,000

With the help of the additional information furnished below, you are required to prepare trading and profit & loss account and a balance sheet as at 31st March, 2022.

(a) The company went in for re-organisation of capital structure, with share capital remaining the same as follows:

Share Capital	50%
Other Shareholder's fund	15%
5% Debentures	10%
Creditors	25%

Debentures were issued on 1st April. Interest is to be paid annually on 31st March.

(b) Land and buildings remained unchanged. Additional plant and machinery has been bought and a further ₹5,000 depreciation was written off.
(The total fixed assets then constituted 60% of total fixed and current assets)

(c) Working capital ratio was 8 : 5.

(d) Quick ratio was 1 : 1.

(e) The receivables (four-fifth of the quick assets) to sales ratio revealed a credit period of 2 months. There were no cash sales.

(f) Return on net worth was 10%

(g) Gross profit was at the rate of 15% of selling price.

(h) Stock turnover was eight times for the year.

Ignore taxation.

[**Sol.** GP = ₹36,000; NP = ₹13,000; BS Total = ₹2,00,000]

10. The following accounting information and financial ratios of SK Ltd. relate to the year ended 31st December, 2022: **[SM, RTP Nov 2022]**

(I) Accounting Information:

Gross Profit	15% of sales
Net Profit	8% of sales
Raw material consumed	20% of works cost
Direct wages	10% of works cost
Stock of raw materials	3 month's usage
Stock of finished goods	6% of works cost
Debt collection period	60 days

(II) Financial Ratios:

Fixed assets to sales	1 : 3
Fixed assets to current assets	13 : 11
Current ratio	2 : 1
Long-term loans to current liabilities	2 : 1
Capital to Reserves and Surplus	1 : 4

If value of fixed assets as on 31st December, 2021 amounted to ₹26 lakhs, prepare a summarized Profit and Loss Account of the company for the year 31st December, 2022 and also the Balance Sheet as on 31st December, 2022.

[**Sol.** GP = ₹11,70,000; NP = ₹6,24,000; BS Total = ₹48,00,000]

11. Based on the following particulars show various assets and liabilities of SK Ltd. **[RTP May 2018]**

Fixed assets turnover ratio	8 times
Capital turnover ratio	2 times
Inventory Turnover	8 times
Receivable turnover	4 times
Payable turnover	6 times
GP Ratio	25%

Gross profit during the year amounts to ₹8,00,000. There is no long-term loan or overdraft. Reserve and surplus amount to ₹2,00,000. Ending inventory of the year is ₹20,000 above the beginning inventory.

[**Sol.** BS Total = ₹20,03,333]

12. From the following ratios and information given below, prepare Trading Account, Profit & Loss Account and Balance sheet of SK Ltd.: **[SM]**

Fixed Assets	₹40,00,000
Closing stock	₹4,00,000
Stock turnover ratio	10
Gross profit ratio	25%
Net profit ratio	20%

Net profit to capital	1/5
Capital to total liabilities	1/2
Fixed assets to capital	5/4
Fixed assets to Total current assets	5/7

[**Sol.** GP = ₹8,00,000; NP = ₹6,40,000; BS Total = ₹96,00,000]

13. Using the following information, complete the Balance Sheet given below: **[MTP May 2019]**

(a)	Total debt to net worth	:	1 : 2
(b)	Total assets turnover	:	2
(c)	Gross Profit on sales	:	30%
(d)	Average collection period (assume 360 days in a year)	:	40 days
(e)	Inventory turnover ratio based on cost of goods sold and year-end inventory	:	3
(f)	Acid test ratio	:	0.75

Balance Sheet as on March 31, 2022

Liabilities	₹	Assets	₹
Equity share capital	4,00,000	Plant & Machinery & other fixed assets	.....
Reserve & Surplus	6,00,000	Current Assets:	
Total Debt:		Inventory	.....
Current liabilities	.....	Debtors	.....
		Cash	.....

[**Sol.** BS Total = ₹15,00,000]

14. SK Ltd. has furnished the following ratios and information relating to the year ended 31st March, 2022. **[SM, Similar July 2021]**

Sales	₹60 lacs
Return on net worth	25%
Rate of income tax	50%
Share capital to reserves	7:3
Current ratio	2
Net-profit to Sales (after tax)	6.25%
Inventory turnover (based on cost of goods sold and closing stock)	12
Cost of goods sold	₹18 lacs
Interest on Debentures (@15%)	₹60,000
Sundry Debtors	₹2 lacs
Sundry Creditors	₹2 lacs

You are required to:

(a) Calculate the operating expenses for the year ended 31st March, 2022.

(b) Prepare a Balance Sheet as on 31st March, 2022.

Balance Sheet as on March 31, 2022

Liabilities	₹	Assets	₹
Equity share capital	.....	Fixed Assets	.....
Reserve & Surplus	.....	Current Assets:	.....
15% Debentures	.....	Stock	.....
Payables	.....	Receivables	.....
	.....	Cash	.....

[**Sol.** (a) ₹33,90,000; (b) BS Total = ₹21,00,000]

15. Using the information given below, complete the Balance Sheet of SK Private Limited:

(i)	Current ratio	1.6:1
(ii)	Cash and Bank balance	15% of total current assets
(iii)	Debtors turnover ratio	12 times
(iv)	Stock turnover (cost of goods sold) ratio	16 times
(v)	Creditors turnover (cost of goods sold) ratio	10 times
(vi)	Gross profit ratio	20%
(vii)	Capital gearing ratio	0.6
(viii)	Depreciation rate	15% on WDV
(ix)	Net Fixed Assets	20% of total assets

(Assume all purchase and sales are on credit)

Balance Sheet of SK Private Limited as at 31.03.2022

Liabilities	₹	Assets	₹
Share Capital	25,00,000	Fixed Assets	
Reserve & Surplus	?	Opening WDV	?
12% Long term debt	?	Less: Depreciation	?
Current Liabilities		**Current Assets**	
Creditors	?	Stock	?
Provision & outstanding expenses	68,50,000	Debtors	?
		Cash & Bank balance	?
Total	?	**Total**	?

[**Sol.** BS total = ₹1,37,00,000]

16. Assuming the current ratio of a company is 2, STATE in each of the following cases whether the ratio will improve or decline or will have no change: **[RTP Nov 2018]**

(a) Payment of current liability (b) Purchase of fixed assets by cash

(c) Cash collected from customers (d) Bill receivable dishonoured

(e) Issue of new shares

[**Sol.** (a) Improve; (b) Decline; (c) No change; (d) No change; (e) Improve]

PRACTICE QUESTIONS

17. In a meeting held at Delhi towards the end of 2020, the Directors of M/s SK Ltd. have taken a decision to diversify. At present SK Ltd. sells all finished goods from its own warehouse. The company issued debentures on 01.01.2021 and purchased fixed assets on the same day. The purchase prices have remained stable during the concerned period. Following information is provided to you: **[SM]**

Income Statement

	2020		2021	
	₹	₹	₹	₹
Sales: Cash	30,000		32,000	
Credit	2,70,000	3,00,000	3,42,000	3,74,000
Cost of sales		(2,36,000)		(2,98,000)
Gross margin		64,000		76,000
Expenses:				
Warehousing	13,000		14,000	
Transport	6,000		10,000	
Administration	19,000		19,000	
Selling	11,000		14,000	
Debenture Interest	.....		2,000	
		(49,000)		(59,000)
Net Profit		15,000		17,000

Balance Sheet

	On 31st December 2020		On 31st December 2021	
	₹	₹	₹	₹
Fixed assets (Less Depreciation)		30,000		40,000
Current assets:				
Stock	60,000		94,000	
Debtors	50,000		82,000	
Cash	10,000		7,000	
	1,20,000		1,83,000	
Less: Current liabilities - Trade creditors	(50,000)		(76,000)	
Net current assets		70,000		1,07,000
		1,00,000		1,47,000
Share capital		75,000		75,000
Reserves and undistributed profit		25,000		42,000
Debentures				30,000
		1,00,000		**1,47,000**

You are required to calculate the following ratios for the year 2020 and 2021.

(a) Gross Profit Ratio

(b) Other Operating Expenses to Sales Ratio

(c) Operating Profit Ratio

(d) Capital Turnover Ratio

(e) Stock Turnover Ratio

(f) Net Profit to Net worth ratio

(g) Debtors collection period

Ratio relating to capital employed should be based on the capital at the end of the year. Give the reasons for change in the ratios for 2 years. Assume opening stock of ₹40,000 for the year 2020. Ignore Taxation.

[Sol. (a) 21.3%; 20.3%; (b) 16.3%; 15.2%; (c) 5%; 5.08%; (d) 3; 2.54; (e) 4.72; 3.87; (f) 15%; 16.24%; (g) 67.6 days; 87.5 days]

18. ABC Company sells plumbing fixtures on terms of 2/10 net 30. Its financial statements over the 3 years are as follows: **[SM]**

Particulars	2020-21	2021-22	2022-23
	₹	₹	₹
Cash	30,000	20,000	5,000
Accounts receivables	2,00,000	2,60,000	2,90,000
Inventory	4,00,000	4,80,000	6,00,0000
	6,30,000	7,60,000	8,95,000
Net fixed assets	8,00,000	8,00,000	8,00,000
	14,30,000	15,60,000	16,95,000
Accounts payable	2,30,000	3,00,000	3,80,000
Accruals	2,00,000	2,10,000	2,25,000
Bank loan (short term)	1,00,000	1,00,000	1,40,000
	5,30,000	6,10,000	7,45,000
Long-term debt	3,00,000	3,00,000	3,00,000
Common stock	1,00,000	1,00,000	1,00,000
Retained earnings	5,00,000	5,50,000	5,50,000
	14,30,000	15,60,000	16,95,000
Sales	40,00,000	43,00,000	38,00,000
Cost of goods sold	32,00,000	36,00,000	33,00,000
Net profit	3,00,000	2,00,000	1,00,000

Considering opening balance of accounts receivables and inventory as 2,00,000 and 4,00,000 respectively as on 1,04,202, analyse the company's financial condition and performance over the last 3 years. Are there any problems?

19. MT Limited has the following Balance Sheet as on March 31, 2019 and March 31, 2020:

[RTP May 2020]

	₹in lakhs	
	March 31, 2019	March 31, 2020
Sources of Funds:		
Shareholder's Funds	2,500	2,500
Loan Funds	3,500	3,000
	6,000	5,500
Application of Funds:		
Fixed Assets	3,500	3,000
Cash and Bank	450	400
Receivables	1,400	1,100
Inventories	2,500	2,000
Other Current Assets	1,500	1,000
Less: Current Liabilities	(1,850)	(2,000)
	6,000	**5,500**

The Income Statement of The MT Ltd. for the year ended is as follows:

	₹in lakhs	
	March 31, 2019	March 31, 2020
Sales	22,500	23,800
Less: Cost of goods sold	(20,860)	(21,100)
Gross Profit	1,640	2,700
Less: Selling, General & Administrative expenses	(1,100)	(1,750)
Earnings before Interest and Tax (EBIT)	540	950
Less: Interest Expenses	(350)	(300)
Earning before Tax (EBT)	190	650
Less: Tax	(57)	(195)
Profits after Tax (PAT)	133	455

Required: CALCULATE for the year 2019-20

(a) Inventory turnover ratio

(b) Financial Leverage

(c) Return on Capital Employed (ROCE)

(d) Return on Equity (ROE)

(e) Average collection period

[Take 1 year = 365 days]

[Sol. (a) 9.4; (b) 1.46; (c) 11.56%; (d) 18.20%; (e) 19.17 days]

20. The following is the Profit and loss account and Balance Sheet of KLM LLP. **[RTP Nov 2019]**

Trading and Profit & loss Account

Particulars	Amount (₹)	Particulars	Amount (₹)
To Opening stock	12,46,000	By Sales	1,96,56,000
To Purchases	1,56,20,000	By Closing stock	14,28,000
To Gross Profit c/d	42,18,000		
	2,10,84,000		2,10,84,000
To Administrative expenses	18,40,000	By Gross profit b/d	42,18,000
To Selling & Dist. exp.	7,56,000	By Interest on investment	24,600
To Interest on loan	2,60,000	By Dividend received	22,000
To Net Profit	14,08,600		
	42,64,600		**42,64,600**

Balance Sheet as on.....

Capital & Liabilities	Amount (₹)	Assets	Amount (₹)
Capital	20,00,000	Plant & Machinery	24,00,000
Retained earnings	42,00,000	Building	42,00,000
General reserve	12,00,000	Furniture	12,00,000
Term loan from bank	26,00,000	Sundry receivables	13,50,000
Sundry payables	7,20,000	Inventory	14,28,000
Other liabilities	2,80,000	Cash & Bank balance	4,22,000
	1,10,00,000		**1,10,00,000**

You are required to COMPUTE:

(a) Gross profit ratio
(b) Net Profit ratio
(c) Operating cost ratio
(d) Operating profit ratio
(e) Inventory turnover ratio
(f) Current ratio
(g) Quick ratio
(h) Interest coverage ratio
(i) Return on capital employed
(j) Debt to assets ratio

[**Sol.** (a) 21.46%; (b) 7.17%; (c) 91.75%; (d) 8.25%; (e) 11.55 times; (f) 3.2 times; (g) 1.77 times; (h) 6.42 times; (i) ₹1,00,00,000; (j) 23.64%]

21. Following information relates to SK ltd: **[SM, RTP May 2022]**

Debtors velocity	3 months
Creditors velocity	2 months
Stock turnover ratio	1.5
Gross profit ratio	25%
Bills receivables	₹25,000
Bills payable	₹10,000
Gross profit	₹4,00,000
Fixed assets turnover ratio	4

Closing stock of the period is ₹10,000 above the opening stock. Calculate:

(i) Sales and cost of goods sold (ii) Sundry debtors

(iii) Sundry creditors (iv) Closing stock

(v) Fixed assets

[Sol. [(i) ₹16,00,000; ₹12,00,000; (ii) ₹3,75,000; (iii) ₹1,91,667; (iv) ₹8,05,000; (v) ₹4,00,000]

22. Following information has been gathered from the books of Tram Ltd. the equity share of which is trading in the stock market at ₹14. **[Nov 2019, Similar RTP Dec 2021]**

Particulars	Amount (₹)
Equity Share Capital (face value ₹10)	10,00,000
10% Preference Shares	2,00,000
Reserves	8,00,000
10% Debentures	6,00,000
Profit before Interest and Tax for the year	4,00,000
Interest	60,000
Profit after tax for the year	2,40,000

Calculate the following:

(a) Return on Capital Employed (b) Earnings per share (c) PE Ratio

[Sol. (a) 15.38%; 9.23%; (b) ₹2.20; (c) 6.364]

23. X Co. has made plans for the next year. It is estimated that the company will employ total assets of ₹8,00,000; 50 percent of the assets being financed by borrowed capital at an interest cost of 8 percent per year. The direct costs for the year are estimated at ₹4,80,000 and all other operating expenses are estimated at ₹80,000. The goods will be sold to customers at 150 percent of the direct costs. Tax rate is assumed to be 50 percent. **[SM, Similar MTP Nov 2019]**

You are required to calculate:

(i) Operating profit margin (before tax)

(ii) Net profit margin (after tax)

(iii) Return on assets (on operating profit after tax)

(iv) Assets turnover

(v) Return on owner's equity

[Sol. (i) 22.22%; (ii) 8.9%; (iii) 10%; (iv) 0.9 times; (v) 16%]

24. The following is the information of XML Ltd. relate to the year ended 31-03-2018: **[Nov 2018]**

Gross Profit	20% of Sales
Net Profit	10% of sales
Inventory Holding Period	3 months
Receivable collection period	3 months
Non-current assets to sales	1:4
Non-current assets to current assets	1:2
Current Ratio	2:1
Non-current liabilities to current liabilities	1:1
Share capital to Reserve and Surplus	4:1
Non-current assets as on 31st March, 2017	₹50,00,000

Assume that:

(a) No change in Non-current assets during the year 2017-18

(b) No depreciation changed on Non-Current Assets during the year

(c) Ignoring tax

You are required to calculate cost of goods sold, net profit, inventory, receivables and cash for the year ended on 31st March, 2018.

[**Sol.** ₹1,60,00,000; ₹20,00,000; ₹40,00,000; ₹50,00,000; ₹10,00,000]

25. Following information and ratios are given for W Limited for the year ended 31st March, 2022: **[May 2022]**

Equity share capital of ₹10 each	₹10 lakhs
Reserve & Surplus to shareholder's fund	0.50
Sales / Shareholder's fund	1.50
Current ratio	2.50
Debtors Turnover Ratio	6.00
Stock Velocity	2 Months
Gross Profit Ratio	20%
Net Working Capital Turnover Ratio	2.50

You are required to calculate:

(i) Shareholder's fund (ii) Stock

(iii) Debtors (iv) Current liabilities (v) Cash Balance

[**Sol.** (i) ₹20,00,000; (ii) ₹4,00,000; (iii) ₹5,00,000; (iv) ₹8,00,000; (v) ₹11,00,000]

26. The following accounting information and financial ratios of A&R Limited relate to the year ended 31st March, 2020: **[MTP July 2020]**

Inventory Turnover Ratio	6 Times
Creditors Turnover Ratio	10 Times
Debtors Turnover Ratio	8 Times
Current Ratio	2.4
Gross Profit Ratio	25%

Total sales ₹6,00,00,000; cash sales 25% of credit sales; cash purchases ₹46,00,000; working capital ₹56,00,000; closing inventory is ₹16,00,000 more than opening inventory.

You are required to calculate:

(a) Average Inventory

(b) Purchases

(c) Average Debtors

(d) Average Creditors

(e) Average Payment Period

(f) Average Collection Period

(g) Current Assets

(h) Current Liabilities

[**Sol.** (a) ₹75,00,000; (b) ₹4,66,00,000; (c) ₹60,00,000; (d) ₹42,00,000; (e) 36.5 days; (f) 45.625 days; (g) ₹96,00,000; (h) ₹40,00,000]

27. Using the following information, prepare the balance sheet: **[SM]**

Long-term debt to net worth	0.5
Total assets turnover	2.5
Average collection period*	18 days
Inventory turnover	9
Gross profit margin	10%
Acid-test ratio	1

*Assume a 360 day year and all sales on credit.

	₹		₹
Cash	?	Notes and payables	1,00,000
Accounts receivable	?	Long term debt	?
Inventory	?	Common stock	1,00,000
Plant & Equipment	?	Retained earnings	1,00,000
Total Assets	**?**	**Total liabilities and equity**	**?**

[**Sol.** BS Total = ₹4,00,000]

28. From the following information, complete the Balance sheet given below: **[Jan 2021]**

(i)	Equity	₹2,00,000
(ii)	Total debt to owner's equity	0.75
(iii)	Total assets turnover	2 times
(iv)	Inventory turnover	8 times
(v)	Fixed assets to owner's equity	0.60
(vi)	Current debt to total debt	0.40

[**Sol.** BS total = ₹3,50,000]

29. Following information and ratios are given in respect of AQUA Ltd. for the year ended 31st March, 2023: **[May 2023]**

Current ratio	4.0
Acid test ratio	2.5
Inventory turnover ratio (based on sales)	6
Average collection period (days)	70
Earnings per share	3.5
Current liabilities	3,10,000
Total assets turnover ratio (based on sales)	0.96
Cash ratio	0.43
Proprietary ratio	0.48
Total equity dividend	1,75,000
Equity dividend coverage ratio	1.60

Assume 360 days in a year.

You are required to complete Balance Sheet as on 31st March, 2023.

Balance Sheet as on 31st March, 2023

Liabilities	₹	Assets	₹
Equity share capital (₹10 per share)	XXX	Fixed assets	XXX
Reserve & surplus	XXX	Inventory	XXX
Long-term debt	XXX	Debtors	XXX
Current liabilities	3,10,000	Loans & advances	XXX
		Cash & bank	XXX
Total	**XXX**	**Total**	**XXX**

[**Sol.** BS Total = ₹29,06,250]

30. From the following information and ratios, prepare the balance sheet as at 31st march, 2023 and Income statement for the year ended on that date for M/s SK Ltd. **[SM]**

Average stock	₹10 lakhs
Current ratio	3:1
Acid test ratio	1:1
PBIT to PBT	2.2:1
Average collection period (assume 360 days in a year)	30 days
Stock turnover ratio (use sales as turnover)	5 times
Fixed assets turnover ratio	0.8 times
Working capital	₹10 lakhs
Net profit ratio	10%
Gross profit ratio	40%
Operating expenses (excluding interest]	₹9 lakhs
Long term loan interest	12%
Tax	Nil

[**Sol.** Answer – GP = ₹20,00,000; NP = ₹5,00,000; BS Total = ₹77,50,000]

31. Following are the data in respect of ABC Industries for the year ended 31st March, 2021: **[Dec 2021]**

Debt to Total assets ratio	0.40
Long-term debts to equity ratio	30%
Gross profit margin on sales	20%
Accounts receivables period	36 days
Quick ratio	0.9
Inventory holding period	55 days
Cost of goods sold	₹64,00,000

Liabilities	₹	Assets	₹
Equity Share Capital	20,00,000	Fixed assets	
Reserve & surplus		Inventories	
Long-term debts		Accounts receivable	
Accounts payable		Cash	
Total	**50,00,000**	**Total**	

Required:

Complete the balance sheet of ABC Industries as on 31st March, 2021. All calculations should be in nearest rupee. Assume 360 days in a year.

[**Sol.** BS Total = ₹50,00,000]

32. The accountant of Moon Ltd. has reported the following data: **[May 2018]**

Gross Profit	₹60,000
Gross profit Margin	20 percent
Total Assets Turnover	0.30:1
Net Worth to Total Assets	0.90:1
Current Ratio	1.5:1
Liquid Assets to Current Liability	1:1
Credit sales to total sales	0.80:1
Average collection period	60 days

Assume 360 days in a year.

You are required to complete the following:

Balance Sheet of Moon Ltd.

Liabilities	₹	Assets	₹
Net Worth		Fixed Assets	?
Current Liabilities		Stock	?
		Debtors	?
		Cash	?
Total Liabilities		**Total Assets**	?

[**Sol.** BS total = ₹10,00,000]

33. SK ltd. has furnished the following information relating to the year ended 31st March, 2021 and 31st March, 2022: **[SM]**

	31st March, 2021	31st March, 2022
Share Capital	40,00,000	40,00,000
Reserve & Surplus	20,00,000	25,00,000
Long term loan	30,00,000	30,00,000

- Net profit ratio: 8%
- Gross profit ratio: 20%
- Long-term loan has been used to finance 40% of the fixed assets
- Stock turnover with respect to cost of goods sold is 4
- Debtors represent 90 days sales
- The company holds cash equivalent to 1½ months cost of goods sold.
- Ignore taxation and assume 360 days in a year.

You are required to prepare balance sheet as on 31st March, 2022 in the following format:

Liabilities	₹	Assets	₹
Share capital	–	Fixed Assets	–
Reserve & Surplus	–	Sundry Debtors	–
Long term loan	–	Closing Stock	–
Sundry Creditors	–	Cash in hand	–

[**Sol.** BS total = ₹1,09,37,500]

34. From the following information, find out missing figures and rewrite the balance sheet of Mukesh Enterprise. **[RTP May 2023]**

Current ratio – 2 : 1

Acid test ratio = 3 : 2

Reserve and surplus – 20% of equity share capital

Long term debt = 45% of net worth

Stock turnover velocity = 1.5 months

Receivables turnover velocity = 2 months

You may assume closing receivables as average receivables.

Gross profit ratio = 20%

Sales is ₹21,00,000 (25% sales are on cash basis and balance on credit basis)

Closing stock is ₹40,000 more than opening stock

Accumulated depreciation is 1/6 of original cost of fixed assets.

Balance sheet of the company is as follows:

Liabilities	(₹)	Assets	(₹)
Equity share capital	?	Fixed assets (cost)	?
Reserve & Surplus	?	Less: Accumulated depreciation	?
Long term loans	6,75,000	Fixed assets (WDV)	?
Bank overdraft	60,000	Stock	?
Creditors	?	Debtors	?
		Cash	?
Total	?	**Total**	?

[**Sol.** BS total = 26,35,000]

35. From the following information, you are required to prepare a summarized balance sheet for Rudra Ltd. for the year 31st March, 2023: **[SM]**

Debt Equity Ratio	1:1
Current ratio	3:1
Acid test ratio	8:3
Fixed assets turnover (on the basis of sales)	4
Stock turnover (on the basis of sales)	6
Cash in hand	₹5,00,000
Stock to debtors	1:1
Sales to net worth	4
Capital to reserves	1:2
Gross profit	20% of cost
COGS to creditor	10:1

Interest for entire year is yet to be paid on long term loan @10%.

[**Sol.** BS Total = ₹75,00,000]

SOLUTIONS

17. **Computation of Ratios**

Ratio	2021-22 (₹)	2022-23 (₹)
1. Gross profit ratio (Gross profit/sales)	$\frac{64,000\times100}{3,00,000}=21.3\%$	$\frac{76,000\times100}{3,74,000}=20.3\%$
2. Operating expense to sales ratio (Operating exp/ Total sales)	$\frac{49,000\times100}{3,00,000}=16.3\%$	$\frac{57,000\times100}{3,74,000}=15.2\%$
3. Operating profit ratio (Operating profit/ Total sales)	$\frac{15,000\times100}{3,00,000}=5\%$	$\frac{19,000\times100}{3,74,000}=5.08\%$

Ratio	2021-22 (₹)	2022-23 (₹)
4. Capital turnover ratio (Sales/capital employed)	$\frac{3,00,000}{1,00,000}=3$	$\frac{3,74,000}{1,47,000}=2.54$
5. Stock turnover ratio (COGS/ Average stock) (Refer to W.N. 1)	$\frac{2,36,000}{50,000}=4.72$	$\frac{2,98,000}{77,000}=3.87$
6. Net Profit to Net worth ratio (Net profit / Net worth)	$\frac{15,000\times100}{1,00,000}=15\%$	$\frac{19,000\times100}{1,17,000}=16.24\%$
7. Receivables collection period (Average receivables/ Average daily credit sales) (Refer to W.N. 2)	$\frac{50,000}{739.73}=67.6$ days	$\frac{82,000}{936.99}=87.5$ days
Working Notes:		
1. Average Stock = (opening stock + closing stock) /2	(40,000+60,000)/2 =50,000	(60,000+94,000)/2 = 77,000
2. Average daily sales = Credit sales /365	$\frac{2,70,000}{365}=739.73$	$\frac{3,42,000}{365}=936.99$

Analysis: The decline in the Gross profit ratio could be either due to a reduction in the selling price or increase in the direct expenses (since the purchase price has remained the same). In this case, cost of goods sold have increased more than proportion of increment in sales, hence impacting gross profit ratio.

Similarly, there is a decline in the ratio of operating expenses to sales. Further analysis reveals that in comparison to increase in sales, there has a lesser proportionate increase in operating expenses. As a result, even the operating profit ratio has remained the same approximately in spite of a decline in the Gross profit ratio.

The company has not been able to deploy its capital efficiently. This is indicated by a decline in the Capital turnover ratio from 3 to 2.54 times.

The decline in stock turnover ratio implies that the company has increased its investment in stock. Net Profit to Net worth ratio has increased indicating that the company's Net worth or Shareholders' capital is efficient in generating profits.

The increase in the Receivables collection period indicates that the company has become liberal in extending credit on sales. There is a corresponding increase in the receivables also due to such credit policy.

18.

Ratios	2020-21	2021-22	2022-23
Current ratio (Current Assets / Current Liabilities)	1.19 (₹6,30,000 / ₹5,30,000)	1.25 (₹7,60,000 / ₹6,10,000)	1.20 (₹8,95,000 / ₹7,45,000)
Acid-test ratio (Quick Assets / Current Liabilities)	0.43 (₹2,30,000 / ₹5,30,000)	0.46 (₹2,80,000 / ₹6,10,000)	0.40 (₹2,95,000 / ₹7,45,000)
Receivables turnover ratio (Sales/ Average Receivables) (Refer Working Notes)	20 (₹40,00,000 / ₹2,00,000)	18.70 (₹43,00,000 / ₹2,30,000)	13.82 (₹38,00,000 / ₹2,75,000)
Average collection period (365 / Receivables turnover ratio)	18.25 (365/20)	19.52 (365/18.70)	26.41 (365/13.82)
Inventory turnover ratio (COGS / Average Inventory) (Refer Working Notes)	8 (₹32,00,000 / ₹4,00,000)	8.18 (₹36,00,000 / ₹4,40,000)	6.11 (₹33,00,000 / ₹5,40,000)
Total debt to net worth (Short term + Long term Debt) / (Common stock + Retained earnings)	1.38 (₹8,30,000 / ₹6,00,000)	1.40 (₹9,10,000 / ₹6,50,000)	1.61 (₹10,45,000 / ₹6,50,000)
Long-term debt to total capitalization	0.33 (₹3,00,000 / ₹9,00,000)	0.32 (₹3,00,000 / ₹9,50,000)	0.32 (₹3,00,000 / ₹9,50,000)
Gross profit margin (Gross Profit / Sales) {Gross profit = Sales - Cost of Goods sold}	0.20 (₹8,00,000 / ₹40,00,000)	0.16 (₹7,00,000 / ₹43,00,000)	0.13 (₹5,00,000 / ₹38,00,000)
Net profit margin (Net Profit / Sales)	0.075 (₹3,00,000 / ₹40,00,000)	0.047 (₹2,00,000 / ₹43,00,000)	0.026 (1,00,000 / 38,00,000)
Total Asset turnover (Sales / Total Assets)	2.80 (₹40,00,000 / ₹14,30,000)	2.76 (₹43,00,000 / ₹15,60,000)	2.24 (₹38,00,000 / ₹16,95,000)

Ratios	2020-21	2021-22	2022-23
Return on assets (Net profit/ Total Assets)	0.21 (₹3,00,000 / ₹14,30,000)	0.13 (₹2,00,000 / ₹15,60,000)	0.06 (₹1,00,000 / ₹16,95,000)
Working Notes:			
Average receivables {(Opening + closing)/2}	(₹2,00,000 + ₹2,00,000)/2 = ₹2,00,000	(₹2,00,000 + ₹2,60,000)/2 = ₹2,30,000	(₹2,60,000 + ₹2,90,000)/2 = ₹2,75,000
Average Inventory {(Opening + closing)/2}	(₹4,00,000 + ₹4,00,000)/2 = ₹4,00,000	(₹4,00,000+ ₹4,80,000)/2 = ₹4,40,000	(₹4,80,000+ ₹6,00,000)/2 = ₹5,40,000

Analysis: The current ratio and quick ratio are less than the ideal ratio (2 : 1 and 1 : 1 respectively) indicating that the company is not having enough resources to meet its current obligations.

Receivables are growing slower, although the average collection period is still very reasonable relative to the terms given. Inventory turnover is slowing as well, indicating a relative build-up in inventories. The increase in receivables and inventories, coupled with the fact that net worth has increased very little, has resulted in the total debt-to-net worth ratio increasing to what would have to be regarded on an absolute basis as a high level.

Long-term debt to total capitalization has not changed relatively coupled with the fact that retained earnings of only ₹50,000 is made in year 2019-20, and there is no issuance of new long-term debt in year 2019-20 and 2020-21.

Both the gross profit and net profit margins have declined substantially. The relationship between the two suggests that the company has incurred more relative expenses. The build-up in inventories and receivables has resulted in a decline in the asset turnover ratio, and this, coupled with the decline in profitability, has resulted in a sharp decrease in the return on assets ratio.

19. (a) Inventory turnover ratio $= \frac{\text{COGS}}{\text{Average Inventory}} = \frac{21,100}{(2,500+2,000)\div 2} = 9.4$

(b) Financial Leverage $= \frac{\text{EBIT}}{\text{EBT}} = \frac{950}{650} = 1.46$

(c) ROCE $= \frac{\text{EBIT}(1-t)}{\text{Average capital Employed}} \times 100 = \frac{950(1-0.30)}{(6,000+5,500)\div 2} \times 100 = \frac{665}{5,750} \times 100 = 11.56\%$

(d) ROE $= \frac{\text{Profits after tax}}{\text{Average Shareholders' Funds}} \times 100 = \frac{455}{2,500} \times 100 = 18.20\%$

(e) Average collection $= \frac{\text{Average Receivables} \times 365}{\text{Sales}} = \frac{(1,400+1,100)\div 2}{23,800} \times 365 = 19.17 \text{ days}$

20. (a) Gross profit ratio $= \frac{\text{Gross Profit}}{\text{Sales}} \times 100 = \frac{42,18,000}{1,96,56,000} \times 100 = 21.46\%$

(b) Net Profit ratio $= \frac{\text{Net Profit}}{\text{Sales}} \times 100 = \frac{14,08,600}{1,96,56,000} \times 100 = 7.17\%$

(c) Operating ratio $= \frac{\text{Operating cost}}{\text{Sales}} \times 100 = \frac{1,54,38,000 + 25,96,000}{1,96,56,000} \times 100 = 91.75\%$

Cost of goods sold = Sales – Gross profit = 1,96,56,000 – 42,18,000 = ₹1,54,38,000

Operating expenses = Administrative exp. + Selling & dist. Exp.

= 18,40,000 + 7,56,000 = ₹25,96,000

(d) Operating profit ratio = 100 – operating cost ratio = 100 – 91.75% = 8.25%

(e) Inventory turnover ratio $= \frac{\text{Cost of goods sold}}{\text{Average stock}} = \frac{1,54,38,000}{(14,28,000 + 12,46,000) \div 2} = 11.55$ times

(f) Current ratio

$= \frac{\text{Current assets}}{\text{Current liabilities}} = \frac{13,50,000 + 14,28,000 + 4,22,000}{7,20,000 + 2,80,000} = \frac{32,00,000}{10,00,000} = 3.2$ times

(g) Quick ratio $= \frac{\text{Quick assets}}{\text{Current liabilities}} = \frac{32,00,000 - 14,28,000}{10,00,000} = 1.77$ times

(h) Interest coverage ratio $= \frac{\text{EBDIT}}{\text{Interest}} = \frac{\text{Net Profit+Interest}}{\text{Interest}} = \frac{14,08,600 + 2,60,000}{2,60,000} = 6.42$ times

(i) Return on capital employed

$= \frac{\text{EBIT}}{\text{Capital employed}} \times 100 = \frac{14,08,600 + 2,60,000}{1,00,00,000} \times 100 = 16.69\%$

Capital employed = Capital + Retained earnings + General reserve + Term loan

= 20,00,000 + 42,00,000 + 12,00,000 + 26,00,000 = ₹1,00,00,000

(j) Debt to assets ratio = Debt/{Total assets} × 100 = 26,00,000/1,10,00,000 × 100 = 23.64%

21. (i) **Determination of Sales and Cost of goods sold:**

Gross Profit Ratio $= \frac{\text{Gross Profit}}{\text{Sales}} \times 100$

Or, $\frac{25}{100} = \frac{₹4,00,000}{\text{Sales}}$

Or, Sales $= \frac{4,00,00,000}{25} = ₹16,00,000$

Cost of Goods Sold = Sales – Gross Profit = ₹16,00,000 – ₹4,00,000 = ₹12,00,000

(ii) **Determination of Sundry Debtors:**

Debtors' velocity is 3 months or Debtors' collection period is 3 months,

So, Debtors' turnover ratio $= \frac{12 \text{ months}}{3 \text{ months}} = 4$

Debtors' turnover ratio = Debtors' turnover ratio $= \frac{\text{Credit Sales}}{\text{Average Accounts Receivable}}$

$= \frac{₹16,00,000}{\text{Bills Receivable + Sundry Debtors}} = 4$

Or, Sundry Debtors + Bills receivable = ₹4,00,000

Sundry Debtors = ₹4,00,000 - ₹25,000 = ₹3,75,000

(iii) **Determination of Sundry Creditors:**

Creditors' velocity of 2 months or credit payment period is 2 months.

So, Creditors' turnover ratio $= \frac{12 \text{ months}}{2 \text{ months}} = 6$

Creditors turnover ratio $= \frac{\text{Credit Purchases}^{*}}{\text{Average Accounts Payables}}$

$= \frac{₹12,10,000}{\text{Sundry Creditors + Bills Payables}} = 6$

So, Sundry Creditors + Bills Payable = ₹2,01,667

Or, Sundry Creditors + ₹10,000 = ₹2,01,667

Or, Sundry Creditors = ₹2,01,667 - ₹10,000 = ₹1,91,667

(iv) **Determination of Closing Stock**

Stock Turnover Ratio $= \frac{\text{Cost of Goods Sold}}{\text{Average Stock}} = \frac{₹12,00,000}{\text{Average Stock}} = 1.5$

So, Average Stock = ₹8,00,000

Now Average Stock $= \frac{\text{Opening Stock + Closing Stock}}{2}$

Or $\frac{\text{Opening Stock} + (\text{Opening Stock} + ₹10,000)}{2} = ₹8,00,000$

Or, Opening Stock = ₹7,95,000

So, Closing Stock = ₹7,95,000 + ₹10,000 = ₹8,05,000

(v) **Determination of Fixed Assets**

Fixed Assets Turnover Ratio $= \frac{\text{Sales}}{\text{Fixed Assets}} = 4$

Or, $= \frac{₹16,00,000}{\text{Fixed Assets}} = 4$

Or, Fixed Asset = ₹4,00,000

Workings:

* Calculation of Credit purchases:

Cost of goods sold = Opening stock + Purchases - Closing stock

₹12,00,000 = ₹7,95,000 + Purchases – ₹8,05,000

₹12,00,000 + ₹10,000 = Purchases

₹12,10,000 = Purchases (credit)

Assumption:

(i) All sales are credit sales

(ii) All purchases are credit purchase

(iii) Stock Turnover Ratio and Fixed Asset Turnover Ratio may be calculated either on Sales or on Cost of Goods Sold.

22. (a) Capital employed = Equity shareholder's fund + Debenture + Pref. shares
= 10,00,000 + 8,00,000 + 6,00,000 + 2,00,000 = ₹26,00,000

$$\text{Return on capital employed (pre tax)} = \frac{\text{EBIT}}{\text{Capital Employed}} \times 100 = \frac{4,00,000}{26,00,000} \times 100 = 15.38\%$$

$$\text{Return on capital employed (post tax)} = \frac{\text{EAT}}{\text{Capital Employed}} \times 100 = \frac{2,40,000}{26,00,000} \times 100 = 9.23\%$$

(b) $$\text{Earning per share} = \frac{\text{Earning available for equity holders}}{\text{No. of equity shares}} = \frac{2,40,000 - 20,000}{1,00,000} = ₹2.20$$

(c) $$\text{PE Ratio} = \frac{\text{MPS}}{\text{EPS}} = \frac{14}{2.20} = 6.364$$

23. **The net profit is calculated as follows:**

Particulars	₹
Sales (150% of ₹4,80,000)	7,20,000
Direct costs	(4,80,000)
Gross profit	2,40,000
Operating expenses	(80,000)
Profit before Interest and Tax (EBIT)	1,60,000
Interest changes (8% of ₹4,00,000)	(32,000)
Profit before taxes	1,28,000
Taxes (@ 50%)	(64,000)
Net profit after taxes	64,000

(i) $$\text{Operating profit margin} = \frac{\text{EBIT}}{\text{Sales}} = \frac{₹1,60,000}{₹7,20,000} = 0.2222 \text{ or } 22.22\%$$

(ii) Net profit margin $= \frac{\text{Net Profit after taxes}}{\text{Sales}} = \frac{₹64,000}{₹7,20,000} = 0.89 \text{ or } 8.9\%$

(iii) Return on assets $= \frac{\text{EBIT}(1-T)}{\text{Assets}} = \frac{₹1,60,000(1-0.5)}{8,00,000} = 0.10 \text{ or } 10\%$

(iv) Asset turnover $= \frac{\text{Sales}}{\text{Assets}} = \frac{₹7,20,000}{₹8,00,000} = 0.9 \text{ times}$

(v) Return on equity $= \frac{\text{Net Profit after taxes}}{\text{Owners' equity}} = \frac{₹64,000}{50\% \text{ of } ₹8,00,000} = \frac{₹64,000}{₹4,00,000} = 16\%$

24. Non-current assets to sale = 1 : 4

Sales = Non-current assets × 4
= 50,00,000 × 4 = ₹2,00,00,000

Net Profit = 10% × Sales = 10% × 2,00,00,000 = ₹20,00,000

Cost of Goods Sold = Sales – Gross Profit
= 2,00,00,000 – (20% × 2,00,00,000)
= ₹1,60,00,000

Inventory = COGS × (3/12)
= 1,60,00,000 × (3/12) = ₹40,00,000

Receivables = Sales × (3/12)
= 2,00,00,000 × (3/12) = ₹50,00,000

Non-Current Assets to current assets = 1 : 2

Current Assets = Non-current assets × 2
= 50,00,000 × 2 = ₹1,00,00,000

Cash = Current Assets – Inventory – Receivables
= 1,00,00,000 – 40,00,000 – 50,00,000
= ₹10,00,000

25. (i) $\frac{\text{Reserve \& Surplus}}{\text{Shareholder's fund}} = 0.5$

$$\frac{\text{Reserve \& Surplus}}{\text{Equity Share Capital + Reserve \& surplus}} = 0.5$$

Reserve & Surplus = 0.5 (10,00,000 + Reserve & Surplus)
Reserve & Surplus = 5,00,000 + (0.5) Reserve & Surplus
(0.5) Reserve & Surplus = 5,00,000
Reserve & Surplus = 10,00,000
Shareholder's fund = 10,00,000 + 10,00,000 = ₹20,00,000

(ii) Sales = 1.5 × Shareholder's fund = 1.5 × 20,00,000 = ₹30,00,000
Gross profit = Sales × GP Ratio = 30,00,000 × 20% = ₹6,00,000
Cost of goods sold (COGS) = Sales – Gross Profit = 30,00,000 – 6,00,000 = ₹24,00,000

Stock velocity = 2 month

$$\frac{\text{Average stock}}{\text{COGS}} \times 12$$

$$\text{Average stock} = \frac{2 \times 24,00,000}{12} = ₹4,00,000$$

(iii) Debtors Turnover Ratio = 6

$$\frac{\text{Sales}}{\text{Average Debtors}} = 6$$

$$\frac{30,00,000}{\text{Average Debtors}} = 6$$

Average Debtors = ₹5,00,000

(iv) Net working capital turnover ratio = 2.5

$$\frac{\text{Average creditors}}{\text{Average Daily Credit Purchases}}$$

$$\frac{30,00,000}{\text{Net working capital}} = 2.5$$

Net working capital = 12,00,000

Current Assets – Current Liabilities = 12,00,000

Current Assets = 12,00,000 + Current Liabilities ...(1)

Current ratio = 2.5

$$\frac{\text{Current Assets}}{\text{Current Liabilities}} = 2.5$$

Current Assets = (2.5) Current liabilities ...(2)

Put value of current assets from equation (1) in equation (2)

12,00,000 + Current liabilities = (2.5) Current liabilities

(1.5) Current liabilities = 12,00,000

Current liabilities = 8,00,000

Thus, from equation (1), Current Assets = 12,00,000 + 8,00,000 = ₹20,00,000

(v) Total current assets = Debtors + Stock + Cash balance

20,00,000 = 5,00,000 + 4,00,000 + Cash balance

Cash balance = ₹11,00,000

26. (a) Computation of Average Inventory

Gross Profit = 25% of 6,00,00,000 = ₹1,50,00,000

Cost of goods sold (COGS) = 6,00,00,000 – 1,50,00,000 = ₹4,50,00,000

$$\text{Inventory Turnover Ratio} = \frac{\text{Cost of Goods sold}}{\text{Average Stock}}$$

$$6 = \frac{4,50,00,000}{\text{Average Stock}}$$

Average stock = ₹75,00,000

(b) Computation of Purchases

Purchases = COGS + Increase in Stock = 4,50,00,000 + 16,00,000 = ₹4,66,00,000

(c) Computation of Average Debtors

Let Credit Sales be ₹100

Cash sales = 25% of 100 = ₹25

Total Sales = 100 + 25 = ₹125

If total sales is ₹6,00,00,000, then credit sales = $\frac{6,00,00,000}{125} \times 100$ = ₹4,80,00,000

Thus, Cash Sales = ₹6,00,00,000 – ₹4,80,00,000 = ₹1,20,00,000

$$\text{Debtors Turnover Ratio} = \frac{\text{Net Credit Sales}}{\text{Average Debtors}}$$

$$8 = \frac{4,80,00,000}{\text{Average Debtors}}$$

Average Debtors = ₹60,00,000

(d) Computation of Average Creditors

Credit Purchases = Purchases – Cash Purchases

= 4,66,00,000 – 46,00,000 = ₹4,20,00,000

$$\text{Creditors Turnover Ratio} = \frac{\text{Net Credit Sales}}{\text{Average Debtors}}$$

$$10 = \frac{4,20,00,000}{\text{Average Creditors}}$$

Average Creditors = ₹42,00,000

(e) Computation of Average Payment Period

$$\text{Average Payment Period} = \frac{\text{Average creditors}}{\text{Average Daily Credit Purchases}} = \frac{42,00,000}{(4,20,00,000 \div 365)} = 36.5 \text{ days}$$

OR

Average Payment Period = 365/Creditors Turnover Ratio = 365/10 = 36.5 days

(f) Computation of Average Collection Period

$$\text{Average Collection Period} = \frac{\text{Average Debtors}}{\text{Average Daily Credit Sales}} = \frac{60,00,000}{(4,80,00,000 \div 365)} = 45.625 \text{ days}$$

OR

Average collection period = 365/Debtors Turnover Ratio = 365/8 = 45.625 days

(g) Computation of Current Assets

$$\text{Current Ratio} = \frac{\text{Current Assets (CA)}}{\text{Current Liabilities (CL)}}$$

$$2.4 = \frac{CA}{CL}$$

$CL = CA/2.4$

Working capital = Current Assets – Current liabilities

$56,00,000 = CA - (CA/2.4)$

$CA = 96,00,000$

(h) Computation of Current Liabilities

Current liabilities = $96,00,000 \div 2.4 = ₹40,00,000$

27. Working Notes:

(i) Long term Debt

$$0.5 = \frac{\text{Long-term debt}}{\text{Net worth}} = \frac{\text{Long-term debt}}{₹1,00,000 + ₹1,00,000}$$

$\therefore$ Long term debt = ₹1,00,000

(ii) Total assets

Total liabilities and Equity = Notes and payables + Long-term debt + Common stock + Retained earnings

$= ₹1,00,000 + ₹1,00,000 + ₹1,00,000 + ₹1,00,000 = ₹4,00,000$

$\therefore$ Total assets = Total liabilities and Equity = ₹4,00,000

(iii) Sales and Cost of Goods sold

$$\text{Total asset turnover} = 2.5 = \frac{\text{Sales}}{\text{Total assets}} = \frac{\text{Sales}}{₹4,00,000}$$

$\therefore$ Sales = ₹10,00,000

Cost of goods sold = (100% – Gross Profit margin) × Sales

$= (100\% - 10\%) \times ₹10,00,000 = ₹9,00,000.$

(iv) Current Assets

$$\text{Inventory turnover} = 9 = \frac{\text{Cost of goods sold}}{\text{Inventory}} = \frac{₹9,00,000}{\text{Inventory}}$$

$\therefore$ Inventory = ₹1,00,000

$$\text{Average collection period} = 18 = \frac{\text{Receivables} \times 360}{\text{Sales}} = \frac{\text{Receivables} \times 360}{₹10,00,000}$$

$\therefore$ Accounts receivables = ₹50,000

$$\text{Acid-test ratio} = 1 = \frac{\text{Cash + Accounts Receivable}}{\text{Notes and Payables}} = \frac{\text{Cash} + ₹50,000}{₹1,00,000}$$

$\therefore$ Cash = ₹50,000

(v) Plant and equipment

= Total Assets – Current Assets

$= ₹4,00,000 - (₹1,00,000 + ₹50,000 + ₹50,000) = ₹2,00,000$

Balance Sheet

	₹		₹
Cash	50,000	Notes and payables	1,00,000
Accounts receivable	50,000	Long-term debt	1,00,000
Inventory	1,00,000	Common stock	1,00,000
Plant and equipment	2,00,000	Retained earnings	1,00,000
Total assets	**4,00,000**	**Total liabilities and equity**	**4,00,000**

28. (a) Current ratio = 4

$$\frac{\text{Current assets}}{\text{Current liabilities}} = 4$$

Current assets = 4 × 3,10,000 = ₹12,40,000

(b) Acid test ratio = 2.5

$$\frac{\text{Current assets-Inventory}}{\text{Current liabilities}} = 2.5$$

$$\frac{12,40,000 - \text{Inventory}}{3,10,000} = 2.5$$

12,40,000 – Inventory = 7,73,000

Inventory = ₹4,65,000

(c) Inventory turnover ratio (on sales) = 6

$$\frac{\text{Sales}}{\text{Inventory}} = 6$$

Sales = 6 × 4,65,000 = ₹27,90,000

(d) Debtors Collection period = 70 days

$$\frac{\text{Debtors}}{\text{Sales}} \times 360 = 70$$

$$\text{Debtors} = \frac{70}{360} \times 27,90,000 = ₹5,42,500$$

(e) Total assets turnover ratio (on sales) = 0.96

$$\frac{\text{Sales}}{\text{Total assets}} = 0.96$$

$$\frac{27,90,000}{\text{Total assets}} = 0.96$$

Total assets = ₹29,06,250

(f) Fixed assets = Total assets – Current assets = 29,06,250 – 12,40,000 = ₹16,66,250

(g) Cash ratio $\frac{\text{Cash}}{\text{Current liabilities}} = 0.43$

Cash = 0.43 × 29,06,250 = ₹1,33,300

(h) $\text{Proprietary ratio} = \frac{\text{Proprietary fund}}{\text{Total assets}} = 0.48$

$\frac{\text{Proprietary fund}}{29,06,250} = 0.48$

Proprietary fund = ₹13,95,000

(i) Equity dividend coverage ratio = 1.6

$\frac{\text{Earning for Equity}}{\text{Equity Dividend}} = 1.6$

Earning for Equity = 1.6 (Equity Dividend)

Divide both side by number of shares

$\frac{\text{Earning for Equity}}{\text{No. of equity shares}} = 1.6 \times \frac{\text{Equity Dividend}}{\text{No. of equity shares}}$

EPS = 1.6 (DPS)

$DPS = \frac{3.5}{1.6}$

DPS = ₹2.1875

(j) $DPS = \frac{\text{Total Dividend}}{\text{No. of equity shares}}$

$2.1875 = \frac{1,75,000}{\text{No. of equity shares}}$

No. of equity shares = 80,000

Equity share capital = 80,000 × 10 = ₹8,00,000

Reserve & Surplus = 13,95,000 – 8,00,000 = ₹5,95,000

(k) Loans and advances = Current assets – Inventory – Receivables – Cash & Bank
= 12,40,000 – 4,65,000 – 5.42.500 – 1,33,000 = ₹99,200

Balance Sheet as on 31st March, 2023

Liabilities	₹	Assets	₹
Equity share capital (₹10 per share)	8,00,000	Fixed assets	16,66,250
Reserve & surplus	5,95,000	Inventory	4,65,000
Long-term debt (Bal. fig.)	12,01,250	Debtors	5,42,500
Current liabilities	3,10,000	Loans & advances	99,200
		Cash & bank	1,33,300
Total	**29,06,250**	**Total**	**29,06,250**

29. Equity = 2,00,000

Total Debt = Equity × 0.75 = 2,00,000 × 0.75 = ₹1,50,000

Current Debt = total Debt × 0.40 = 1,50,000 × 0.40 = ₹60,000

Long term debt = 1,50,000 – 60,000 = ₹90,000

Fixed Assets = Equity × 0.60 = 2,00,000 × 0.60 = ₹1,20,000

Total Assets = Total Liabilities = Equity + Total Debt = 2,00,000 + 1,50,000 = ₹3,50,000

Current Assets = Total Assets – Fixed Assets = 3,50,000 – 1,20,000 = ₹2,30,000

Sales = 2 × Total Assets = 2 × 3,50,000 = ₹7,00,000

$$\text{Inventory} = \frac{\text{Sales}}{\text{ITR}} = \frac{7,00,000}{8} = ₹87,500$$

Other CA = Current Assets – Inventory = 2,30,000 – 87,500 = ₹1,42,500

Equity	2,00,000	Fixed Assets	1,20,000
Long Term Debt	90,000	Inventory	87,500
Current Debts	60,000	Other CA	1,42,500
	3,50,000		3,50,000

30. 1. Current Ratio = 3:1

Current Assets (CA)/Current Liability (CL) = 3:1

CA = 3CL

WC = 10,00,000

CA – CL = 10,00,000

3CL – CL = 10,00,000

2CL = 10,00,000

$$CL = \frac{10,00,000}{2}$$

CL = ₹5,00,000

CA = 3 × 5,00,000

CA = ₹15,00,000

2. Acid Test Ratio = CA-Stock / CL = 1:1

$$= \frac{15,00,000 - \text{Stock}}{5,00,000} = 1$$

15,00,000 – stock = 5,00,000

Stock = ₹10,00,000

3. Stock Turnover ratio (on sales) = 5

$$\frac{\text{Sales}}{\text{Avg stock}} = 5$$

$$\frac{\text{Sales}}{10,00,000} = 5$$

Sales = ₹50,00,000

4. Gross Profit = 50,00,000 × 40% = ₹20,00,000

Net profit (PBT) = 50,00,000 × 10% = ₹5,00,000

5. PBIT/PBT = 2.2

   PBIT = 2.2 × 5,00,000

   PBIT = 11,00,000

   Interest = 11,00,000 – 5,00,000 = ₹6,00,000

   $$\text{Long term loan} = \frac{6,00,000}{0.12} = ₹50,00,000$$

6. Average collection period =30 days

   $$\text{Receivables} = \frac{30}{360} \times 50.00.000 = 4,16,667$$

7. Fixed Assets Turnover Ratio = 0.8

   50,00,000 / Fixed Assets = 0.8

   Fixed Assets = ₹62,50,000

Income Statement

	(₹)
Sales	50,00,000
Less: Cost of Goods Sold	30,00,000
Gross Profit	20,00,000
Less: Operating Expenses	9,00,000
Less: Interest.	6,00,000
Net Profit	5,00,000

Balance sheet

Liabilities	(₹)	Assets		(₹)
Equity share capital	22,50,000	Fixed asset		62,50,000
Long term debt	50,00,000	Current assets:		
Current liability	5,00,000	Stock	10,00,000	
		Receivables	4,16,667	
		Other	83,333	15,00,000
	77,50,000			**77,50,000**

31. Balance Sheet of ABC Industries as on 31st March, 2021

Liabilities	₹	Assets	₹
Equity Share Capital	20,00,000	Fixed assets	30,32,222
Reserve & surplus	10,00,000	Inventories	9,77,7778
Long-term debts	9,00,000	Accounts receivable	8,00,000
Accounts payable	11,00,000	Cash	1,90,000
Total	**50,00,000**	**Total**	**50,00,000**

Note:

Working Notes:

(1) Total liabilities = Total assets = ₹50,00,000

$$\frac{\text{Debt}}{\text{Total Assets}} = 0.40 = \frac{\text{Debt}}{50,00,000} = 0.40$$

Debt = ₹20,00,000

(2) Reserve & Surplus = Total liabilities – Equity capital – Debt

= 50,00,000 – 20,00,000 – 20,00,000 = ₹10,00,000

(3) $$\frac{\text{Long term debt}}{\text{Equity shareholder fund}} = 30\% = \frac{\text{Long term debt}}{(20,00,000 + 10,00,000)} = 30\%$$

Long term debt = ₹9,00,000

(4) Accounts payable = total debt – long term debt = 20,00,000 – 9,00,000 = ₹11,00,000

(5) COGS ratio = 100 – GP Ratio = 100 – 20% = 80% of sales

(6) $$\text{Sales} = \frac{\text{Cost of goods sold}}{\text{COGS Ratio}} = \frac{64,00,000}{80\%} = ₹80,00,000$$

(7) $$\text{Closing inventory} = \frac{\text{Cost of goods sold}}{\text{Inventory days}} \times 360 = \frac{64,00,000}{55} \times 360 = ₹9,77,778$$

(8) $$\text{Account receivables} = \frac{\text{Credit sales}}{\text{Account receivable period}} \times 360 = \frac{80,00,000}{36} \times 360 = ₹8,00,000$$

(9) $$\text{Quick ratio} = \frac{\text{Quick assets}}{\text{Current liabilities}}$$

$$0.90 = \frac{\text{Cash} + \text{Debtors}}{11,00,000}$$

Cash + 8,00,000 = 9,90,000

Cash = ₹1,90,000

(10) Fixed assets = Total assets – current assets = 50,00,000 – (9,77,778 + 8,00,000 + 1,90,000)
= ₹30,32,222

32. Balance Sheet of Moon Ltd.

Liabilities	₹	Assets	₹
Net Worth	9,00,000	Fixed Assets	8,50,000
Current Liabilities	1,00,000	Stock	50,000
		Debtors	40,000
		Cash	60,000
Total Liabilities	**10,00,000**	**Total Assets**	**10,00,000**

Working Notes:

Sales	= Gross profit ÷ Gross Profit Margin
	= 60,000 ÷ 20% = ₹3,00,000
Total Assets	= Sales ÷ Total Assets Turnover
	= 3,00,000 ÷ 0.30 = ₹10,00,000
Net Worth	= 0.90 × Total Assets
	= 0.90 × 10,00,000 = ₹9,00,000
Current Liability	= Total Assets – Net Worth
	= 10,00,000 – 9,00,000 = ₹1,00,000
Current Assets	= 1.5 × Current Liabilities
	= 1.5 × 1,00,000 = ₹1,50,000
Liquid Assets	= Current Liabilities × 1
	= 1,00,000 × 1 = ₹1,00,000
Stock	= Current Assets – Liquid Assets
	= 1,50,000 – 1,00,000 = ₹50,000
Debtors	= Credit sales × (Average collection period ÷ 12)
	= 3,00,000 × 0.80 × (60/360) = ₹40,000
Cash	= Current Assets – Stock – Debtors
	= 1,50,000 – 50,000 - 40,000 = ₹60,000
Fixed assets	= Total Assets – Current Assets
	= 10,00,000 – 1,50,000 = ₹8,50,000

33. (i) Change in Reserve & Surplus = ₹25,00,000 – ₹20,00,000 = ₹5,00,000

So, Net profit = ₹5,00,000

Net Profit Ratio = 8%

$$\therefore \text{Sales} = \frac{5,00,000}{8\%} = ₹62,50,000$$

(ii) Cost of Goods sold

= Sales – Gross profit Margin = ₹62,50,000 – 20% of ₹62,50,000 = ₹50,00,000

(iii) $\text{Fixed Assets} = \frac{₹30,00,000}{40\%} = ₹75,00,000$

(iv) $\text{Stock} = \frac{\text{Cost of Goods Sold}}{\text{Stock Turnover ratio}} = \frac{50,00,000}{4} = ₹12,50,000$

(v) $\text{Debtors} = \frac{62,50,000}{360} \times 90 = ₹15,62,500$

(vi) $\text{Cash Equivalent} = \frac{50,00,000}{12} \times 1.5 = ₹6,25,000$

Balance Sheet as on 31st March 2023

Liabilities	(₹)	Assets	(₹)
Share Capital	40,00,000	Fixed Assets	75,00,000
Reserve and Surplus	25,00,000	Sundry Debtors	15,62,500
Long-term loan	30,00,000	Closing Stock	12,50,000
Sundry Creditors (Balancing Figure)	14,37,500	Cash in hand	6,25,000
	1,09,37,500		1,09,37,500

34.

Liabilities	(₹)	Assets	(₹)
Equity share capital	12,50,000	Fixed assets (cost)	20,58,000
Reserve & Surplus	2,50,000	Less: Accumulated depreciation	(3,43,000)
Long term loans	6,75,000	Fixed assets (WDV)	17,15,000
Bank overdraft	60,000	Stock	2,30,000
Creditors	4,00,000	Debtors	2,62,500
		Cash	4,27,500
Total	**26,35,000**	**Total**	**26,35,000**

Working Notes:

(1) COGS = Sales − GP = 21,00,000 − 20% = ₹16,80,000

(2) Receivable turnover velocity $= \frac{\text{Average receivables}}{\text{Credit sales}} \times 12$

$$2 = \frac{\text{Average receivables}}{21,00,000 \times 75\%} \times 12$$

Average receivables = ₹2,62,500

Closing receivables = ₹2,62,500

(3) Stock turnover velocity $= \frac{\text{Average stock}}{\text{COGS}} \times 12$

$$1.5 = \frac{\text{Average stock}}{16,80,000} \times 12$$

Average stock = ₹2,10,000

$$\frac{\text{Opening stock} + \text{closing stock}}{2} = 2,10,000$$

Opening stock + closing stock = 4,20,000

Given that, closing stock = opening stock + 40,000

Opening stock + opening stock + 40,000 = 4,20,000

Opening stock = ₹1,90,000

Closing stock = 1,90,000 + 40,000 = ₹2,30,000

(4) $$\text{Current ratio} = \frac{\text{Current assets}}{\text{Current liabilities}} = \frac{\text{Stock + Receivables + cash}}{\text{Bank overdraft + creditors}}$$

$$2 = \frac{2,30,000 + 2,62,500 + \text{cash}}{60,000 + \text{creditors}}$$

$1,20,000 + 2(\text{Creditors}) = 4,92,500 + \text{cash}$

$\text{Cash} = 2(\text{Creditors}) - 3,72,500$ ...(1)

$$\text{Acid test ratio} = \frac{\text{Current assets–stock}}{\text{Current liabilities}} = \frac{\text{Debtors + Cash}}{\text{Bank overdraft + creditors}}$$

$$\frac{3}{2} = \frac{2,62,500 + \text{Cash}}{60,000 + \text{creditors}}$$

$1,80,000 + 3(\text{Creditors}) = 5,25,000 + 2(\text{Cash})$

Putting value of cash from equation (1) in equation (2)

$1,80,000 + 3(\text{Creditors}) = 5,25,000 + 2[2(\text{creditors}) - 3,72,500]$

$1,80,000 + 3(\text{Creditors}) = 5,25,000 + 4(\text{Creditors}) - 7,45,000$

Creditors = ₹4,00,000

Cash = 2(4,00,000) – 3,73,500 = ₹4,27,500

(5) Long term debt = 45% of net worth

$$\text{Net worth} = \frac{\text{Long term debt}}{45\%} = \frac{6,75,000}{45\%} = ₹15,00,000$$

(6) Equity share capital (ESC) + Reserves = 15,00,000

$\text{ESC} + (0.2)\text{ESC} = 15,00,000$

ESC = ₹12,50,000

Reserves = 0.2 × 12,50,000 = ₹2,50,000

(7) Total of liabilities = 12,50,000 + 2,50,000 + 6,75,000 + 60,000 + 4,00,000 = 26,35,000

Total of assets = Fixed assets (WDV) + 2,30,000 + 2,62,500 + 4,27,500

= FA(WDV) + 9,20,000

Total assets = Total liabilities

FA(WDV) + 9,20,000 = 26,35,000

Fixed assets (WDV) = ₹17,15,000

FA (Cost) – Depreciation = FA (WDV)

$$\text{FA (Cost)} - \frac{\text{FA(Cost)}}{6} = 17,15,000$$

$$\left(\frac{5}{6}\right)\text{FA(Cost)} = 17,15,000$$

FA (Cost) = ₹20,58,000

Depreciation = 20,58,000 × 1/6 = ₹3,43,000

35. **Balance Sheet of Rudra Ltd.**

Liabilities	(₹)	Assets	(₹)
Capital	10,00,000	Fixed Assets	30,00,000
Reserves	20,00,000	Current Assets:	
Long Term Loan @ 10%	30,00,000	Stock in Trade	20,00,000
Current Liabilities:		Debtors	20,00,000
Creditors	10,00,000	Cash	5,00,000
Other Short-term	2,00,000		
Current Liability (Other STCL)			
Outstanding Interest	3,00,000		
	75,00,000		**75,00,000**

Working Notes:

Let sales be ₹ x

Balance Sheet of Rudra Ltd.

Liabilities	(₹)	Assets	(₹)
Capital		Fixed Assets	x/4
Reserves		Current Assets:	
Net Worth	x/4	Stock in Trade	x/6
Long Term Loan@10%	x/4	Debtors	x/6
		Cash	5,00,000
Current liabilities:			
Creditors	x/12		
Other Short-term Current			
Liability			
Outstanding Interest			
Total Current Liabilities	x/9 + 5,00,000/3		
Total		**Total**	

1. Fixed Asset Turnover $= 4 = \frac{x}{\text{Fixed Assets}}$

   Fixed Assets $= \frac{x}{4}$

2. Stock Turnover $= 6 = \frac{x}{\text{stock}}$

   Stock $= \frac{x}{6}$

3. Sales to net worth = 4 = $\frac{x}{\text{net worth}}$

   Net worth = $\frac{x}{4}$

4. Debt: Equity = 1 : 1 $\frac{\text{Long Term Loan}}{\text{Net worth}} = \frac{1}{1}$

   Long term loan = Net worth = $\frac{x}{4}$

5. Gross Profit to Cost = 20%

   $\frac{GP}{\text{Sales} - GP} = 20\%$

   $\frac{GP}{x - GP} = 20\%$

   $GP = 0.2x - 0.2GP$

   $1.2GP = 0.2x$

   $GP = \frac{0.2x}{1.2}$

   $GP = x/6$

   Cost of Goods Sold = $x - x/6 = 5/6x$

6. COGS to creditors = 10 : 1

   $\frac{COGS}{\text{Creditors}} = \frac{10}{1}$

   $\frac{\frac{5}{6}x}{\text{Creditors}} = \frac{10}{1}$

   $\text{Creditors} = \frac{5x}{60} = \frac{x}{12}$

7. $\frac{\text{Stock}}{\text{Debtor}} = 1$

   Debtor = Stock = $\frac{x}{6}$

8. Current Ratio = 3 : 1

   $\frac{\text{Stock} + \text{Debtors} + \text{Cash}}{\text{Current Liabilities}} = \frac{3}{1}$

   $\frac{\frac{x}{6} + \frac{x}{6} + 5{,}00{,}000}{\text{Current Liabilities}} = 3 = \frac{\frac{x}{3} + 5{,}00{,}000}{3} = CL$

   $CL = \frac{x}{9} + \frac{5{,}00{,}000}{3}$

9. CA = 3CL

$$= 3\left(\frac{x}{9} + \frac{₹5,00,000}{3}\right)$$

$$CA = \frac{x}{3} + 5,00,000$$

10. Net worth + Long Term Loan + Current Liability = Fixed Asset + Current Assets

$$\frac{x}{4} + \frac{x}{4} + \frac{x}{9} + \frac{₹5,00,000}{3} = \frac{x}{4} + \frac{x}{3} + ₹5,00,000$$

$$\frac{x}{4} + \frac{x}{9} - \frac{x}{3} = ₹5,00,000 - \frac{₹5,00,000}{3}$$

$$\frac{9x + 4x - 12x}{36} = \frac{₹15,00,000 - ₹5,00,000}{3}$$

$$\frac{x}{36} = \frac{₹10,00,000}{3}$$

$$x = ₹1,20,00,000$$

11. Now, from above calculations, we get,

$$\text{Fixed Asset} = \frac{x}{4} = \frac{₹1,20,00,000}{4} = ₹30,00,000$$

$$\text{Stock} = \frac{x}{6} = \frac{₹1,20,00,000}{6} = ₹20,00,000$$

$$\text{Debtor} = \frac{x}{6} = \frac{₹1,20,00,000}{6} = ₹20,00,000$$

$$\text{Net Worth} = \frac{x}{4} = ₹30,00,000$$

Now, Capital to Reserve is 1 : 2

Capital = ₹10,00,000

and, Reserve = ₹20,00,000

$$\text{Long Term Loan} = \frac{x}{4} = 30,00,000$$

Outstanding Interest = 30,00,000 × 10% = 3,00,000

$$\text{Creditors} = \frac{x}{12} = \frac{₹1,20,00,000}{12} = ₹10,00,000$$

Current Liabilities = Creditors + Other STCL + Outstanding Interest

$$\frac{x}{9} + \frac{₹5,00,000}{3} = ₹10,00,000 + \text{ Other STCL} + ₹3,00,000$$

$$\frac{₹1,20,00,000}{9} + \frac{₹5,00,000}{3} = ₹13,00,000 + \text{Other STCL}$$

₹15,00,000 = Other STCL + ₹13,00,000

Other STCL = ₹2,00,000

4 CHAPTER

Cost of Capital

THEORY

Meaning of Cost of Capital	❑ It is the rate of return expected by the providers of capital i.e. equity shareholders, preference shareholders and debt holders. ❑ It can also be referred as the discount rate that is used in determining the present value of the estimated future cash proceeds of the business/ new project and eventually deciding whether the business/new project is worth undertaking or now. ❑ It is also the minimum rate of return that a firm must earn on its investment which will maintain the market value of share at its current level. ❑ It can also be stated as the opportunity cost of an investment, i.e. the rate of return that a company would otherwise be able to earn at the same risk level as the investment that has been selected.
Significance of Cost of Capital	❑ It is used for **evaluation of investment options** by discounting the benefits and cost of the project with relevant cost of capital. ❑ **It helps in financing decision** to choose source of finance by comparing the cost of different sources. ❑ It helps in designing optimum credit policy for the customer by comparing the present value of cost and benefits calculated at cost of capital.
Components of Cost of Capital	(*a*) Cost of Debt (*b*) Cost of Preference Capital (*c*) Cost of Equity Capital (*d*) Cost of Retained Earnings
Cost of Debt	❑ A debt may be in the form of bond, debenture or long term loan. ❑ Approximation Method ○ Cost of Irredeemable debenture $= \frac{I(1-t)}{NP}$ ○ Cost of Redeemable debenture $= \frac{I(1-t)+(RV-NP)/2}{(RV+NP)/2}$

	▫ ***NPV* or *YTM* Approach** ○ Identify the relevant cash flows from the debentures ○ Calculate approximate cost of debt using approximation method. ○ Calculate *NPV* at the approximate cost of debt calculated in step-2. ○ *NPV* = Present value of future cash inflows – Present value of future cash outflows. ○ If *NPV* is positive than increase the rate so that it becomes negative and If *NPV* is negative than decrease the rate so that it becomes positive. ○ Interpolate the two NPVs to calculate cost of debentures using below formula: Cost of debt (*IRR*) (*Kd*) $\text{Lower rate} + \left[\frac{\text{Lower rate NPV}}{\text{Lower rate NPV} - \text{Higher rate NPV}}\right]$ (Higher rate – Lower rate) ▫ Amortization of Bond ○ Calculate cash flows of each year ○ Cash flow = [Interest × (1 – t)] + Amortized amount p.a. ○ $Kd = IRR = \text{Lower rate} + \left[\frac{\text{LR NPV}}{\text{LR NPV} - \text{HR NPV}}\right]$ (Higher rate – Lower rate) ▫ Convertible Debentures ○ Redeemable value = Higher of either cash or equity value ○ Value of one equity share = $P0 \times (1+g)^n$ ▫ Intrinsic Value ○ It is the present value of all future income from security discounted at the required rate of return. ○ If Intrinsic value > current value, it is case of under-priced security ○ If Intrinsic value < current value, it is case of over-priced security
Cost of Preference Capital	▫ The cost of preference capital is the dividend expected by the shareholders. ▫ **Approximation Method** ○ Cost of Irredeemable Preference Shares = $\frac{\text{PD}}{\text{NP}}$ ○ Cost of Redeemable Preference Shares = $\frac{\text{PD} + \left(\frac{\text{RV} - \text{NP}}{\text{n}}\right)}{\left(\frac{\text{RV} + \text{NP}}{2}\right)}$

	▫ ***NPV* or *YTM* Approach** ○ Identify the relevant cash flows from the preference share ○ Calculate approximate cost of preference capital using approximation method. ○ Calculate NPV at the approximate cost of preference capital calculated in step-2 ○ *NPV* = Present value of future cash inflows – Present value of future cash outflows ○ If NPV is positive than increase the rate so that it becomes negative and if NPV is negative than decrease the rate so that it becomes positive. ○ Interpolate the two NPVs to calculate cost of preference using below formula: ○ Cost of preference capital (IRR) (Kp) $= \text{Lower rate} + \left[\frac{\text{Lower rate NPV}}{\text{Lower rate NPV} - \text{Higher rate NPV}}\right]$ (Higher rate – Lower rate)
Cost of Equity Capital	▫ It is the expectation of equity shareholders. ▫ It can be computed by various methods which are as follows: ○ Dividend price approach ○ Earning price approach ○ Dividend growth approach or Gordon model ○ Realized yield approach ○ Capital assets pricing model
Dividend Price Approach or Dividend Model	▫ According to this approach, the investor arrives at the market price of equity shares by capitalizing the set of expected dividend payments. ▫ $K_e = \frac{D}{NP}$ ▫ Where, D = Dividend per share ▫ NP = Net proceeds or market price
Earning Price Approach or Earning Model	▫ According to this approach, it is the earning per share which determines the market price of shares. ▫ $K_e = \frac{EPS}{NP}$ ▫ Where, EPS = Earning per share NP = Net proceeds or market price
Dividend Growth Model or Gordon Model	▫ According to this approach, the cost of equity capital depends upon the expected dividend rate plus the growth rate of dividend. ▫ $K_e = \frac{D_1}{NP} + G$

	▫ Where, D_1 = Next expected dividend = $D_0(1+g)$ ▫ NP = Net proceeds or market price ▫ G = Growth rate ▫ Estimation of Growth rate ○ **Average method** – Growth rate = $\sqrt[n]{\frac{Do}{Dn}} - 1$ ○ **Gordon's growth model** – $g = b \times r$ b = retention ratio r = rate of return on investment
Realized Yield Approach	▫ Return of one year = $\frac{\text{Dividend + Capital Gain}}{\text{Investment}}$ ▫ $Ke = \sqrt[n]{(1+r1)\times(1+r2)\times(1+r3)...(1+rn)} - 1$ ▫ If year wise price data is not given than use *YTM* method
Capital Assets Pricing Model	▫ It describes the risk-return trade-off for securities. ▫ This model compensate investor for time value of money and risk as well. ▫ Time value of money is compensated by risk free rate and risk is compensated by risk premium. ▫ Thus, required rate of return = Risk free rate + Risk premium ▫ Also, cost of equity (Ke) = Rf + (Rm – Rf)(β) ▫ Where, Rf = Risk free rate R_m = Return on market portfolio B = Beta coefficient $R_m - R_f$ = Market risk premium ▫ Shortcomings of *CAPM* ○ Calculation of Beta with historical data is unrealistic ○ Market imperfections may lead investors to unsystematic risk
Cost of Retained Earnings	▫ The cost of retained earnings must be considered as the opportunity cost of the foregone dividends. ▫ Any earnings retained by the company could have been invested profitably by the equity shareholders themselves. Therefore, there is an opportunity cost involved in the firm's retaining the earnings and an estimation of this cost can be taken up as a measure of cost of capital of retained earnings. ▫ The cost of retained earnings is taken as equal to the cost of equity share capital since the retained earnings are taken as fresh subscription to the equity share capital. ▫ Although cost of equity remains high than the cost of retained earnings due to issue of shares at a price lower than current price and flotation cost.

	❑ For calculation of *Kr*, *P* or *NP* will be taken as current market price only. $K_r = \frac{D}{P}$ $K_r = \frac{EPS}{P}$ $K_r = \frac{D_1}{NP} + G$ ❑ As per opportunity cost approach, cost of retained earnings (*Kr*) is: $Kr = Ke(1 - tp)(1 - f)$ Where, t_p = personal income tax and f = flotation cost
Weighted Average Cost of Capital	❑ Weighted average cost of capital is the average cost of the costs of various sources of financing used to raise the required finance for the firm where weights used can be either book value weights or market value weights. ❑ $WACC = (Ke \times We) + (Kr \times Wr) + (Kp \times Wp) + (Kd \times Wd)$
Market Value Weights	Market value weights are preferred because: (*a*) Market value of securities closely approximate the actual amount to be received from their sale (*b*) The cost of the specific sources of finance which constitute the capital structure of the firm are calculated using prevailing market prices.
Book Value Weights	Book value weights are preferred because: (*a*) They are readily available from the published records of the firm (*b*) Firms state their capital structure targets in terms of book values (*c*) The analysis of capital structure in terms of debt-equity ratio is based on book value
MV vs BV Weights	❑ It is preferred to use market value weights for calculation of WACC. ❑ Market value of retained earnings are included in the share price itself. ❑ To get market value of retained earnings, total market value will be apportioned between book value of retained earnings and face value of equity.
Marginal Cost of Capital	❑ The marginal cost of capital may be defined as the cost of raising an additional rupee of capital. ❑ Marginal cost of capital is derived, when we calculate the average cost of capital using the marginal weights. ❑ The marginal weights represent the proportion of funds the firm intends to employ.

EXAMPLE

Ex1. A person needs ₹10,00,000 after 7 years @ 8% p.a. How much money needs to be deposited today?

[**Sol.** ₹5,83,490]

Ex2. A person invest ₹5,00,000 for 6 years @ 7.5% p.a. How much money he will get after 6 years?

[**Sol.** ₹7,71,650]

Ex3. A person wants to receive ₹10,000 per annum for 3 years. Find the amount to be deposited today if the rate of interest is 9% p.a.

[**Sol.** ₹25,313]

Ex4. A person invest ₹6,000 per annum for 5 years. Find the amount to be received at end if the rate of interest is 8.5% p.a.

[**Sol.** ₹35,552]

Ex5. A person invest ₹20,000 in a scheme today. He is supposed to get ₹4,000 per annum for next 5 years and will receive ₹6,000 as additional bonus at end of year 5. Find the net present value of cash flows if the rate of return is 9% p.a.

[**Sol.** ₹540.]

Ex6. A person invest ₹25,000 in a scheme today. He is supposed to get ₹4,500 per annum for next 4 years and will receive ₹8,000 as additional bonus at end of year 4. Find the net present value of cash flows if the rate of return is 10% p.a.

[**Sol.** ₹5,271]

Ex7. A person invest ₹20,000 in a scheme today. He is supposed to get ₹4,000; ₹4,200; ₹4,500 and ₹6,000 at the end of respective 4 years. Find the net present value of cash flows if the rate of return is 9% p.a.

[**Sol.** ₹5,074]

PRACTICAL QUESTIONS

1. SK Ltd. issued ₹100 lakhs 12% Debentures of ₹100 each. Calculate the cost of debt in each of the following cases. Assume tax rate being 40%.

(*a*) If Debentures are issued at par.

(*b*) If Debentures are issued at par with 5% floatation cost

(*c*) If Debentures are issued at 10% premium with 5% floatation cost.

[**Sol.** (*a*) 7.20%; (*b*) 7.58%; (*c*) 6.89%]

2. SK Ltd. issued ₹100 lakhs 12% Debentures of ₹100 each redeemable at premium of 5% after 5 years. Calculate the cost of debt in each of the following cases. Assume tax rate being 40%.

(*a*) If debentures are issued at par

(*b*) If debentures are issued at par with 5% floatation cost

(*c*) If debentures are issued at 10% discount with 5% floatation cost

[**Sol.** (*a*) 8%; (*b*) 9.20%; (*c*) 11.65%]

3. A company is considering raising of funds of about ₹100 lakhs by one of two alternative methods, viz. 14% institutional term loan and 13% non-convertible debentures. The term loan option would attract no major incidental cost. The debentures would have to be issued at a discount of 2.5% and would involve cost of issue of ₹1 lakh. Advise the company as to the better option based on the effective cost of capital in each case. Assume a tax rate of 35%.

[**Sol.** Loan = 9.10%; Debentures = 8.76%]

4. Five years ago, SK Ltd. issued 12% irredeemable debentures at ₹103, at ₹3 premium to their par value of ₹100. The current market price of these debentures is ₹94. If the company pays corporate tax at a rate of 35%, calculate its current cost of debenture capital?

[**Sol.** 8.298%]

5. SK Ltd. issued ₹10,00,000, 10% Debentures of face value ₹100 each, which are redeemable after 10 years. Current market price of debenture is ₹120 and flotation cost of 4%. If income tax rate is at 30%, compute cost of debenture using YTM method.?

[**Sol.** 5.03%]

6. SK Ltd. issued ₹10,00,000, zero coupon bond of face value ₹1,000 each at ₹350, which are redeemable after 12 years. Compute cost of bonds if there is no tax on capital gain.
   You may use, $PVF_{(10\%, 12)} = 0.319$; $PVF_{(7\%, 12)} = 0.444$.

[**Sol.** 9.256 %]

7. SK Ltd. issued 10% Bonds of face value ₹1,000 each, which are redeemable after 5 years. The bonds are issued at ₹1,100 with 2% flotation cost. Tax rate is 30% and the bonds are amortized equally over the life of bonds. Compute cost of the bonds.

Years	1	2	3	4	5
PVF @ **3%**	0.971	0.943	0.915	0.888	0.863
PVF @ **5%**	0.952	0.907	0.864	0.823	0.784

[**Sol.** 4.14 %]

8. SK Ltd. issued 12% Bonds of face value ₹2,000 each, which are redeemable after 5 years. Tax rate is 30% and the bonds are amortized equally over the life of bonds. Compute the value of the bond if the investor expects a minimum return of 8% from the bonds.

[**Sol.** ₹2,020.26]

9. SK Ltd. issued ₹10,00,000, 12% Convertible Debentures of face value ₹100 each, which are redeemable after 6 years. At the time of redemption, the holder will have the option to convert the debenture into equity shares of the company in the ratio of 1:5 (5 shares for every 1 debenture). Current market price of equity share is ₹22 and of debenture is ₹120 with flotation cost of 4%. Historically, the equity share of the company grows by 6%p.a. If income tax rate is at 30%, compute cost of debenture using approximation method.

[**Sol.** 11.21%]

10. SK Ltd. issued ₹10,00,000, 10% Preference shares of face value ₹100 each, which are redeemable after 10 years. Compute cost of preference shares in each of the following conditions:

(*a*) Preference shares are issued at par and redeemable at par

(*b*) Preference shares are issued at par and redeemable at a premium of 10%

(*c*) Preference shares are issued at a discount of 10% and redeemable at par

(*d*) Preference shares are issued at a discount of 10% and redeemable at a premium of 10%.

[**Sol.** (*a*) 10%; (*b*) 10.48%; (*c*) 11.58%; (*d*) 12%]

11. An equity share of the company is selling for ₹50. The company had earned ₹6 per share at the end of last year. Dividend payout ratio is 60%. Dividend per share is expected to grow at the rate of 8% p.a. Calculate the cost of equity.

[**Sol.** 15.78%]

12. The shares of a chemical company are selling at ₹20 per share. The firm had paid dividend @ ₹2 per share last year. The estimated growth of the company is approximately 5% per year.

(*a*) Determine the cost of equity capital of the company.

(*b*) Determine the estimated market price of the equity share if the anticipated growth rate of the firm

(i) Rises to 8%

(ii) Fall to 3%

[**Sol.** (*a*) 15.50%; (*b*) (i) ₹28.80; (ii) ₹16.48]

13. A company's current price of share is ₹60 and dividend per share is ₹4. If its capitalization rate is 12%, what is the dividend growth rate?

[**Sol.** 5 %]

14. From the under mentioned facts, determine the cost of equity shares of company SK:

(*a*) Current market price of a share = ₹150

(*b*) Cost of floatation per share on new shares ₹3

(*c*) Dividend paid on the outstanding shares over the past five years:

Year	Dividend Per Share
1	₹10.50
2	₹11.02
3	₹11.58
4	₹12.16
5	₹12.76
6	₹13.40

(*d*) Assume a fixed dividend payout ratio

(*e*) Expected dividend on the new shares at the end of the current year is ₹14.10 per share.

[**Sol.** 14.59%]

15. The following is an extract from the financial statement of SK Ltd.

	(In Lakhs)
Operating profit	105
Less: Interest on debentures	33
	72
Less: Income tax	36
Net Profit	36
Equity share capital (shares of ₹10 each)	200
Reserves and surplus	100
15% Non-convertible debentures (of ₹100 each)	220
	520

The market price per equity shares is ₹12 and per debenture ₹93.75.

(*a*) What is earning per share?

(*b*) What is the percentage cost of capital of the company for the debentures funds and the equity?

[**Sol.** (*a*) ₹1.80; (*b*) 15%]

16. From the following information, calculate the cost of equity (*Ke*):

Risk free rate of interest	8%
Expected return of market portfolio	18%
Standard deviation of an asset	2.8%
Market standard deviation	2.3%
Correlation coefficient	0.8

[**Sol.** 17.74%]

17. (*a*) Calculate the expected rate of return of the security (*Ke*) from the following information:

Beta of security	0.5
Expected rate of return on market portfolio	15%
Risk-free rate of return	0.06

(*b*) If another security has an expected rate of return (*Ke*) of 18%, what would be its Beta?

[**Sol.** (*a*) 10.50%; (*b*) 1.33]

18. SK Ltd. has invested in four streams of business (*S*, *K*, *M* and *P*), the following sums: *S* – ₹10,000; K – ₹20,000; M – ₹16,000; P – ₹14,000.

The β values of these businesses are 0.80, 1.20, 1.40 and 1.75 respectively. If the risk free return is 4.25% and the market return is 11%,

(*a*) What is the β of SK Ltd. and its expected return/cost of equity?

(*b*) If SK Ltd. encashes its investment in business K and reinvest the funds in RBI bonds yielding a return of 4.25%, what is the β value of the businesses and its expected return?

[**Sol.** (*a*) 13.126%; (*b*) 10.43%]

19. Following data relates to SK ltd.: **[SM]**

Year	1	2	3	4	5
Dividend per share	1.00	1.00	1.20	1.25	1.15
Price per share (at the beginning)	9.00	9.75	11.50	11.00	10.60

Calculate the cost of equity using realized yield approach.

[**Sol.** 15%]

20. Mr. S had purchased a share of SK Limited for ₹1,000. He received dividend for a period of five years at the rate of 10%. At the end of the fifth year, he sold the share for ₹1,128. You are required to compute the cost of equity as per realised yield approach. **[SM]**

[**Sol.** 12.002%]

21. An equity share of a company is presently selling at ₹125 per share. The earnings per share is ₹20 of which 60% is paid as dividend. The shareholders expect the company to earn a constant after tax rate of 10% on its investment of retained earnings. The flotation cost of new shares is expected to be 4% of issue price. Calculate the cost of equity and cost of retained earnings.

[**Sol.** Ke = 14.40%; Kr = 13.98%]

22. Calculate the cost of retained earnings from the following information:

Current market price of a share ₹140

Cost of brokerage per share 3%

Growth in expected dividend 5%

Expected dividend per share on new shares ₹14

Shareholder's marginal/personal income tax 22%

[**Sol.** 11.349%]

23. A company issues: **[SM, May 2022]**

- 15% convertible debentures of ₹100 each at par with a maturity period of 6 years. On maturity, each debenture will be converted into 2 equity shares of the company. The risk-free rate of return is 10%, market risk premium is 18% and beta of the company is 1.25. The company has paid dividend of ₹12.76 per share. Five years ago, it paid dividend of ₹10 per share. Flotation cost is 5% of issue amount.
- 5% preference shares of ₹100 each at premium of 10%. These shares are redeemable after 10 years at par. Flotation cost is 6% of issue amount.

Assuming corporate tax rate is 40%.

(i) Calculate the cost of convertible debentures using the approximation method.

(ii) Use YTM method to calculate the cost of preference shares.

Year	1	2	3	4	5	6	7	8	9	10
$PVIF0_{.03,t}$	0.971	0.943	0.915	0.888	0.863	0.837	0.813	0.789	0.766	0.744
$PVIF0_{.05,t}$	0.952	0.907	0.864	0.823	0.784	0.746	0.711	0.677	0.645	0.614
$PVIFA0_{.03,t}$	0.971	1.913	2.829	3.717	4.580	5.417	6.230	7.020	7.786	8.530
$PVIFA0_{.05,t}$	0.952	1.859	2.723	3.546	4.329	5.076	5.786	6.463	7.108	7.722

Interest rate	1%	2%	3%	4%	5%	6%	7%	8%	9%
$FVIF_{i,5}$	1.051	1.104	1.159	1.217	1.276	1.338	1.403	1.469	1.539
$FVIF_{i,6}$	1.062	1.126	1.194	1.265	1.340	1.419	1.501	1.587	1.677
$FVIF_{i,7}$	1.072	1.149	1.230	1.316	1.407	1.504	1.606	1.714	1.828

[**Sol.** (i) 13.24%; (ii) 4.60%]

24. For varying levels of debt-equity mix, the estimates of the cost of debt (after tax) and equity capital are given below:

Debt as % of total capital employed	Cost of Debt	Cost of equity
0	7.0	15.0
10	7.0	15.0
20	7.0	16.0
30	8.0	17.0
40	9.0	18.0
50	10.0	21.0
60	11.0	24.0

You are required to decide on the optimal debt-equity mix for the company by calculating the composite cost of capital.

[**Sol.** 15%; 14.20%; 14.20%; 14.30%; 14.140%; 15.50%; 16.20%]

25. From the following capital structure of a company, calculate the overall cost of capital, using (a) book value weights, and (b) market value weights.

Source	Book Value	Market Value
Equity share capital (₹10 shares)	45,000	90,000
Retained earnings	15,000	
Preference share capital	10,000	10,000
Debentures	30,000	30,000

The after tax cost of different sources of finance is as follows:

Equity share capital – 14%

Retained earnings – 13%

Preference share capital – 10%

Debentures – 5%

[**Sol.** (*a*) 10.75%; (*b*) 11.44%]

26. The capital structure of a company as on 31st March 2021 is as follows:

	₹
Equity capital: 6,00,000 equity shares of ₹100 each	6 crores
Reserve and surplus	1.20 crores
12% debentures of ₹100 each	1.80 crores

For the year ended 31st March 2021, the company is expected to pay equity dividend @ 24%. Dividend is likely to grow by 5% every year. The market price of equity share is ₹600 per share. Income tax rate applicable to the company is 30%.

Required:

(*a*) Compute the current weighted average cost of capital

(*b*) The company has plan to raise a further ₹3 crores by way of long-term loan at 18% interest. If loan is raised the market price of equity share is expected to fall to ₹500 per share. What will be the new weighted average cost of capital of the company?

[**Sol.** (*a*) 8.88%; (*b*) 10.29%]

27. The latest Balance Sheet of SK Ltd. is given below: **(₹ '000)**

Ordinary shares (50,000 shares)	500
Share Premium	100
Retained profits	600
	1,200
8% Preference shares	400
13% Perpetual debts (Face value ₹100 each)	600
	2,200

The ordinary shares are currently priced at ₹39 ex-dividend each and ₹25 preference share is priced at ₹18 cum-dividend. The debentures are selling at 110% ex-interest and tax is paid by SK Ltd. at 40%. SK Ltd. has a beta of 0.90, risk free return is 10% & market return is 20%. Calculate the weighted average cost of capital, (based on market value) WACC of SK Ltd. **[Similar Nov 2022]**

[**Sol.** 15.68%]

28. SK Ltd. evaluates all its capital projects using discounting rate of 15%. Its capital structure consists of equity share capital, retained earnings, bank term loan and debentures redeemable at par.

Rate of interest on bank term loan is 1.5 times that of debenture. Remaining tenure of debenture and bank loan is 3 years and. 5 years respectively. Book value of equity share capital, retained earnings and bank loan is ₹10,00,000, ₹15,00,000 and ₹10,00,000 respectively. Debentures which are having book value of ₹15,00,000 are currently trading at ₹97 per debenture. The ongoing P/E multiple for the shares of the company stands at 5. You are required to calculate the rate of interest on bank loan and debentures if tax rate applicable is 25%. **[RTP Nov 2022]**

[**Sol.** Interest on debentures = 10.36%; Interest on bank loan = 15.54%]

29. An entity has ₹50 lakhs existing funds financed ₹20 lakhs from equity share capital, ₹15 lakhs form retained earnings and ₹15 lakhs from 12% debentures. It requires additional funds of ₹20 lakhs. These can be financed ₹10 lakhs from 14% debentures and ₹10 lakhs from new issue of equity shares. Tax rate applicable to the company is 35%. The company is expecting to pay ₹4 per share at the end of the year. The company's growth rate of dividends is expected to be 8% perpetually. Market price per equity share is ₹40 per share. Issue price of the new equity shares is expected to be ₹35 per share. Floatation cost to the issue is ₹3 per share. Compute weighted marginal cost of capital.

[**Sol.** 14.80%]

30. SK Ltd. wishes to raise additional finance of ₹30 lakhs for meeting its investment plans. The company has ₹6,00,000 in the form of retained earnings available for investment purposes. The following are further details: **[Similar Nov 2019]**

- Debt/Equity – 30 : 70
- Cost of debt – at the rate of 11% (before tax) upto ₹3,00,000 and 14% (before tax) beyond ₹3,00,000
- Previous earning per share – ₹15
- Dividend pay-out – 70% of earnings
- Expected growth rate in dividend – 10%
- Current market price per share – ₹90
- Company's tax rate is 30% and shareholder's personal tax rate is 20%

You are required:

(*a*) To determine the post-tax average cost of additional debt

(*b*) To determine the cost of retained earnings and cost of equity

(*c*) Compute the overall weighted average (after tax) cost of additional finance

[**Sol.** (*a*) 9.10%; (*b*) 18.26%; 22.83%; (*c*) 17.797%]

31. The SK Ltd. is planning a ₹10 crores expansion of its chain of restaurants to several neighbouring states. This expansion will be financed, in part with debt issued with a coupon interest rate of 15%. The bonds have a 10 years maturity and ₹1,000 face value and they will be sold to new Ewing ₹990 after issue costs. The company's marginal tax rate is 40%.

Preference share capital will cost SK Ltd. 14%. The company paid an equity dividend of ₹2 per share last year. The current market price per share is ₹15 and new shares can be sold to net ₹14 per share. The company's dividends are expected to increase at an annual rate of 5% for the foreseeable future. SK Ltd. expects to have ₹2 crores of retained earnings available to finance the expansion. The company's target capital structure is:

Debt	20%
Preference shares	5%
Equity shares	75%

Calculate the weighted cost of capital that is appropriated to use in evaluating this expansion programme.

[**Sol.** 17.33%]

32. The SK Company has following capital structure at 31st March, 2021 which is considered to be optimum: **[Similar to SM, Similar MTP Nov 2019]**

13% debenture	₹3,60,000
11% Preference share capital	₹1,20,000
Equity share capital (2,00,000 shares)	₹19,20,000

The company's share has a current market price of ₹27.75 per share. The expected dividend per share in next year is 50% of the 2021 EPS. The EPS of last 10 years is as follows. The past trends are expected to continue

Year	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021
EPS	1.000	1.120	1.254	1.405	1.574	1.762	1.974	2.211	2.476	2.773

The company can issue 14% new debenture. The company's debenture is currently selling at ₹98. The new preference issue can be sold at a net price of ₹9.80, paying a dividend of ₹1.20 per share. The company's marginal tax rate is 50%.

(*a*) Calculate the after tax cost (*i*) of a new debts and new preference share capital, (ii) of ordinary equity assuming new equity comes from the retained earnings.

(*b*) Calculate the marginal cost of capital

(*c*) How much can be spent for capital investment before new ordinary share must be sold? Assuming that retained earnings available for next year's investment are 50% of 2021 earnings.

(*d*) What will be marginal cost of capital {cost of fund raised in excess of the amount calculated in part (*c*)} if the company can sell new ordinary shares to net ₹20 per share? The cost of debt and of preference capital is constant.

[Sol. (*a*) (i) Kp = 12.24%; Kd = 7.14%; (ii) 17%; (*b*) 15.283%; (*c*) ₹3,46,625; (*d*) 16.827%]

PRACTICE QUESTIONS

33. A company issued 10%, 10,000 debentures of ₹100 each at a premium of 10% on 1.4.2023 to be matured on 1.4.2028. The debentures will be redeemed on maturity. Compute the cost of debentures assuming 35% as tax rate **[SM]**

[Sol. 4.28%]

34. A company issued 10,000, 10% debentures of ₹100 each at par on 1.4.2018 to be matured on 1.4.2028. the company wants to know the cost if its existing debt on 1.4.2023 when the market price of the debenture is ₹80. Compute the cost of existing debentures assuming 35% tax rate. **[SM]**

[Sol. 11.67%]

35. Institutional Development Bank (IDBI) issued Zero interest deep discount bonds of face value of ₹1,00,000 each issued at ₹2,500 and repayable after 25 years. Compute the cost of debt if there is no corporate tax. **[SM]**

You may use $PVF_{(15\%,25)} = 0.030$ and $PVF_{(16\%,25)} = 0.024$.

[Sol. 15.83%]

36. RBML is proposing to sell a 5-year bond of ₹5,000 at 8 percent rate of interest per annum. The bond amount will be amortised equally over its life. Calculate the bond's present value for an investor if he expects a minimum rate of return of 6 percent? **[SM]**

[Sol. ₹5,262.62]

37. TT Ltd. issued 20,000, 10% convertible debentures of ₹100 each with a maturity period of 5 years. At maturity the debentures holders will have the option to convert debentures into equity shares of the company in ratio of 1 : 5 (5 shares for each debentures). The current market price of the equity share is ₹20 each and historically the growth rate of the share is 4% per annum. Assuming tax rate is 25%. Compute the cost of 10% convertible debenture using Approximation Method and Internal Rate of Return Method.

PV Factor are as under: **[Nov 2020]**

Year	1	2	3	4	5
PV Factor @10%	0.909	0.826	0.751	0.683	0.621
PV Factor @15%	0.870	0.756	0.658	0.572	0.497

[Sol. Approximation method = 10.67%; *IRR* = 11.08%]

38. SK Ltd. issues, 20,000 10% preference shares of ₹100 each at ₹95 each. Calculate the cost of preference shares. **[SM]**

[**Sol.** 10.53%]

39. If SK Ltd. is issuing preferred stock at ₹100 per share, with a stated dividend of ₹12 and a flotation cost of 3% then, calculate the cost of preference share? **[SM]**

[**Sol.** 12.37%]

40. SK Ltd. issues 2,000 10% preference shares of ₹100 each at ₹95 each. The company proposes to redeem the preference shares at the end of 10th year from the date of issue. Calculate the cost of preference share? **[SM]**

[**Sol.** 10.77%]

41. A company has paid dividend of ₹1 per share (of face value of ₹10 each) last year and it is expected to grow @10% every year. Calculate the cost of equity if the market price per share is ₹55. **[SM]**

[**Sol.** 12%]

42. SK Company's Equity Share is quoted in the market at ₹25 per share currently. The company pays a dividend of ₹2 per share and the Investor's Market expects a growth rate of 6% per year. You are required to: **[SM]**

(*a*) Calculate the company's cost of equity capital

(*b*) If the anticipated growth rate is 8% per annum, calculate the indicated market price per share

(*c*) If the company issues 10% debentures of face value of ₹100 each and realizes ₹96 per debenture while the debentures are redeemable after 12 years at a premium of 12% what will be the cost of debentures using YTM? [Tax = 50%]

You may use following discount factors:

Discount Rate	PVF (r, 12)	PVAF (r, 12)
5%	0.557	8.863
10%	0.319	6.814

[**Sol.** (*a*) 14.48%; (*b*) ₹33.33; (*c*) 6.45%]

43. From the following information, calculate the cost of equity according to

(*a*) Dividend price approach;

(*b*) Dividend price plus growth approach;

(*c*) Earning Price Ratio approach;

(*d*) Earning price plus growth approach;

(*e*) Capital assets pricing model;

- Current market price of an equity share : ₹100
- Expected earnings per share at the end of the year : ₹10
- Dividend Payout ratio : 80%
- Growth Rate : 6%
- Rate of return on risk free investment : 8%
- Rate of return on market portfolio : 18%
- Volatility of securities return relative to the return of a broad based market portfolio : 1.275

[**Sol.** (*a*) 8%; (*b*) 14%; (*c*) 10%; (*d*) 16%; (*e*) 20.75%]

44. Calculate the cost of equity capital of SK Ltd., whose risk-free rate of return equals 10%. The firm's beta equals 1.75 and the return on market portfolio equals to 15%. **[SM]**

[**Sol.** 18.75%]

45. Face value of equity shares of a company is ₹10, while current market price is ₹200 per share. Company is going to start a new project, and is planning to finance it partly by new issue and partially by retained earnings. You are required to calculate cost of equity shares as well as cost of retained earnings if issue price will be ₹190 per share and flotation cost will be ₹5 per share. Dividend at the end of first year is expected to be ₹10 and growth rate will be 5%. **[SM]**

[**Sol.** $Ke = 10.41\%$; $Kr = 10\%$]

46. SK company provides the following details:

$D0 = ₹4.19$ $P0 = ₹50$ $g = 5\%$

Calculate the cost of retained earnings. **[SM]**

[**Sol.** 13.80%]

47. SK company provides the following details:

$R_f = 7\%$ $(R) = 1.20$ $R_m - R_f = 6\%$

Calculate the cost of retained earnings based on *CAPM* method. **[SM]**

[**Sol.** 14.20%]

48. M/s Navya Corporation has a capital structure of 40% debt and 60% equity. The company is presently considering several alternative investment proposals costing less than ₹20 lakhs. The corporation always raises the required funds without disturbing its present debt equity ratio.

The cost of raising the debt and equity are as under: **[RTP Nov 2018]**

Project Cost	Cost of debt	Cost of equity
Upto ₹2 lakhs	10%	12%
Above ₹2 lakhs & upto ₹5 lakhs	11%	13%
Above ₹5 lakhs & upto ₹10 lakhs	12%	14%
Above ₹10 lakhs & upto ₹20 lakhs	13%	14.5%

Assuming the tax rate at 50%, CALCULATE:

(*a*) Cost of capital of two projects *X* and *Y* whose fund requirements are ₹6.5 lakhs and ₹14 lakhs respectively.

(*b*) If a project is expected to give after tax return of 10%, DETERMINE under what conditions it would be acceptable?

[**Sol.** (*a*) 6%; 6.50%]

49. Calculate the WACC using the following data by using: **[RTP Nov 2020, Similar Jan 2021]**

(*a*) Book value weights (*b*) Market value weights

The capital structure of the company is as under:

	(₹)
Debentures (₹100 per debenture)	5,00,000
Preference shares (₹100 per share)	5,00,000
Equity shares (₹10 per share)	10,00,000
	20,00,000

The market price of these securities are:

Debentures	₹105 per debenture
Preference shares	₹110 per preference share
Equity shares	₹24 per equity share

Additional information:

(*a*) ₹100 per debenture redeemable at par, 10% coupon rate, 4% flotation costs, 10 year maturity.

(*b*) ₹100 per preference share redeemable at par, 5% coupon rate, 2% flotation cost and 10 year maturity.

(*c*) Equity shares has ₹4 flotation cost and market price of ₹24 per share.

The next year expected dividend is ₹1 with annual growth rate of 5%. The firm has practice of paying all earnings in the form of dividend.

Corporate tax rate is 30%. Use YTM method to calculate cost of debentures and preference shares.

[**Sol.** (a) 7.74%; (b) 8.59%]

50. SK Ltd. has 5,00,000, ₹1 ordinary shares whose current ex-dividend market price is ₹1.50 per share. The company has just paid a dividend of 27 paise per share, and dividends are expected to continue at this level for some *W*. If the company has no debt capital, compute the weighted average cost of capital? **[SM]**

[**Sol.** 18%]

51. Cost of equity of a company is 10.41% while cost of retained earnings is 10%. There are 50,000 equity shares of ₹10 each and retained earnings of ₹15,00,000. Market price per equity share is ₹50. Calculate WACC using market value weights if there are no other sources of finance. **[SM]**

[**Sol.** 10.10%]

52. The following details are provided by the company: **[SM]**

	(₹)
Equity share capital	65,00,000
12% Preference share capital	12,00,000
15% Redeemable debentures	20,00,000
10% Convertible debentures	8,00,000

The cost of equity capital for the company is 16.30% and income tax rate for the company is 30%. You are required to calculate the weighted average cost of capital of the company.

[**Sol.** 13.99%]

53. Book value of capital structure of B Ltd. is as follows: **[December 2021]**

Sources	Amount
12% Debentures @₹100 each	₹6,00,000
Retained earnings	₹4,50,000
4,500 Equity shares @₹100 each	₹4,50,000
	₹15,00,000

Currently, the market value of debenture is ₹110 per debenture and equity share is ₹180 per share. The expected rate of return to equity shareholder is 24% p.a. company is paying tax @30%.

Calculate WACC on the basis of market value weights.

[**Sol.** 10.77%]

54. Determine the cost of capital of SK ltd. using the book value and market value weights from the following information: **[SM, Similar RTP May 2022]**

Sources	Book Value (₹)	Market Value (₹)
Equity shares	1,20,00,000	2,00,00,000
Retained earnings	30,00,000	-
Preference shares	36,00,0000	33,75,000
Debentures	9,00,000	10,40,000

Additional information:

(*a*) Equity: Equity shares are quoted at ₹130 per share and a new issue priced at ₹125 per share will be fully subscribed; flotation cost will be ₹5 per share.

(*b*) Dividend: During the previous 5 years, dividends have steadily increased from ₹10.60 to ₹14.19 per share. Dividend at the end of the current year is expected to be ₹15 per share.

(*c*) Preference shares: 15% Preference shares with face value of ₹100 would realise ₹105 per share.

(*d*) Debentures: The company proposes to issue 11-year 15% debentures but the yield on debentures of similar maturity and risk class is 16%; flotation cost is 2%.

(*e*) Tax: Corporate tax rate is 35%. Ignore dividend tax.

(*f*) Flotation cost would be calculated on face value.

[**Sol.** *Ko* (*BV*) = 17.29%; *Ko* (*MV*) = 17.51%]

55. SK has issued 10,000 ordinary shares of ₹100 each. Details of the company's dividends per share during the past 4 years are as follows:

Year ended	Dividend per share (₹)
2017	26
2020	30

The current market value of each ordinary share of SK is ₹235 cum-dividend. The 2020 dividend of ₹30 per share has just been paid. You are required to estimate the cost of capital for SK ordinary share capital.

[**Sol.** 20.25%]

56. Capital structure of *D* Ltd. as on 31st March, 2023 is given below: **[May 2023]**

Particulars	₹
Equity share capital (₹10 each)	30,00,000
8% Preference share capital (₹100 each)	10,00,000
12% Debentures (₹100 each)	10,00,000

- Current market price of equity share is ₹80 per share. The company has paid dividend of ₹14.07 per share. Seven years ago, it paid dividend of ₹10 per share. Expected dividend is ₹16 per share.
- 8% Preference shares are redeemable at 6% premium after five years. Current market price per preference share is ₹104.
- 12% debentures are redeemable at 20% premium after 10 years. Flotation cost is ₹5 per debenture.
- The company is in 40% tax bracket.
- In order to finance an expansion plan, the company intends to borrow 15% Long-term loan of ₹30,00,000 from bank. This financial decision is expected to increase dividend on equity share from ₹16 per share to ₹18 per share. However, the market price of equity share is expected to decline from ₹80 to ₹72 per share, because investors' required rate of return is based on current market conditions.

Required:

(i) Determine the existing Weighted Average Cost of Capital (WACC) taking book value weights.

(ii) Compute Weighted Average Cost of Capital (WACC) after the expansion plan taking book value weights.

Interest Rate	1%	2%	3%	4%	5%	6%	7%
FVIFi, 5	1.051	1.104	1.159	1.217	1.276	1.338	1.403
FVIFi, 6	1.062	1.126	1.194	1.265	1.340	1.419	1.501
FVIFi, 7	1.072	1.149	1.230	1.316	1.407	1.504	1.606

[**Sol.** (i) 18.40%; (ii) 16.76%]

57. The following items have been extracted from the Liabilities side of the Balance Sheet of SK Company as at 31st December, 2020:

Paid up capital

4,00,000 Equity Shares of ₹10 each	40,00,000
Reserves and Surplus	60,00,000
Loans: 15% Non-convertible Debentures	20,00,000
14% Institutional Loans	60,00,000

Other information about the company as relevant is given below:

Year ended 31 Dec	Dividend per share	Earnings per share	Average market price per share
31 Dec	share	share	price per share
2020	4.00	7.50	50.00
2019	3.00	6.00	40.00
2018	4.00	4.50	30.00

You are required to calculate the weighted average cost of capital, using book values as weights and Earnings/Price (E/P) ratio as the basis of cost of equity. Assume tax rate is 40%.

[**Sol.** 12.10%]

58. SK Ltd. has the following book-value capital structure as on March 31, 2003.

	₹
Equity share capital (2,00,000 shares)	40,00,000
11.5% Preference shares	10,00,000
10% debentures	30,00,000
	80,00,000

The equity share of the company sells for ₹20. It is expected that the company will pay next year a dividend of ₹2 per equity share, which is expected to grow at 5% p.a. forever. Assume a 35% corporate tax rate. Required:

(*a*) Compute weighted average cost of capital (WACC) of the company based on the existing capital structure.

(*b*) Compute the new WACC, if the company raises an additional ₹20 lakhs debt by issuing 12% debentures. This would result in increasing the expected equity dividend to ₹2.40 and leave the growth rate unchanged, but the price of equity share will fall to ₹16 per share.

(*c*) Comment on the use of weights in the computation of weighted average cost of capital.

[**Sol.** (*a*) 11.375%; (*b*) 12.66%]

59. SK Ltd. has the following book value capital structure:

Equity capital (in share of ₹10 each fully paid up at par)	₹15 crores
11% Preference capital (in shares of ₹100 each fully paid up at par)	₹1 crores
Retained Earnings	₹20 crores
13.5% Debentures (of ₹100 each)	₹10 crores
15% Term loans	₹12.5 crores

The next expected dividend on equity shares per share is ₹3.60. The dividend per share is expected to grow at the rate of 7%. The market price per share is ₹40. Preference stock, redeemable after 10 years, is currently selling at ₹75 per share. Debentures, redeemable after six years, are selling at ₹80 per debenture. The income tax rate for the company is 40%.

You are required to determine the weighted average cost of capital (*Ko*) of the *XYZ* Ltd. using:

(*a*) Book value weights (*b*) Market value weights

[**Sol.** (*a*) 13.93%; (*b*) 14.59%]

60. The capital structure of SK Ltd. is as under:

9% Debenture	₹2,75,000
11% Preference shares	₹2,25,000
Equity shares (face value: ₹10 per share)	₹5,00,000
	₹10,00,000

Additional information:

(*a*) ₹100 per debenture issued and redeemable at par has 2% floatation cost and 10 years of maturity. The market price per debenture is ₹105.

(*b*) ₹100 per preference share issued & redeemable at par has 3% floatation cost and 10 year of maturity. The market price per preference share is ₹106.

(*c*) Equity share has ₹4 floatation cost and market price per share of ₹24 the next year expected dividend is ₹2 per share with annual growth of 5%. The firm has a practice of paying all earnings in the form of dividends.

(*d*) Corporate income tax rate is 35%

Required: Calculate weighted average cost of capital (WACC) using market value weights.

[**Sol.** 13.02%]

61. SK Ltd. wishes to raise additional finance of ₹10 lakhs for meeting its investment plans. It has ₹2,10,000 in the form of retained earnings available for investment purposes. Further details are as follows: **[SM, Similar RTP Nov 2023]**

(1)	Debt\Equity mix	3:7
(2)	Cost of debt	
	Up to ₹1,80,000	10% (before tax)
	Beyond ₹1,80,000	16% (before tax)
(3)	Earnings per share	₹4
(4)	Dividend pay out	50% of earnings
(5)	Expected growth rate of dividend	10%
(6)	Current market price per share	₹44
(7)	Tax rate	50%

You are required to:

(*a*) Determine the pattern for raising the additional finance

(*b*) Determine the post-tax average cost of additional debt

(*c*) Determine the cost of retained earnings and cost of equity

(*d*) Compute the overall weighted average after tax cost of additional finance.

[**Sol.** (*b*) 6.20%;(*c*) 15%; (*d*) 12.36%]

62. Alpha Ltd. has furnished the following information:

- Earning per share (EPS)	₹4
- Dividend payout ratio	₹25%
- Market price per share	₹50
- Rate of tax	30%
- Growth rate of dividend	10%

The company wants to raise additional capital of ₹10 lakhs including debt of ₹4 lakhs. The cost of debt (before tax) is 10% upto ₹2 lakhs and 15% beyond that. Compute the after tax cost of equity and debt and the weighted average cost of capital.

[**Sol.** $Ke = 12.20\%$; $Kd = 8.75\%$; $Ko = 10.82\%$]

63. Following are the information of TT Ltd.: **[July 2021]**

Particulars	
Earnings per share	₹10
Dividend per share	₹6
Expected growth rate in Dividend	6%
Current market price per share	₹120
Tax rate	30%
Requirement of Additional Finance	₹30 lakhs
Debt Equity Ratio (For additional finance)	2:1
Cost of Debt:	
0 – 5,00,000	10%
5,00,001 – 10,00,000	9%
Above 10,00,000	8%

Assuming that there is no Reserve and Surplus available in TT Ltd. You are required to:

(*a*) Find the pattern of finance for additional requirement

(*b*) Calculate post tax average cost of additional debt

(*c*) Calculate cost of equity

(*d*) Calculate the overall weighted average after tax cost of additional finance

[**Sol.** (*b*) 6.125%;(*c*) 11.3%; (*d*) 7.85%]

64. MR Ltd. is having the following capital structure, which is considered to be optimum as on 31.03.2022. **[Nov 2022]**

Equity share capital (50,000 shares)	₹8,00,000
12% Pref. share capital	₹50,000
15% Debentures	₹1,50,000
	₹10,00,000

The earning per share (EPS) of the company were ₹2.50 in 2021 and the expected growth in equity dividend is 10% per year. The next year's dividend per share (DPS) is 50% EPS of the year 2021. The current market price per share (MPS) is ₹25.00. the 15% new debentures can be issued by the company. The company's debentures are currently selling at ₹96 per debenture. The new 12% Pref. Share can be sold at a net price of ₹91.50 (face value ₹100 each). The applicable tax rate is 30%.

You are required to calculate:

(*i*) After tax cost of

(*a*) New debt

(*b*) New preference share capital and

(*c*) Equity shares assuming that new equity shares comes from retained earnings.

(*ii*) Marginal cost of capital

(*iii*) How much can be spend for capital investment before sale of new equity shares assuming that retained earnings for next year investment is 50% of 2021?

[**Sol.** (i) (*a*] 10.94%; (*b*) 13.11%; (*c*) 15%; (ii) 14.30%; (iii) ₹78,125]

65. Amrit corporation has the following book value capital structure: **[RTP May 2023]**

Equity capital (50 lakh shares of ₹10 each)	₹5,00,00,000
15% Preference shares (50,000 shares of ₹100 each]	₹50,00,000
Retained earnings	₹4,00,00,000
Debentures 14% (2,50,000 debentures ₹100 each)	₹2,50,00,000
Term loan 13%	₹4,00,00,000

The companies last year earnings per share was ₹5, and it maintains a dividend pay-out ratio of 60% and returns on equity is 10%. The market price per share is ₹20.80. Preference shares redeemable after 10 years is currently selling for ₹90 per share. Debentures redeemable after 6 years are currently selling ₹75 per debenture. The income tax rate is 40%.

(*a*) Calculate the weighted average cost of capital (WACC) using market value proportions.

(*b*) Determine the marginal cost of capital (MACC) if it needs ₹5,00,00,000 next year assuming the amount will be raised by 60% equity, 20% debt and 20% retained earnings. Equity issues will fetch a net price of ₹14 and cost of debt will be 13% before tax up to ₹40,00,000 and beyond ₹40,00,000 it will be 15% before tax.

[**Sol.** (*a*) 15.74%; (*b*) 22.73%]

SOLUTIONS

33. I = Interest on debenture =10% of ₹100 = ₹10

NP = Net Proceeds =110% of ₹100 = ₹110

RV = Redemption value = ₹100

n = Period of debenture = 5 years

t = Tax rate = 35% or 0.35

$$\text{Cost of Debenture}(K_d) = \frac{I(1-t)+\frac{(RV-NP)}{n}}{\frac{(RV+NP)}{2}} = \frac{₹10(1-0.35)+\frac{(₹100-₹110)}{5\text{ years}}}{\frac{(₹100+₹110)}{2}}$$

$$= ₹4.5/₹105 = 0.0428 = 4.28\%$$

34. I = Interest on debenture = 10% of ₹100 = ₹10

NP = Current market price = ₹80

RV = Redemption value = ₹100

n = Period of debenture = 5 years

t = Tax rate

Cost of debenture (K_d) =

$$\frac{I(1-t)+\frac{(RV-NP)}{n}}{\frac{(RV+NP)}{2}} = \frac{₹10(1-0.35)+\frac{(₹100-₹80)}{5\text{ years}}}{\frac{(₹100+₹80)}{2}} = \frac{₹10.5}{₹90} = 0.11666 \text{ or } 11.67\%$$

35. NP = ₹2,500; RV = ₹1,00,000; n = 25 years; I = 0

NPV at 15% = $[I \times (1-t) \times PVAF_{(15\%,10)}] + [RV \times PVF_{(15\%,10)}] - NP$

= 0 + [1,00,000 × 0.030] – 2,500 = ₹500

NPV at 16% = $[I \times (1-t) \times PVAF_{(16\%,10)}] + [RV \times PVF_{(16\%,10)}] - NP$

= 0 + [1,00,000 × 0.024] – 2,500 = –₹100

Cost of debt (YTM) =

$$\text{Lower rate} + \left[\frac{\text{Lower rate NPV}}{\text{Lower rate NPV} - \text{Higher rate NPV}}\right](\text{Higher rate} - \text{Lower rate})$$

$$= 15 + \left[\frac{500}{500-(-100)}\right](16-15) = 15.83\%$$

36.

Year	Principal Outstanding	Principal Repayment	Interest Payment Net of Tax	Total Cash Flows
1	5,000	1,000	5,000 × 8% = 400	1,400
2	4,000	1,000	4,000 × 8% = 320	1,320
3	3,000	1,000	3,000 × 8% = 240	1,240
4	2,000	1,000	2,000 × 8% = 160	1,160
5	1,000	1,000	1,000 × 8% = 80	1,080

Value of the bond

$= [1,400 \times PVF_{(6\%,1)}] + [1,320 \times PVF_{(6\%,2)}] + [1,240 \times PVF_{(6\%,3)}] + [1,160 \times PVF_{(6\%,4)}] + [1,080 \times PVF_{(6\%,5)}]$

$= (1,400 \times 0.943) + 1,320 \times 0.890) + (1,240 \times 0.840) + (1,160 \times 0.792) + (1,080 \times 0.747)$

= ₹5,262.62

37. Value of equity shares after 5 years = 20 × (1 + 0.04)5 = ₹24.33

Redemption value of debenture will be higher of:

(*a*) Cash value of debenture = ₹100

(*b*) Value of equity shares = 5 × 24.33 = ₹121.65

∴ Higher redemption value of the above two = ₹121.65

Approximation Method:

Cost of Debentures (*Kd*)

$$= \frac{I(1-t)+\{(RV-NP\div n\}}{\{(NP+RV)\div 2\}} = \frac{10(1-0.25)+\{(121.65-100]\div 5\}}{\{(100+121.65\div 2\}} = \frac{11.83}{110.825} = 10.67\%$$

Internal Rate of Return Method:

NPV at 10% = PVCI – PVCO = PV of Interest + PV of Redemption Value – Investment

= [10 × (1 – 0.25) × 3.790] + [121.65 × 0.621] – 100 = ₹3.96965

NPV at 15% = PVCI – PVCO = PV of Interest + PV of Redemption Value – Investment

= [10 × (1 – 0.25) × 3.353] + [121.65 × 0.497] – 100 = –₹14.39245.

Cost of Debentures $(Kd) = L + \left[\frac{NPV_L}{NPV_L - NPV_H}\right](H-L)$

$$= 10 + \left[\frac{3.96965}{3.96965-(-14.39245)}\right](15-10) = 11.08\%.$$

38. $K_P = \frac{PD}{P_0} = \frac{(10\times 2{,}000)}{(95\times 2{,}000)} = \frac{10}{95} = 0.1053$ or 10.53%.

39. P_0 = ₹100 – 3% of ₹100 = ₹97

$$K_P = \frac{PD}{P_0} = \frac{₹12}{₹97} = 0.1237 \text{ or } 12.37\%.$$

40. $K_P = \frac{PD + \frac{(RV-NP)}{n}}{\frac{(RV+NP)}{2}} = \frac{10+\left(\frac{100-95}{10}\right)}{\left(\frac{100+95}{2}\right)} = 0.1077$ or 10.77% (approx.)

41. $K_e = \frac{D_1}{P_0} + g = \frac{₹1(1+0.1)}{₹55} + 0.1 = 0.12$ or 12%

42. (a) $Ke = \frac{D_1}{P_0} + g = \frac{2(1+0.06)}{25} + 6\% = 14.48\%$

(b) $Ke = \frac{D_1}{P_0} + g \Rightarrow 0.1448 = \frac{2(1+0.08)}{MPS} + 8\% \Rightarrow MPS = ₹33.33$

(c) Cost of Debenture (K_d) :

Using Present Value method (*YTM*)

Identification of relevant cash flows

Year	Cash flows
0	Current market price (P_0) = ₹96
1 to 12	Interest net of tax $[I(1-t)]$ = 10% of ₹100(1 – 0.5) = ₹5
12	Redemption value (RV) = ₹100 (1.12) = ₹112

Calculation of Net Present Values (NPV) at two discount rates

Year	Cash flows (₹)	Discount factor @ 5%(L)	Present Value(₹)	Discount factor @ 10% (H)	Present Value (₹)
0	(96)	1.000	(96.00)	1.000	(96.00)
1 to 12	5	8.863	44.32	6.814	34.07
12	112	0.557	62.38	0.319	35.73
NPV			+10.7		–26.2

$$IRR = L + \frac{NPV_L}{NPV_L - NPV_H}(H - L) = 5\% + \frac{₹107}{₹10.7 - (₹ - 26.2)}(10\% - 5\%) = 5\% + \frac{₹53.5}{₹36.9} - 6.45\%$$

Therefore, $K_e = 6.45\%$.

43. (*a*) **Dividend Price Approach**

$$Ke = \frac{D_1}{P_0} = \frac{80\% \text{ of } 10}{100} = 8\%$$

(*b*) **Dividend Price Plus Growth Approach**

$$Ke = \frac{D_1}{P_0} + g = \frac{80\% \text{ of } 10}{100} + 6\% = 14\%$$

(*c*) **Earning Price Approach**

$$Ke = \frac{E}{P} = \frac{10}{100} = 10\%$$

(*d*) **Earning Price plus Growth Approach**

$$Ke = \frac{E_1}{P_0} + g = \frac{10}{100} + 6\% = 16\%$$

(*e*) **Capital Assets Pricing Model**

$K_e = R_f + \beta \times (R_m - R_f) = 8\% + 1.275 \times (18\% - 8\%) = 20.75\%$.

44. $K_e = R_f + B(R_m - R_f) = 0.10 + 1.75(0.15 - 0.10) = 0.1875$ or 18.75%.

45. $K_r = \frac{D_1}{P_0} + g = \frac{10}{200} + 0.05 = 10\%$

$K_e = \frac{D_1}{P_0} + g = \frac{₹10}{₹190 - ₹5} + 0.05 = 10.41\%$.

46. $K_r = \frac{D_1}{P_0} + g = \frac{D_0(1+g)}{P_0} + g = \frac{₹4.19(1+0.05)}{₹50} + 0.05 = 0.088 + 0.05 = 13.8\%$

47. $K_r = R_f + B(R_m - R_f) = 7\% + 1.20\ (6\%) = 7\% + 7.20 = 14.2\%$.

48. (*a*) For fund requirement of ₹6.5 lakh

Weighted Average Cost of Capital

Source of Capital	Weight	Cost	WMCC
Equity	0.60	14%	8.40
Debt	0.40	6%*	2.40
	1.00		**10.80%**

*Cost of debt = $I \times (1 - t) = 12 \times (1 - 0.50) = 6\%$

For fund requirement of ₹14 lakh

Weighted Average Cost of Capital

Source of Capital	Weight	Cost	WMCC
Equity	0.60	14.50%	8.70
Debt	0.40	6.50%*	2.60
	1.00		**11.30%**

*Cost of debt = $I \times (1 - t) = 13 \times (1 - 0.50) = 6.50\%$.

(*b*) If a Project is expected to give after tax return of 10%, it would be acceptable provided its project cost does not exceed ₹5 lakhs or, after tax return should be more than or at least equal to the weighted average cost of capital.

49. (i) Cost of Equity $(K_e) = \frac{D_1}{P_0 - F} + g = \frac{₹1}{₹24 - ₹4} + 0.05 = 0.1$ or 10%

(ii) Cost of Debt (K_d)

Current market price (P0) = 105 – 4% = ₹100.80

Interest net of tax = $I(1 - t) = (10\% \times 100)(1 - 0.30) = ₹7$

Redemption value = RV = ₹100

Calculation of NPV at discount rate of 5% and 7%

Year	Cash flows (₹)	Discount factor @ 5%	Present Value (₹)	Discount factor @ 7%	Present Value (₹)
0	100.8	1.000	(100.8)	1.000	(100.8)
1 to 10	7	7.722	54.05	7.024	49.17
10	100	0.614	61.40	0.508	50.80
NPV			+14.65		– 0.83

Cost of debt = $K_d = 5\% + \frac{14.65}{14.65 - (-0.83)}(7\% - 5\%) = 5\% + \frac{14.65}{15.48}(7\% - 5\%) = 6.89\%$

(iii) **Cost of Preference shares (K_p)**

Current market price = $P0 = 110 - 2\% = ₹107.80$

Preference dividend = $5\% \times 100 = ₹5$

Redemption value = $RV = ₹100$

Calculation of NPV at discount rate of 3% and 5%

Year	Cash flows (₹)	Discount factor @ 3%	Present Value (₹)	Discount factor @ 5%	Present Value (₹)
0	107.8	1.000	(107.8)	1.000	(107.8)
1 to 10	5	8.530	42.65	7.722	38.61
10	100	0.744	74.40	0.614	61.40
NPV			+ 9.25		- 7.79

$$\text{Cost of Preference} = K_p = 3\% + \frac{9.25}{9.25-(-7.79)}(5\%-3\%) = 3\% + \frac{9.25}{17.04}(5\%-3\%) = 4.08\%$$

(*a*) **Calculation of WACC using book value weights**

Source of capital	Book Value	Weights	After tax cost of capital	WACC (K_o)
	(₹)	(a)	(b)	(c) = (a) × (b)
10% Debentures	5,00,000	0.25	0.0689	0.01723
5% Preference shares	5,00,000	0.25	0.0408	0.0102
Equity shares	10,00,000	0.50	0.10	0.05000
	20,00,000	1.00		0.07743

$WACC(K_o) = 0.07743$ or 7.74%

(*b*) **Calculation of WACC using market value weights**

Source of capital	Market Value	Weights	After tax cost of capital	WACC (K_o)
	(₹)	(a)	(b)	(c) = (a) × (b)
10% Debentures (₹105 × 5,000)	5,25,000	0.151	0.0689	0.0104
5% Preference shares (₹110 × 5,000)	5,50,000	0.158	0.0408	0.0064
Equity shares (₹24 × 1,00,000)	24,00,000	0.691	0.10	0.0691
	34,75,000	1.000		0.0859

$WACC(K_o) = 0.0859$ or 8.59%

50. Market value of equity, $E = 5{,}00{,}000$ shares $\times$ ₹1.50 = ₹7,50,000

Market value of debt, D = Nil

Cost of equity capital, $K_e = \frac{D_1}{P_0} = \frac{₹0.27}{₹1.50} = 0.18$

Since there is no debt capital, $WACC = K_e$ = 18 percent.

51. Book value of paid up equity capital = ₹5,00,000

Book value of retained earnings = ₹15,00,000

Ratio of Paid up equity capital & retained earnings = 5,00,000 : 15,00,000 = 1 : 3

Market value of paid up equity capital & retained earnings = ₹50,000 × ₹50 = ₹25,00,000

Market value of paid up equity capital = ₹25,00,000 × 1/4 = ₹6,25,000

Market value of retained earnings = ₹25,00,000 × 3/4 = ₹18,75,000

Calculation of WACC using market value weights

Source of capital	Market Value	Weights	Cost of capital	WACC (Ko)
	(₹)	(*a*)	(*b*)	(*c*) = (*a*) × (*b*)
Equity shares	6,25,000	0.25	0.1041	0.0260
Retained earnings	18,75,000	0.75	0.1000	0.0750
	25,00,000	1.000		0.1010

$WACC\ (K_0)$ = 0.1010 or 10.10%

52.

Calculation of Weighted Average Cost of Capital (*WACC*)

Source	(₹)	Weight	Cost of Capital after tax	WACC
Equity Capital	65,00,000	0.619	0.163	0.1009
12% Preference Capital	12,00,000	0.114	0.120	0.0137
15% Redeemable Debentures	20,00,000	0.190	0.105*	0.020
10% Convertible Debentures	8,00,000	0.076	0.070**	0.0053
Total	1,05,00,000	1.0000		0.1399

Weighted Average Cost of Capital (WACC) = 0.1399 = 13.99%

* Cost of 15% Redeemable Debentures (after tax) = 15(1 – 0.30) = 10.5% or 0.105

** Cost of 10% Convertible Debentures (after tax) = 10(1 – 0.30) = 7% or 0.070

(**Note:** In the above solution, the Cost of Debentures has been computed without considering the impact of special features i.e. redeemability and convertibility in absence of requisite information.)

53. $Ke = \frac{EPS}{P0} = \frac{(24\% \times 100)}{180} = 0.1333 = 13.33\%$

$Kr = Ke = 13.33\%$

$Kd = \frac{I(1-t)}{Po} = \frac{(12\% \times 100)(1-0.30)}{110} = \frac{840}{110} = 7.64\%$

Computation of WACC (By Market Value Weights)

Source	Market Value (A)	Cost (B)	A × B
12% Debentures	$\frac{6,00,000}{100} \times 110 = 6,60,000$	7.64%	50,424
Equity Shareholder Fund	$4,500 \times 180 = 8,10,000$	13.33%	1,07,973
	14,70,000		1,58,397

Weighted Average Cost of Capital $= \frac{1,58,397}{14,70,000} \times 100 = 10.77\%$

54. (i) Calculation of :

$₹10.6\ (1+g)^5 = ₹14.19$ Or, $(1+g)^5 = \frac{14.19}{10.6} = 1.338$

Table (*FVIF*) suggests that ₹1 compounds to ₹1.338 in 5 years at the compound rate of 6 percent. Therefore, g is 6 percent.

Cost of Equity $(K_e) = \frac{D_1}{P_0 - F} + g = \frac{₹15}{₹125 - ₹5} + 0.06^* = 0.125 + 0.06 = 0.185$

(ii) Cost of Retained Earnings $(K_r) = \frac{D_1}{P_0} + g = \frac{₹15}{₹125} + 0.06 = 0.18$

(iii) Cost of Preference Shares $(K_p) = \frac{PD}{P_0} = \frac{₹15}{₹105} = 0.1429$

(iv) Cost of Debentures $(K_d) = \frac{I(1-t) + \left(\frac{RV - NP}{n}\right)}{\frac{RV + NP}{2}} = \frac{₹15(1-0.35) + \left(\frac{₹100 - ₹91.75^*}{11 \text{ years}}\right)}{\frac{₹100 + ₹91.75^*}{2}}$

$= ₹0.1095$

*Since yield on similar type of debentures is 16 percent, the company would be required to offer debentures at discount.

Market price of debentures (approximation method) = ₹15 ÷ 0.16 = ₹93.75

Sale proceeds from debentures = ₹93.75 – ₹2 (i.e., floatation cost) = ₹91.75

OR Market value (P_0) of debentures can also be found out using the present value method:

P_0 = Annual Interest × *PVIFA* (16%,11) + Redemption value × *PVIF* (16%,11)

$P_0 = ₹15 \times 5.029 + ₹100 \times 0.195 = ₹94.935$

Net Proceeds = ₹94.935 – 2% of ₹100 = ₹92.935

Accordingly, the cost of debt can be calculated

Total Cost of capital [BV weights and MV weights] **(Amount in (₹) lakh)**

Source of capital	Weights		Specific Cost (K)	Total cost	
	BV	MV		(BV×K)	(MV×K)
Equity Shares	120	160*	0.1850	22.2	29.6
Retained Earnings	30	40*	0.1800	5.4	7.2
Preference Shares	36	33.75	0.1429	5.14	4.82
Debentures	9	10.4	0.1095	0.986	1.139
	195	244.15		33.73	42.76

*Market Value of equity has been apportioned in the ratio of Book Value of equity and retained earnings i.e., 120 : 30 or 4 : 1.

Weighted Average Cost of Capital (WACC):

$$\text{Using Book Value} = \frac{₹33.73}{₹195} = 0.1729 \text{ or } 17.29\%$$

$$\text{Using Market Value} = \frac{₹42.76}{₹244.15} = 0.17551 \text{ or } 17.51\%$$

55. In order to find out the cost of equity capital the growth rate, g, may be ascertained as follows:

$26(1+g)^3 = 30 \rightarrow g = 4.9\%$

Ex-dividend price of the share = ₹235 – ₹30 = ₹205

$$Ke = \frac{D_1}{P_o} + g = \frac{30(1.049)}{205} + 0.049 = 20.25\%$$

56. Growth rate in dividend

$14.07 = 10 \times FVIF_{(i,7\text{ years})}$

$FVIF_{(i,7\text{ years})} = 1.407$

$FVIF_{(5\%,7\text{ years})} = 1.407$

$i = 5\%$

Growth rate in dividend = 5%

(b) $Ke = \frac{1}{P_0} + g = \frac{16}{80} + 0.05 = 25\%$

(c) $Kp = \frac{PD + \left(\frac{RV - NP}{n}\right)}{\left(\frac{RV + NP}{2}\right)} = \frac{8 + \left(\frac{106 - 104}{5}\right)}{\left(\frac{106 + 104}{2}\right)} = 8\%$

(d) $Kd = \frac{I(1-t) + \left(\frac{RV - NP}{n}\right)}{\left(\frac{RV + NP}{2}\right)} = \frac{12(1-0.4) + \left(\frac{120 - 95}{10}\right)}{\left(\frac{120 + 95}{2}\right)} = 9.02\%$

(*i*) Statement of WACC

Source	Book Value	Cost of capital	Total cost
Equity share capital	30,00,000	25%	7,50,000
Preference share capital	10,00,000	8%	80,000
Debentures	10,00,000	9.02%	90,200
	50,00,000		9,20,200

$$WACC = \frac{9,20,200}{50,00,000} \times 100 = 18.40\%$$

(*ii*) Cost of long term debt = 15(1 – 0.40) = 9%

$$\text{Revised } Ke = \frac{18}{72} + 0.05 = 30\%$$

Statement of WACC

Source	Book Value	Cost of capital	Total cost
Equity share capital	30,00,000	30%	9,00,000
Preference share capital	10,00,000	8%	80,000
Debentures	10,00,000	9.02%	90,200
Long term debt	30,00,000	9%	2,70,000
	80,00,000		13,40,200

$$WACC = \frac{13,40,200}{80,00,000} \times 100 = 16,76\%$$

57. $Ke = \frac{EPS}{MPS} = \frac{7.50}{50} = 15\%$

$$Kd\ (15\%\ \text{N. C. D}) = \frac{15(1-0.4)}{100} = 9\%$$

$$Kd\ (14\%\ \text{Loan}) = \frac{14(1-0.4)}{100} - 8.4\%$$

Statement Showing Computation of WACC:

Capital Structure	Amount	Cost of Capital	Weights	WACC
Equity Share Cap. & Reserves	1 Crore	15%	0.55	8.25%
15% Non-convertible Debentures	20 Lakh	9%	0.11	0.99%
14% Institutional Loan	60 Lakh	8.4%	0.33	2.86%
		15%	1.00	21.1%

58. (*a*) Weighted Average Cost of Capital of the Company is as follows:

Capital Structure	Amount	Cost of Capital	Weights	WACC
Equity Share Capital	40,00,000	15%	0.500	7.50%
11.5% preference shares	10,00,000	11.5%	0.125	1.4375%
10% debentures	30,00,000	6.5%	0.375	2.4375%
	80,00,000		1.000	11.375%

Working Notes:

1. Cost of equity capital $(Ke)=\frac{D_1}{P_o}+g=\frac{2}{20}+5\%=15$

2. Cost of preference share capital $(Kp)=\frac{D}{P}=\frac{11.5}{100}=11.5\%$

3. Cost of new debentures $(Kd)=\frac{I(1-t)}{P}=\frac{10(1-0.35)}{100}=6.5\%$

(*b*) **New Weighted Average Cost of Capital of the Company is as follows:**

Capital Structure	Amount	Cost of Capital	Weights	WACC
Equity Share Capital	40,00,000	20%	0.40	8.00%
11.5% preference shares	10,00,000	11.5%	0.10	1.15%
10% debentures	30,00,000	6.5%	0.30	1.95%
12% debentures	20,00,000	7.8%	0.20	1.56%
	1,00,00,000		1.00	12.66%

Working Notes: Cost of equity capital $(Ke)=\frac{D_1}{P_o}+g=\frac{2.40}{16}+5\%=20\%$

(*c*) **Comment:** (*i*) **Book Value Weights:** The weights are said to be book value weights if the proportions of different sources are ascertained on the basis of the face values i.e., the accounting values. The book value weights can be easily calculated by taking the relevant information from the capital structure as given in the balance sheet of the firm. Based on the value proportions in the Company's Balance Sheet, this represents the proportion a particular source of financing has in the Balance Sheet total.

(*ii*) **Market Value Weights:** The weights may also be calculated on the basis of the market value of different sources i.e., the proportion of each source at its market value. In order to calculate the market value weights, the firm has to find out the current market price of the securities in each category. However, a problem may arise if there is no market value available for a particular type of security.

59. $Ke=\frac{D_1}{P_o}+g=\frac{3.6}{40}+7\%=16\%$

$Kp=\frac{11+(100-75)/10}{(100+75)/2}=15.43\%$

$$Kd(\text{Debenture}) = \frac{13.5(1-0.4)+(100-80)/6}{(100+80)} = 12.7\%$$

$$Kd\,(\text{term loan}) = \frac{15(1-0.4)}{100} = 9\%$$

Weighted Average Cost of Capital: (On the basis of Book Value Weights)

Source	Amount	Weights	Cost of Capital	WACC
Equity Capital	35 crore	0.598	16%	9.57
Preference Capital	1 crore	0.017	15.43%	0.26
Debentures	10 crore	0.171	12.7%	2.17
Term Loan	12.5 crore	0.214	9%	1.93
	58.5 crore	1.000		13.93%

Weighted Average Cost of Capital: (On the basis of Market Value Weights)

Source	Amount	Weights	Cost of Capital	WACC
Equity Capital	60 crore	0.738	16%	11.81
Preference Capital	0.75 crore	0.01	15.43%	0.15
Debentures	8 crore	0.098	12.7%	1.24
Term Loan	12.5 crore	0.154	9%	1.39
	81.25 crore	1.000		14.59%

60. Computation of Specific Cost of Capital:

$$Ke = \frac{D1}{Po} + g = \frac{2}{24-4} + 5\% = 15\%$$

$$Kd = \frac{I(1-t)+(RV-NP)/n}{(RV+NP)/2} = \frac{9(1-0.35)+(100-98)/10}{(100+98)/2} = \frac{6.05}{99} = 6.11\%$$

$$Kp = \frac{PD+(RV-NP)/n}{(RV+NP)/2} = \frac{11+(100-97)/10}{(100+97)/2} = \frac{11.30}{98.50} = 11.47\%$$

Calculation of WACC using Market Value Weights

Source of Capital	Market Value	Weights	Specific Cost	Total Cost
Debentures (₹105 per debenture)	2,88,750	0.1672	6.11%	1.02%
Preference Share (₹106 per share)	2,38,500	0.1381	11.47%	1.58%
Equity Share (₹24 per share)	12,00,000	0.6947	15%	10.42%
	17,27,250	1.00		13.02%

WACC using market value weights = 13.02%

61. Pattern for raising the additional finance:

Equity 70% of ₹10,00,000 = ₹7,00,000

Debt 30% of ₹10,00,000 = ₹3,00,000

The capital structure after raising additional finance:

		(₹)
Shareholders' funds		
Equity Capital	(₹7,00,000 – ₹2,10,000)	4,90,000
Retained earnings		2,10,000
Debt (Interest at 10% p.a.)		1,80,000
(Interest at 16% p.a.)	(₹3,00,000 – ₹1,80,000)	1,20,000
Total Funds		10,00,000

Determination of post-tax average cost of additional debt:

I = Interest Rate t = Corporate tax-rate

On ₹1,80,000 = 10%(1 – 0.5) = 5% or 0.05

On ₹1,20,000 = 16% (1 – 0.5) = 8% or 0.08.

$$\text{Average Cost of Debt} = \frac{I(1-t)}{P0} = \frac{(₹1,80,000 \times 0.05) + (₹1,20,000 \times 0.08)}{3,00,000} \times 100 = 6.2\%$$

(*c*) Determination of cost of retained earnings and cost of equity by applying Dividend growth model:

D_0 = Dividend paid = 50% of EPS = 50% × ₹4 = ₹2

g = Growth rate = 10%

P_0 = Current market price per share = ₹44.

(*d*) **Computation of overall weighted average after tax cost of additional finance:**

Particulars	Amount (₹)	Weights	Cost of funds	Weighted Cost (%)
Equity (including retained earnings)	7,00,000	0.70	15%	10.5
Debt	3,00,000	0.30	6.2%	1.86
WACC	10,00,000			12.36

62. Cost of Equity Share Capital $(K_e) = \frac{D1}{P0} + g = \frac{(4 \times 25\%)(1 + 0.10)}{50} + 0.10 = 0.122 = 12.20\%$

Cost of Debt $(Kd) = \frac{I(1-t)}{NP} = \frac{[(2,00,000 \times 10\%) + (2,00,000 \times 15\%)](1 - 0.30)}{4,00,000} \times 100 = 8.75\%$

Weighted Average Cost of Capital (WACC)

Source (1)	Amount In ₹ (2)	Weights (3)	Cost of capital (4)	Weighted Average Cost (5)= (3) × (4)
Equity	6,00,000	0.6	12.20	7.32
Debt	4,00,000	0.4	8.75	3.50
		1		10.82

Weighted Average Cost of Capital (WACC) = 10.82%

[**Note**: Ke can be computed alternatively without taking growth rate into consideration $(D_0/P_0 + g)$. The values of Ke and WACC then would change accordingly.]

63. (*a*) **Pattern of raising capital**

Debt (30,00,000 × 2/3)	= ₹20,00,000
Equity (30,00,000 × 1/3)	= ₹10,00,000
Equity Fund:	
Equity (additional)	= ₹10,00,000
	₹10,00,000
Debt Fund:	
10% Debt	= ₹5,00,000
9% Debt	= ₹5,00,000
8% Debt	= ₹10,00,000
	₹20,00,000

(*b*) $Kd = \frac{\text{Interest}(1-t)}{P0} \times 100$

$$= \frac{[(5,00,000 \times 10\%) + (5,00,000 \times 9\%) + (10,00,000 \times 8\%)(1-0.30)]}{20,00,000} \times 100$$

= 1,22,500/20,00,000 × 100 = 6.125%

(*c*) $Ke = \frac{D(1+g)}{P0} + g = \frac{6 \times (1+0.06)}{120} + 0.06 = \frac{5.36}{120} + 0.06 = 0.113 = 11.3\%$

(*d*) Weighted average cost of capital

Source	Amount (₹)	Weight	Cost of capital after tax	WACC
Equity Fund	10,00,000	1/3	11.3	3.767
Debt Fund	20,00,000	2/3	6.125	4.083
Total	**30,00,000**	**1**		**7.85**

64. (i) (*a*) Cost of new debt $(Kd) = \frac{I(1-t)}{P0} = \frac{15(1-0.30)}{96} = 0.1094 = 10.94\%$

(*b*) Cost of new preference shares $(Kp) = \frac{PD}{Po} = \frac{12}{91.5} - 0.1311 = 13.11\%$

(*c*) Cost of equity $(Ke) = \frac{D1}{Po} + g = \frac{(2.50 \times 50\%)}{25} + 0.10 = 0.15 = 15\%$

(ii) Marginal cost of capital = $(Ke)(We) + (Kd)(Wd) + (Kp)(Wp)$

= (0.15)(0.80) + (.01994)(0.15) + (0.1311)(0.05) = 0.1430 = 14.30%

(iii) Amount that can be spend for capital investment = 50% × EPS × No. of shares

= 50% × 2.50 × 50,000 = ₹62,500

Portion of equity capital is 80% of total capital.

Thus, ₹62,500 is 80% of total capital

Amount of capital investment= $\frac{62,500}{80\%}$ =₹ 78,125

65. (a) **Calculation of cost of equity**

$D_0 = 5 \times 60\% = ₹3$

$g = b \times r = (1 - 0.60) \times 0.10 = 0.04 = 4\%$

$$Ke = \frac{D1}{P0} + g = \frac{3(1+0.04)}{20.80} + 0.04 = 0.19 = 19\%$$

Calculation of cost of preference shares

$$Kp = \frac{PD + \left(\frac{RV - NP}{N}\right)}{\left(\frac{RV + NP}{2}\right)} = \frac{15 + \left(\frac{100 - 90}{10}\right)}{\left(\frac{100 + 90}{2}\right)} = \frac{16}{95} = 0.1684 = 16.84\%$$

Calculation of cost of debentures

$$Kd = \frac{I(1-t) + \left(\frac{RV - NP}{N}\right)}{\left(\frac{RV + NP}{2}\right)} = \frac{14(1-0.40) + \left(\frac{100-75}{6}\right)}{\left(\frac{100+75}{2}\right)} = \frac{4.23}{87.5} = 0.1437 = 14.37\%$$

Calculation of cost of term loan

$Kd = I\,(1 - t) = 13(1 - 10.40) = 7.8\%$

Calculation of WACC (using market weights)

Source	Market Value	Weights (A)	Cost of Capital (B)	Product (A × B)
Equity	50,00,000 × 20.8 = 10,40,00,000	0.6218	19%	11.81%
Preference Shares	90 × 50,000 = 45,00,000	0.0269	16.84%	0.45%
Debentures	75 × 2,50,000 = 1,87,50,000	0.1121	14.37%	1.61%
Term loan	4,00,00,000	0.2392	7.80%	1.87%
Total	**16,72,50,000**	**1**		**15.74%**

WACC = 15.74%

(b) Required capital of ₹5,00,00,000 will be raised as follows:

Equity = 60% × 5,00,00,000 = ₹3,00,00,000

Debt = 20% × 5,00,00,000 = ₹1,00,00,000

Retained earnings = 20% × 5,00,00,000 = ₹1,00,00,000

$$\text{Marginal cost of equity} = \frac{D1}{Po} + g = \frac{3(1+0.04)}{1.4} + 0.04 = 26.28\%$$

$$\text{Marginal cost of debt} = \frac{I(1-t)}{P0} = \frac{\left[(40,00,000 \times 13\%) + (60,00,000 \times 15\%)\right](1-0.40)}{1,00,00,000}$$

$$= \frac{8,52,000}{1,00,00,000} = 8.52\%$$

Calculation of Marginal Cost of Capital (MACC)

Source	Market Value	Weights (A)	Cost of Capital (B)	Product (A × B)
Equity	3,00,00,000	0.60	26.28%	15.77%
Reserves	1,00,00,000	0.20	26.28%	5.26%
Term loan	1,00,00,000	0.20	8.52%	1.70%
Total	**5,00,00,000**	**1**		**22.73%**

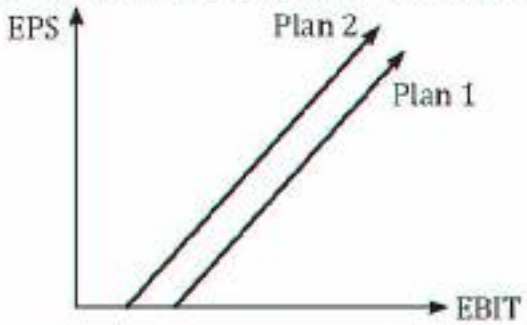
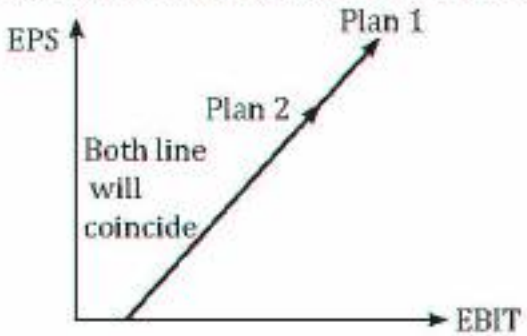
Marginal cost of capital (MACC) = 22.73%

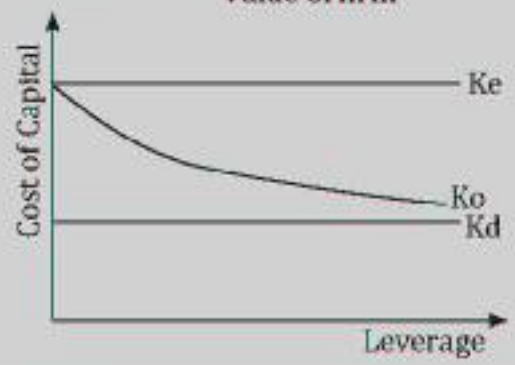
5 CHAPTER

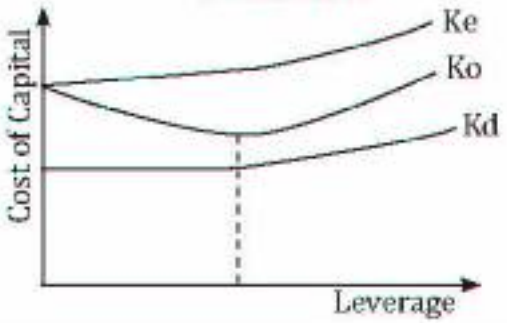
Capital Structure

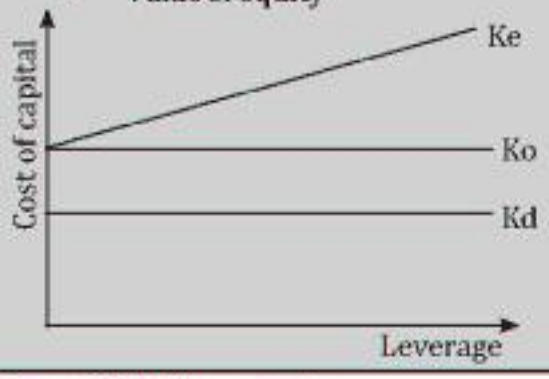
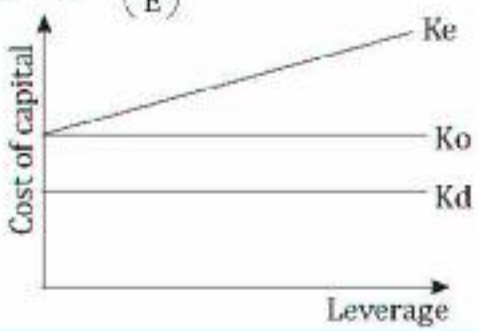
THEORY

Meaning of Capital Structure	Capital structure refers to the mix of a firm's capitalization i.e. mix of long term sources of funds such as debentures, preference share capital, equity share capital and retained earnings for meeting total capital requirement.
Major Factors in Capital Structure Planning	(*a*) Risk (*b*) Cost of capital (*c*) Control (*d*) Purpose of financing (*e*) Flexibility (*f*) Requirement of investors (*g*) Financial leverage or trading on equity (*h*) Growth and stability of sales
Capital Structure vs Financial Structure	❑ Capital structure refers to the combination of debt and equity which a company uses to finance its long-term operations. ❑ Financial Structure is the entire left-hand side of the balance sheet which represents all the long-term and short-term sources of capital. ❑ Thus, capital structure is only a part of financial structure.
Optimum Capital Structure	❑ It deals with the issue of right mix of debt and equity in the long-term capital structure of a firm. ❑ The mix should be designed so as to ensure maximization of wealth which is in line with objective of financial management. ❑ In other words, mix should be designed in such a manner which can provide the highest earnings per share (EPS) over the firm's expected range of earnings before interest and tax (EBIT).
EBIT-EPS Analysis Tool or Indifference Point Analysis	❑ Through this analysis, a comparison can be drawn for various methods of financing by obtaining indifference point. ❑ It is a point to the EBIT level at which EPS remains unchanged irrespective of debt-equity mix. ❑ The indifference point for the capital mix (equity share capital and debt) can be determined as follows: $\frac{(EBIT - I_1)(1-t)}{E_1} = \frac{(EBIT - I_2)(1-t)}{E_2}$

	❑ If amount of equity share capital is same under two financial plans, then one of the following two situations will arise: **(a) No Indifference Point:** It will arise when after tax cost of the source other than equity shares is not same under both plans.  **(b) Many Indifference PointL** It will arise when after tax cost of the source other than equity share is same under both plans. 
Trading on Equity	❑ It is the process of using securities with fixed financial burden (e.g. loan, preference shares, bonds etc.) to produce gain for the owners (equity shareholders). ❑ It is known as trading on equity because equity shareholders are the only one interested in the business income and lenders are willing to advance funds on the strength of the equity supplied by the owners. ❑ Trading on equity occurs if the firm takes debt to acquire assets on which it can earn return greater than the interest on cost of debt. In this case, the leverage is favourable for the firm.
General Assumptions of all Approaches	(*a*) There are only two sources of funds: (i) Equity; and (ii) Debt having fixed interest (*b*) Total assets of the firm are given and there would be no change in the decisions of the firm. (*c*) There are no retained earnings i.e. dividend payout ratio is 100%. (*d*) The operating profit, i.e. EBIT of the firm is given and is not expected to grow. (*e*) Business risk of the firm is given and it does not get affected by the financing mix.

Net Income (NI) Approach	**Specific assumptions of NI Approach:** (*a*) The debt capitalization rate (Kd) is less than the equity capitalization rate (Ke). (*b*) The use of debt component doesn't change the risk perception of investors. As a result, both debt capitalization rate (Kd) and equity capitalization rate (Ke) remains constant. (*c*) There are no personal or corporate taxation. **Approach:** ❑ According to this approach, capital structure decision is relevant to the value of the firm. ❑ With the increase in debt of the firm, the WACC would decline because of use of relatively less expensive debt and in turn, the value of firm will increase and vice-versa. ❑ The optimum capital structure will be at a point where WACC is minimum and value of firm is maximum. $\text{Value of Equity } (V_E) = \frac{\text{EBIT} - \text{Interest}}{\text{Cost of Equity}}$ $\text{Value of Firm } (V_F) = \text{Value of Equity } (V_E) + \text{Value of Debt } (V_D)$ $\text{Overall cost of capital } (K_O) = \frac{\text{EBIT}}{\text{Value of firm}}$ 
Traditional Approach	**Specific Assumptions of Traditional Approach:** (*a*) There are no personal or corporate taxes. (*b*) The increase in proportion of debt in capital structure leads to change in risk perception of the shareholders. (*c*) The debt capitalization rate (Kd) is less than the equity capitalization rate (Ke). **Approach:** ❑ It is also known as intermediate approach as it takes a midway between NI approach and the NOI approach. ❑ According to this approach, with the increase in debt upto a certain reasonable limit, the overall cost of capital (WACC) will start declining because of use of relatively cheaper debt funds.

	❑ If the debt is increased beyond the reasonable limit, both the cost of equity (ke) and cost of debt (kd) will start rising due to excess level of financial risk. ❑ As a result, WACC of the firm starts rising. ❑ The optimum capital structure will be at a point where WACC is minimum and value of firm is maximum. $\text{Value of Equity } (V_E) = \frac{\text{EBIT} - \text{Interest}}{\text{Cost of Equity}}$ $\text{Value of Firm } (V_F) = \text{Value of Equity } (V_E) + \text{Value of Debt } (V_D)$ $\text{Overall cost of capital } (K_O) = \frac{\text{EBIT}}{\text{Value of firm}}$ 
Net Operating Income (NOI) Approach	**Specific assumptions of NOI approach:** (*a*) There are no corporate or personal taxes. (*b*) The market capitalizes the value of the firm as whole. Thus the split between debt and equity is not important. (*c*) The increase in proportion of debt in capital structure leads to change in risk perception of the shareholders. (*d*) The overall cost of capital (Ko) remains constant for all degrees of debt equity mix. **Approach:** ❑ According to this approach, WACC of the firm or value of firm is independent of its capital structure. ❑ With the increase in the debt component in the capital structure, the financial risk of equity shareholders increases. ❑ To compensate the increased risk the shareholders would expect a higher rate of return on their investments. ❑ Thus, the benefit of using relatively cheaper debt funds is offset by the loss arising out of the increase in cost of equity. ❑ As a result, the overall cost (value of firm) remains constant irrespective of capital structure. $\text{Value of Firm } (V_F) = \frac{\text{EBIT}}{\text{Overall cost of capital}}$ $\text{Value of Equity } (V_E) = \text{Value of Firm } (V_F) - \text{Value of Debt } (V_D)$

	$\text{Cost of Equity } (K_E) = \dfrac{\text{EBIT} - \text{Interest}}{\text{Value of equity}}$ 
Modigilani and Miller (MM) Approach	**Specific assumptions of MM Approach:** (*a*) Capital markets are perfect and investors are assumed to be rational. (*b*) There are no personal or corporate taxes. (*c*) Firms can be categorized into "equivalent return" classes. All firms within a class have the same degree of business risk. (*d*) All investors have the same expectations from a firm's net operating income (EBIT) which are necessary to evaluate the value of a firm. **The three basic propositions of the approach are:** 1. The total market value of the firm and its cost of capital are independent of its capital structure. The total market value of a firm is given by capitalizing the expected stream of operating earnings at a discount rate appropriate for its risk class. 2. The cost of equity (Ke) is equal to capitalization rate of pure equity stream plus a premium for financial risk. The financial risk increases with more debt content in the capital structure. As a result, Ke increases in a manner to offset exactly the use of less expensive source of funds. 3. The cut-off rate for investment purposes is completely independent of the way in which an investment is financed. This proposition along-with the first implies a complete separation of the investment and financing decisions of the firm. Value of levered firm (V_L) = Value of unlevered firm (V_U) $= \dfrac{\text{EBIT}}{\text{Overall Cost of Capital}}$ $K_{eL} = K_{eU} + (K_{eU} - K_d) \times \left(\dfrac{D}{E}\right)$ 

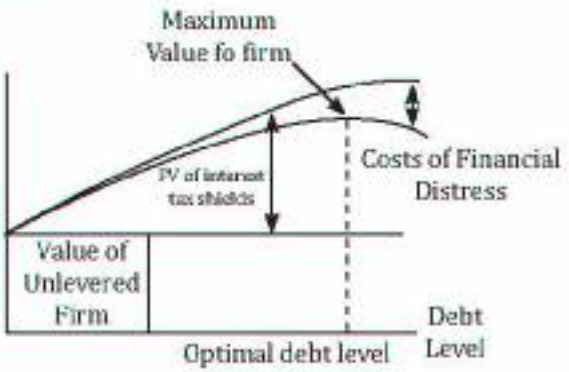
<table>
<tr><td>MM Approach with Corporate Taxes</td><td>

MM recognized that the value of the firm will increase and the cost of capital will decrease with the use of debt on account of deductibility of interest charges for tax purpose.
Thus, the optimum capital structure can be achieved by maximizing the debt mix in the equity of the firm.

$$\text{Value of unlevered firm } (V_U) = \frac{EBIT(1-t)}{\text{Overall cost of capital}}$$
$$\text{Value of levered firm } (V_L) = \text{Value of unlevered firm } (V_U) + (\text{Debt})(\text{tax rate})$$
$$K_{eL} = K_{eU} + (K_{eU} - K_d) \times (1-t) \times \left(\frac{D}{E}\right)$$
</td></tr>
<tr><td>Weakness of MM Hypothesis</td><td>
(a) Since, the interest on debt is tax deductible, a levered firm is in position to take the advantage of trading on equity. Hence, the total market value of a levered firm is likely to exceed that of unlevered firm.
(b) Other hidden costs associated with leverage, such as bankruptcy and agency costs have not been considered.
(c) Investors may not substitute personal leverage for corporate leverage since they don't have the same risk characteristic.
(d) The assumption that an individual will be able to borrow at the same rate at which corporations are able to issue debentures at any point of time is not realistic.
(e) Institutional restrictions may not permit institutional investors to engage in home made leverage.
</td></tr>
<tr><td>Arbitrage Process</td><td>

Arbitrage is the process of purchasing a security in a market where the price is low and selling it in a market where the price is higher.
Activities under Arbitrage Process:

<table>
<tr><th>When Levered Firm is overvalued</th><th>When Unlevered Firm is overvalued</th></tr>
<tr><td>1. Investor sells his present equity holdings of levered firm.</td><td>1. Investor sells his present equity holdings of unlevered firm.</td></tr>
<tr><td>2. Investor borrows proportionate to his share of debt of levered firm (because personal leverage is perfect substitute of corporate leverage).</td><td>2. Investor purchases securities of the levered firm equal to his percentage equity holdings in the unlevered firm.</td></tr>
<tr><td>3. Investor purchases securities of the unlevered firm equal to his percentage equity holdings in the levered firm.</td><td>3. Investor will also invest proportionately in the debt instruments.</td></tr>
<tr><td>4. After one year, investor will receive dividend and will pay interest on personal debt taken.</td><td>4. After one year, investor will receive dividend and interest from his investment.</td></tr>
</table>
</td></tr>
</table>

	5. Thus, investor will earn higher rate of return in unlevered firm as compared to continuing in levered firm.	5. Thus, investor will earn higher rate of return in levered firm as compared to continuing in unlevered firm.
	❑ According to MM, this arbitrage process will come to an end when the values of both companies become identical.	
The Trade-off Theory	❑ This theory helps to find the optimum level of debt by balancing the cost and benefits. ❑ Benefits of using debt is tax saving on interest ❑ Cost of using debt involves financial distress and agency cost ❑ In case if company is not able to meet the payment obligations to the debt holder than it may become insolvent which leads to various cost such as legal cost, admin. Cost , bankruptcy cost etc. ❑ Also, there might be dispute between shareholders, management & debt-holders which gives rise to agency cost. ❑ The marginal benefit of further increase in debt declines as debt increases. ❑ Thus, firm tries to trade-off the cost with benefit to optimize or maximize the overall value.  	
Pecking Order Theory	❑ This theory states that capital structure decision is affected by manager's choice. ❑ Thee is no well-defined equity-debt mix. ❑ There are two sources i.e. internal & external ❑ Debt is the most cheaper source ❑ Internal equity is cheaper than external equity because it doesn't involve transaction or issue cost etc. ❑ As per this theory, manager may raise funds from various sources in following order: ○ First choice is to use internal finance ○ In absence or shortage of internal finance then use secured debt, unsecured debt etc. ○ Manager may issue new equity shares as last option.	

Over Capitalization	It is a situation where a firm has more capital than it needs or in other words assets are worth less than its issued share capital, and earnings are insufficient to pay dividend and interest.
Causes of over Capitalization	(*a*) Raising more money through issue of equity shares or debentures than company can employ profitably. (*b*) Borrowing huge amount at higher rate than rate at which company can earn. (*c*) Excessive payment for the acquisition of fictitious assets such as goodwill etc. (*d*) Wrong estimation to earnings and capitalization.
Consequences of Over Capitalization	(*a*) Considerable reduction in the rate of dividend and interest payments. (*b*) Reduction in the market price of shares (*c*) Resorting to window dressing (*d*) Some companies may opt for reorganization
Remedies of Over Capitalization	(*a*) Companies should go for thorough reorganization (*b*) Buyback of shares (*c*) Reduction in claims of debenture-holders and creditors (*d*) Value of share may also be reduced.
Under Capitalization	❑ It is a state, when company's actual capitalization is lower than its proper capitalization as warranted by its earning capacity. ❑ This situation normally happens with companies which have insufficient capital but large secret reserves in the form of considerable appreciation in the values of fixed assets not brought into the books.
Consequences of Under Capitalization	(*a*) The dividend rate will be higher in comparison to similarly situated companies. (*b*) Market value of shares will be higher than value of shares of other similar companies. (*c*) Real value of shares will be higher than their book values.
Remedies of Under Capitalization	(*a*) The shares of the company should be split up. (*b*) Issue of bonus shares. (*c*) By revising upward the par value of share in exchange of the existing shares.
Over Capitalization vs Under Capitalization	❑ Over capitalization is more dangerous to the company, society and shareholders than under capitalization. ❑ Situation of under capitalization can be handled easily as compared to over capitalization.

PRACTICAL QUESTIONS

1. SK Ltd. has equity share capital of ₹5,00,000 (face value ₹100). To meet the expenditure of an expansion programme, the company wishes to raise ₹3,00,000 and is having following four alternative sources to raise the funds:

Plan *A*: To have full money from the equity shares

Plan *B*: To have ₹1 lakh from equity and ₹2 lakhs from borrowing from the financial institutions @ 10% p.a.

Plan *C*: Full money from borrowing @ 10% per annum

Plan *D*: ₹1 lakh in equity and ₹2 lakh from preference shares @ 8% per annum dividend.

The company is having present earnings (EBIT) of ₹1,50,000. The corporate taxes 50%. Suggest a suitable plan of the above four plans to raise the required funds.

[**Sol.** EPS - ₹15; ₹18.33; ₹21; ₹17.33]

2. SK Ltd. requires ₹25,00,000 for a new plant. This plant is expected to yield earnings before interest and taxes of ₹5,00,000. While deciding about the financial plan, the company considers the objective of maximizing earnings per share.

It has three alternatives to finance the project – by raising debt of ₹2,50,000 or ₹10,00,000 or ₹15,00,000 and the balance in each case by issuing equity shares. The company's share is currently selling at ₹150, but is expected to decline to ₹125 in case the funds are borrowed in excess of ₹10,00,000. The funds can be borrowed at the rate of 10% up to ₹2,50,000, at 15% over ₹2,50,000 and up to ₹10,00,000 and at 20% over ₹10,00,000. The tax rate applicable to the company is 50 percent. Analyse which form of financing should the company choose? **[SM]**

[**Sol.** EPS - ₹15.83; ₹18.125; ₹16.406]

3. SK Ltd., a profit making company, has a paid-up capital of ₹100 lakhs consisting of 10 lakhs ordinary shares of ₹10 each. Currently, it is earning an annual pre-tax profit of ₹60 lakhs. The company's shares are listed and are quoted in the range of ₹50 to ₹80. The management wants to diversify production and has approved a project which will cost ₹50 lakhs and which is expected to yield a pre-tax income of ₹40 lakhs per annum. To raise this additional capital, the following options are under consideration of the management:

(*a*) To issue equity share capital for the entire additional amount. It is expected that the new shares (face value of ₹10) can be sold at a premium of ₹15.

(*b*) To issue 16% non-convertible debentures of ₹100 each for the entire amount.

(*c*) To issue equity capital for ₹25 lakhs (face value of ₹10 each) and 16% non-convertible debentures for the balance amount. In this case, the company can issue shares at a premium of ₹40 each.

Calculate the additional capital that can be raised, keeping in mind that the management wants to maximise the earnings per share to maintain its goodwill. The company is paying income tax at 50% **[SM]**

[**Sol.** EPS - ₹4.17; ₹4.60; ₹4.57]

4. The following data are presented in respect of SK Ltd.: **[SM]**

Particulars	Amount (₹)
Profit before interest and tax	52,00,000
Less: Interest on debentures @12%	12,00,000
Profit before tax	40,00,000
Less: Income tax @ 50%	20,00,000
Profit after tax	20,00,000
No. of equity shares (of ₹10 each)	8,00,000
EPS	2.5
MPS	25

The company is planning to start a new project requiring a total capital outlay of ₹40,00,000. You are informed that a debt equity ratio (D/D + E) higher than 35% push the Ke up to 12.5% means reduce PE ratio to 8 and rises the interest rate on additional amount borrowed at 14%. Find out the probable price of share if:

(*a*) The additional funds are raised as a loan.

(*b*) The amount is raised by issuing equity shares.

(Note: Retained earnings of the company is ₹1.2 crores).

[**Sol.** (*a*) ₹20.66; ₹24.44]

5. The financial advisor of SK Ltd. is confronted with following two alternative financing plans for raising ₹10 lakhs that is needed for plant expansion and modernization. **[SM]**

Alternative I: Issue 80% of funds with 14% Debenture (Face value ₹100) at par and redeem at a premium of 10% after 10 years and balance by issuing equity shares at 33(1/3)% premium.

Alternative II: Raise 10% of funds required by issuing 8% irredeemable debentures (face value ₹100) at par and the remaining by issuing equity shares at current market price of ₹125.

Currently, the firm has an Earnings per share (*EPS*) of ₹21.

The modernization and expansion programme is expected to increase the firm's Earnings before Interest and Taxation (EBIT) by ₹2,00,000 annually.

The firm's condensed Balance Sheet for the current year is as given below:

Balance Sheet as on 31.3.2022

Liabilities	(₹)	Assets	(₹)
Current Liabilities	5,00,000	Current Assets	16,00,000
10% Long term loan	15,00,000	Plant & Equipment (Net)	34,00,000
Reserve & Surplus	10,00,000		
Equity share capital (FV: ₹100 each)	20,00,000		
	50,00,000		50,00,000

However, the finance advisor is concerned about the effect that issuing of debt might have on the firm. The average debt ratio for firms in industry is 35%. He believes if this ratio is exceeded, the PE ratio of the company will be 7 because of the potentially greater risk.

If the firm increases its equity capital by more than 10%, he expects the PE ratio of the company will increase to 8.5 irrespective of the debt ratio.

Assume tax rate of 25%. Assume target dividend pay-out under each alternative to be 60% for the next year and growth rate to be 10% for the purpose of calculating cost of equity.

Suggest with reasons which alternative is better on the basis of each of the below given criteria:

(*a*) Earnings per share (*EPS*) & Market Price per share (*MPS*)

(*b*) Financial Leverage

(*c*) Weighted Average Cost of Capital & Marginal Cost of Capital (using Book Value Weights)

[Sol. (*a*) *EPS* – ₹22.60; ₹20.74; *MPS* - ₹158.20; ₹176.29; (*b*) 1.40; 1.21; (*c*) WACC – 9.12%; 7.66%; MACC – 10.65%; 7.58%]

6. SK Limited requires funds amounting to ₹80 lakhs for its new project. To raise the funds, the company has following alternatives:

(*i*) To issue equity shares of ₹100 each (at par) amounting to ₹60 lakhs and borrow the balance amount at the interest of 12% p.a.; or

(*ii*) To issue equity shares of ₹100 each (at par) and 12% debentures in equal proportion.

The income tax rate is 30%. Identify the point of indifference between the available two modes of financing and state which option will be beneficial in different situations. **[SM]**

[Sol. ₹9,60,000]

7. SK Ltd. is considering three financing plans. The key information is as follows:

(*a*) Total investment to be raised ₹2,00,000 **[SM, Similar Nov 2020]**

(*b*) Plans of financing portion

Plans	Equity	Debt	Preference
A	100%	–	–
B	50%	50%	–
C	50%	–	50%

(*c*) Cost of debt 8%

(*d*) Cost of preference shares 8%

(*e*) Tax rate 50%

(*f*) Equity share of the face value of ₹10 each will be issued at a premium of ₹10 per share

(*e*) Expected EBIT is ₹80,000.

You are required to determine for each plan:

(i) Earning per share (*EPS*)

(ii) The financial break-even point

(iii) Indicate if any of the plans dominate and compute EBIT range among the plans for indifference.

[Sol. (i) ₹4; ₹7.20; ₹6.40; (ii) Nil; ₹8,000; ₹16,000; (iii) Plan B]

8. SK Ltd.'s EBIT is ₹5,00,000. The company has 10%, ₹20 lakh debentures. The equity capitalization rate i.e. ke is 16%.

You are required to calculate:

(*i*) Market value of equity and value of firm

(ii) Overall cost of capital

(iii) If company decides to redeem ₹3,00,000 equity with 10% debt, compute value of equity and overall cost of capital. **[SM]**

[Sol. (i) ₹38,75,000; (ii) 12.90%; (iii) ₹16,87,500; 12.54%]

9. SK Ltd., is expecting an EBIT of ₹3,00,000. The company presently raised its entire fund requirement of ₹20 lakhs by issue of equity with equity capitalization rate of 16%. The firm is now contemplating to redeem a part of capital by introducing debt financing. The firm has two options to raise debt to the extent of 30% or 50% of total funds. It is expected that for debt financing upto 30% the rate of interest will be 10% and equity capitalization rate is expected to increase to 17%. However, if firm opts for 50% debt then interest rate will be 12% and equity capitalization rate will be 20%. You are required to compute value of firm and its overall cost of capital under different options if the traditional approach is held valid.

[**Sol.** Ko = 16%; 14.91%; 15.79%]

10. SK Ltd. is expecting an Earnings before interest & tax of ₹4,00,000 and is an all equity company.

(*a*) Using the NOI approach and an overall cost of capital of 10%, compute the total value, the stock market value of the firm, and the cost of equity.

(*b*) Determine the answers to (*a*) if the company decide to retire ₹1 million of common stock it with 9% long term debt. Also compute the return of Mr. S if he owns 5% of the shares of SK Ltd.

[**Sol.** (*a*) ₹40,00,000; ₹40,00,000; 10%; (*b*) ₹40,00,000; ₹30,00,000; 10.33%; ₹15,500]

11. Alpha Ltd. and Beta Ltd. are identical except for capital structures. Alpha Ltd. has 50 percent debt and 50 percent equity, whereas Beta Ltd. has 20 percent debt and 80 percent equity. (All percentages are in market-value terms). The borrowing rate for both companies is 8 percent in a no-tax world, and capital markets are assumed to be perfect. **[SM, Similar Jan 2021]**

(*a*) (i) If you own 2 percent of the shares of Alpha Ltd., determine your return if the company has net operating income of ₹3,60,000 and the overall capitalization rate of the company, Ko is 18 percent?

(ii) Calculate the implied required rate of return on equity.

(*b*) Beta Ltd. has the same net operating income as Alpha Ltd.

(i) Determine the implied required return of Beta Ltd.?

(ii) Analyse why does it differ from that of Alpha Ltd.?

[**Sol.** (*a*) (i) ₹5,600; (ii) 28%; (*b*) (i) 20.50%]

12. SK Ltd. has a total capitalization of ₹10,00,000. The financial manager of the firm wants to take a decision regarding the capital structure. After a study of the capital market, he gathers the following data: **[SM, Similar RTP May 2021]**

Amount of Debt ₹	Interest Rate %	Equity Capitalization Rate (at given level of debt) %
0	–	10.0
1,00,000	4.0	10.5
2,00,000	4.0	11.0
3,00,000	4.5	11.6
4,00,000	5.0	12.4
5,00,000	5.5	13.5
6,00,000	6.0	16.0

(a) What amount of debt should be employed by the firm if the traditional approach is held valid (and that the firm always maintains its capital structure at book values)?

(b) If the Modigliani-Millar approach is followed, what should be the equity capitalization rate?

[Sol. (a) 10%; 9.85%; 9.60%; 9.47%; 9.44%; 9.50%; 10%; (b) 10%; 10.67%; 11.50%; 12.36%; 13.33%; 14.50%; 16%]

13. There are two company N Ltd. and M Ltd., having same earnings before interest and taxes i.e. EBIT of ₹20,000. M Ltd. is a levered company having a debt of ₹1,00,000 @7% rate of interest. The cost of equity of N Ltd. is 10% and of M Ltd. is 11.50%. Compute how arbitrage process will be carried on? **[SM]**

[**Sol.** ₹130.40]

14. There are two companies U Ltd. and Ltd., having same NOI of ₹20,000 except that L Ltd. is a levered company having a debt of ₹1,00,000 @7% and cost of equity of U Ltd. and L Ltd. are 10% and 18% respectively. Compute how arbitrage process will work. **[SM]**

[**Sol.** ₹323]

15. Companies Chunnu and Munnu are identical in every respect except that the former does not use debt in its capital structure, while the latter employs ₹6,00,000 of 15% debt. Assuming that (a) all the MM assumptions are met, (b) the corporate tax rate is 50%, (c) the EBIT is ₹2,00,000, and (d) the equity capitalization of the unlevered company is 20%, what will be the value of the firms, Chunnu and Munnu? Also determine the weighted average cost of capital for both the firms.

[**Sol.** Chunnu = ₹5,00,000; 20%; Munnu = ₹8,00,000; 12.50%]

16. The following data relates to two companies belonging to the same risk class:

Particulars	A Ltd.	B Ltd.
Expected Net Operating Income	₹18,00,000	₹18,00,000
12% Debt	₹54,00,000	-
Equity capitalization rate	-	18

Required:

(a) Determine the total market value, equity capitalization rate and weighted average cost of capital for each company assuming no taxes as per M.M. approach.

(b) Determine the total market value, equity capitalization rate and weighted average cost of capital for each company assuming 40% taxes as per MM Approach.

[SM, Similar July 2021, Nov 2018]

[Sol. (a) Vf = ₹1,00,00,000; Ko = 18%; (b) Vb = ₹60,00,000; Va = ₹81,60,000; Ko-*B* = 18%; Ko-*A* = 13.23%]

17. SK Ltd., an all equity financed company is considering the repurchase of ₹275 lakhs equity shares and to replace it with 15% debentures of the same amount. Current market value of the company is ₹1,750 lakhs with its cost of capital of 20%. The company's Earnings before Interest and Taxes (EBIT) are expected to remain constant in future years. The company also has a policy of distributing its entire earnings as dividend.

Assuming the corporate tax rate as 30%, you are required to calculate the impact on the following on account of the change in the capital structure as per Modigliani and Miller (MM) Approach:

(a) Market value of the company (b) Overall cost of capital

(c) Cost of Equity **[SM, Similar May 2018]**

[**Sol.** (a) MV increase by ₹82,50,000; (b) Ko decrease by 0.90%; (c) Ke increase by 0.62%]

18. Company P and Q are identical in all respects including risk factors except for debt/equity, company P having issued 10% debentures of ₹18 lakhs while company Q is unlevered. Both the companies earn 20% before interest and taxes on their total assets of ₹30 lakhs.

Assuming a tax rate of 50% and capitalization rate of 15% from an all-equity company.

Required:

CALCULATE the value of companies P and Q using (*a*) Net Income Approach and (*b*) net Operating Income Approach. **[RPT May 2018]**

[**Sol.** (*a*) ₹32,00,000; ₹20,00,000; (*b*) ₹20,00,000; ₹29,00,000]

PRACTICE QUESTIONS

19. Suppose that a firm has an all equity capital structure consisting of 1,00,000 ordinary shares of ₹10 per share. The firm wants to raise ₹2,50,000 to finance its investments and is considering three alternative methods of financing – (i) to issue 25,000 ordinary shares at ₹10 each, (ii) to borrow ₹2,50,000 at 8 percent rate of interest, (iii) to issue 2,500 preference shares of ₹100 each at an 8 percent rate of dividend. If the firm's earnings before interest and taxes after additional investment are ₹3,12,500 and the tax rate is 50 percent, find the earnings per share under the three financing alternatives. **[SM]**

[**Sol.** EPS - ₹1.25; ₹1.46; ₹1.36]

20. *Y* Limited requires ₹50,00,000 for a new plant. This Plant is expected to yield earnings before interest and taxes of ₹10,00,000. While deciding about the financial plan, the company considers the objective of maximizing earnings per share. It has two alternatives to finance the project – by raising debt of ₹5,00,000 or ₹20,00,000 and the balance in each case by issuing equity shares. The company's share is currently selling at ₹300 but is expected to decline to ₹250 in case the funds are borrowed in excess of ₹20,00,000. The funds can be borrowed at the rate of 12% upto ₹5,00,000, at 10% over ₹5,00,000. The tax rate applicable to the company is 25%. Which form of financing should company choose? **[Nov 2018]**

[**Sol.** ₹47; ₹59.25]

21. *RM* Steels Limited requires ₹10,00,000 for construction of a new plant. It is considering three financial plans: **[May 2019]**

(i) The company may issue 1,00,000 ordinary shares at ₹10 per share;

(ii) The company may issue 50,000 ordinary shares at ₹10 per share and 5,000 debentures of ₹100 denominations bearing at 8% rate of interest; and

(iii) The company may issue 50,000 ordinary shares at ₹10 per share and 5,000 preference shares at ₹100 per share bearing a 8% rate of dividend.

If RM Steels Limited's earnings before interest and taxes are ₹20,000; ₹40,000; ₹80,000; ₹1,20,000 and ₹2,00,000, you are required to compute the earnings per share under each of the three financial plans? Which alternative would you recommend for RM Steels and why? Tax rate is 50%.

[**Sol.** Plan (i) - ₹0.10, ₹0.20, ₹0.40, ₹0.60, ₹1; Plan (ii) - ₹(0.20), Nil, ₹0.40, ₹0.80, ₹1.60; Plan (iii) - ₹(0.60), ₹(0.40), Nil, ₹0.40, ₹1.20]

22. Earnings before interest and tax of a company are ₹4,50,000. Currently the company has 80,000 Equity shares of ₹10 each, retained earnings of ₹12,00,000. It pays annual interest of ₹1,20,000 on 12% Debentures. The company proposes to take up an expansion scheme for which it needs additional fund of ₹6,00,000. It is anticipated that after expansion, the company will be able to achieve the same return on investment as at present. It can raise fund either through debts at rate of 12% p.a. or by issuing Equity shares at par. Tax rate is 40%.

Required to compute the earning per share if:

(i) The additional funds were raised through debts.

(ii) The additional funds were raised by issue of Equity shares.

Advise whether the company should go for expansion plan and which sources of finance should be preferred. **[Dec 2021]**

[**Sol.** *EPS* - ₹2.610; ₹1.800]

23. The particulars relating to Raj Ltd. for the year ended 31st March, 2022 are given as follows:

Output (units at normal capacity)	1,00,000
Selling price per unit	₹40
Variable cost per unit	₹20
Fixed cost	₹10,00,000

The capital structure of a company as on 31st March, 2022 is as follows:

Particulars	Amount in ₹
Equity share capital (1,00,000 shares of ₹10 each)	10,00,000
Reserve and surplus	5,00,000
Current liabilities	5,00,000
Total:	20,00,000

Raj Ltd. has decided to undertake an expansion project to use the market potential that will involve ₹20 lakhs. The company expects an increase in output by 50%. Fixed cost will be increase by ₹5,00,000 and variable cost per unit will be decreased by 15%. The additional output can be sold at existing selling price without any adverse impact on the market. **[May 2022]**

The following alternative schemes for financing the proposed expansion program are planned:

(Amount in ₹)

Alternative	Debt	Equity Shares
1	5,00,000	Balance
2	10,00,000	Balance
3	14,00,000	Balance

Current market price per share is ₹200.

Slab wise interest rate for fund borrowed is as follows:

Fund Limit	Applicable interest rate
Up-to ₹5,00,000	10%
Over ₹5,00,000 and up-to ₹10,00,000	15%
Over ₹10,00,000	20%

Find out which of the above-mentioned alternatives would you recommend for Raj Ltd. with reference to the *EPS*, assuming a corporate tax rate is 40%?

[Sol. ₹10.60; ₹10.43; 9.87]

24. The following information pertains to CIZA Ltd.: **[May 2023]**

Capital Structure:	₹d
Capital Structure:	
Equity share capital (₹10 each)	8,00,000
Retained earnings	20,00,000
9% Preference share capital (₹100 each)	12,00,000
12% Long-term loan	10,00,000
Interest coverage ratio	8
Income tax rate	30%
Price – earnings ratio	25

The company is proposed to take up an expansion plan, which requires an additional investment of 34,50,000. Due to this proposed expansion, earnings before interest and taxes of the company will increase by 6,15,000 per annum. The additional fund can be raised in following manner:

- By issue of equity shares at present market price, or
- By borrowing 16% Long-term loans from bank.

You are informed that Debt-equity ratio (Debt/Shareholders' fund) in the range of 50% to 80% will bring down the price-earnings ratio to 22 whereas; Debt-equity ratio over 80% will bring down the price-earnings ratio to 18.

Required:

Advise which option is most suitable to raise additional capital so that the Market Price per Share (*MPS*) is maximized.

[Sol. MPS – ₹221; ₹117.90]

25. CALCULATE the level of earnings before interest and tax (*EBIT*) at which the *EPS* indifference point between the following financing alternatives will occur. **[RTP May 2020]**

(*i*) Equity share capital of ₹60,00,000 and 12% debentures of ₹40,00,000.

(*ii*) Equity share capital of ₹40,00,000, 14% preference share capital of ₹20,00,000 and 12% debentures of ₹40,00,000.

Assume the corporate tax rate is 35% and par value of equity share is ₹100 in each case.

[Sol. ₹17,72,308]

26. SK Ltd. is setting up a project with a capital outlay of ₹60,00,000. It has two alternatives in financing the project cost. **[SM]**

Alternative I: 100% equity finance by issuing equity shares of ₹10 each.

Alternative II: Debt-equity ratio 2:1 (issuing equity shares of ₹10 each)

The rate of interest payable on the debt is 18% p.a. The corporate tax rate is 40%. Calculate the indifference point between the two alternative methods of financing.

[Sol. ₹10,80,000]

27. *SK* Ltd. is considering a new project which requires a capital investment of ₹9 crores. Interest on term loan is 12% and corporate tax rate is 30%. Calculate the point of indifference for the project considering the Debt Equity ratio insisted by the financing agencies being 2 : 1. **[SM]**

[**Sol.** ₹1,08,00,000]

28. Sun Ltd. is considering two financing plans: Details of which are as under: **[May 2018]**

(i) Fund's requirement – ₹100 lakhs

(ii) Financial Plan

Plan	Equity	Debt
I	100%	-
II	25%	75%

(iii) Cost of debt – 12% p.a.

(iv) Tax rate – 30%

(v) Equity share of ₹10 each, issued at a premium of ₹15 per share

(vi) Expected earnings before interest and taxes (EBIT) ₹40 lakhs

You are required to compute:

(*a*) *EPS* in each of the two plans

(*b*) The financial break-even point

(*c*) Indifference point between Plan I and Plan II

[**Sol.** (*a*) ₹7; ₹21.70; (*b*) ₹0; ₹9,00,000; (*c*) ₹12,00,000]

29. Current Capital Structure of XYZ Ltd is as follows:

Equity share capital of 7 lakh shares of face value ₹20 each

Reserves of ₹10,00,000

9% bonds of ₹3,00,00,000

11% preference capital; 3,00,000 shares of face value ₹50 each

Additional funds required for XYZ Ltd are ₹5,00,00,000.

XYZ Ltd is evaluating the following alternatives: **[RTP May 2023]**

I. **Proposed alternative:** Raise the funds via 25% equity capital and 75% debt at 10%. PE Ratio in such scenario would be 12.

II. **Proposed alternative:** Raise the funds via 50% equity capital and rest from 12% Preference capital. PE Ratio in such scenario would be 11.

Any new equity capital would be issued at a face value of ₹20 each. Any new preferential capital would be issued at a face value of ₹20 each. Tax rate is 34%.

Determine the indifference point under both the alternatives.

[**Sol.** Indifference point = ₹72,63,636.36]

30. SK Ltd. is considering two alternative financing plans as follows: **[SM]**

Particulars	Plan – A (₹)	Plan – B (₹)
Equity shares of ₹10 each	8,00,000	8,00,000
Preference Shares of ₹100 each	–	4,00,000

Particulars	Plan – A (₹)	Plan – B (₹)
12% Debentures	4,00,000	–
	12,00,000	12,00,000

The indifference point between the plans is ₹4,80,000. Corporate tax rate is 30%. Calculate the rate of dividend on preference shares.

[**Sol.** 8.40%]

31. SK Limited presently has ₹36,00,000 in debt outstanding bearing an interest rate of 10 percent. It wishes to finance a ₹40,00,000 expansion programme and is considering three alternatives; additional debt at 12 percent interest, preference shares with an 11 percent dividend, and the issue of equity shares at ₹16 per share. The company presently has 8,00,000 shares outstanding and is in a 40 percent tax bracket. **[SM]**

(*a*) If earning before interest and taxes are presently ₹15,00,000. Determine earnings per share for the three alternatives, assuming no immediate increase in profitability.

(*b*) Analyse which alternatives do you prefer. Compute how much would EBIT need to increase before the next alternative would be best.

[**Sol.** (*a*) ₹0.495, ₹0.305, ₹0.651; (*b*) ₹23,76,000]

32. SK Ltd. has EBIT of ₹1,00,000. The company make use of debt and equity capital. The firm has 10% debentures of ₹5,00,000 and the firm's equity capitalization rate is 15%. **[SM]**

You are required to calculate:

(*a*) Current value of the firm

(*b*) Overall cost of capital

(*c*) Find value of firm and overall cost of capital if firm increases debt by ₹2,00,000

[**Sol.** (*a*) ₹8,33,333; (*b*) 12%; (*c*) ₹9,00,000; 11.11%]

33. Following data is available in respect of two companies having same business risk: **[SM]**

Capital employed = ₹2,00,000; EBIT = ₹30,000; Ke = 12.5%

Sources	Levered Company (₹)	Unlevered Company (₹)
Debt (@10%)	1,00,000	NIL
Equity	1,00,000	2,00,000

Investor is holding 15% shares in levered company. Calculate increase in annual earnings of investor if he switches his holding from levered to unlevered company.

[**Sol.** ₹375]

34. Following data is available in respect of two companies having same business risk: **[SM]**

Capital employed = ₹2,00,000; EBIT = ₹30,000

Sources	Levered Company (₹)	Unlevered Company (₹)
Debt (@10%)	1,00,000	NIL
Equity	1,00,000	2,00,000
Ke	20%	12.5%

Investor is holding 15% shares in Unlevered company. Calculate increase in annual earnings of investor. If he switches his holding from Unlevered to Levered company.

[Sol. ₹900]

35. Determine the optimal capital structure of a company from the following information: **[SM]**

Options	Cost of Debt (Kd) in %	Cost of Equity (Ke) in %	Percentage of Debt on total value (Debt + Equity)
1	11.0	13.0	0.0
2	11.0	13.0	0.1
3	11.6	14.0	0.2
4	12.0	15.0	0.3
5	13.0	16.0	0.4
6	15.0	18.0	0.5
7	18.0	20.0	0.6

[Sol. 13%; 12.80%; 13.52%; 14.10%; 14.80%; 16.50%; 18.80%]

36. SK Ltd.'s operating income (*EBIT*) is ₹5,00,000. The firm's cost of debt is 10% and currently the firm employs ₹15,00,000 of debt. The overall cost of capital of the firm is 15%. You are required to calculate: **[SM]**

(*a*) Total value of the firm (*b*) Cost of Equity

[Sol. (*a*) ₹33,33,333; (*b*) 19.09%

37. SK Ltd. has a net operating income of ₹21,60,000 and the total capitalization of ₹120 lakhs. The company is evaluating the options to introduce debt financing in the capital structure and the following information is available at various levels of debt value. **[SM]**

Debt Value (₹)	Interest rate (%)	Equity Capitalization rate (%)
0	NA	12.00
10,00,000	7.00	12.50
20,00,000	7.00	13.00
30,00,000	7.50	13.50
40,00,000	7.50	14.00
50,00,000	8.00	15.00
60,00,000	8.50	16.00
70,00,000	9.00	17.00
80,00,000	10.00	20.00

You are required to compute the equity capitalization rate if MM approach is followed. Assume that the firm operates in zero tax regime and calculations to be based on book values.

[Sol. 18%; 19%; 20.20%; 21.50%; 23.25%; 25.14%; 27.50%; 30.60%; 34%]

38. One-third of the total market value of SK Ltd. consists of loan stock, which has a cost of 10 percent. Another company MK Ltd., is identical in every respect to SK Ltd., except that its capital structure is all-equity, and its cost of equity is 16 percent. According to Modigliani and Miller, if we ignored taxation and tax relief on debt capital, compute the cost of equity of SK Ltd. **[SM]**

[Sol. 19%]

39. The following are the costs and value for the firms A and B according to the traditional approach.

Particulars	Firm A	Firm B
Total value of firm, V (in ₹)	50,000	60,000
Market value of debt, D (in ₹)	0	30,000
Market value of equity, E (in ₹)	50,000	30,000
Expected net operating income (in ₹)	5,000	5,000
Cost of debt (in ₹)	0	1,800
Net income (in ₹)	5,000	3,200
Cost of equity, Ke = NI/E	10.00%	10.70%

(*a*) Compute the Equilibrium value for the firm A and B in accordance with the MM approach. Assume that (i) taxes do not exist and (ii) the equilibrium value of Ke is 9.09%.

(*b*) Compute value of equity and cost of equity for both the firms. **[Nov 2022]**

[**Sol.** (*a*) ₹55,005.50; ₹55,005.50; (*b*) ₹55,005.50; 9.09%; ₹25,005.50; 12.80%]

40. Rounak Ltd. is an all equity financed company with a market value of ₹25,00,000 and cost of equity (Ke) 21%. The company wants to buyback equity shares worth ₹5,00,000 by issuing and raising 15% perpetual debt of the same amount. Rate of tax may be taken as 30%. After the capital restructuring and applying MM model (with taxes), you are required to COMPUTE:

(*a*) Market value of the company **[RTP Nov 2018]**

(*b*) Cost of equity

(*c*) Weighted average cost of capital (using market weights) and comment on it.

[**Sol.** (*a*) ₹26,50,000; (*b*) 21.98%; (*c*) 19.80%]

41. The following particulars relating to SK Ltd. for the year ended 31st March 2022 is given: **[SM]**

Output	1,00,000 units at normal capacity
Selling price per unit	₹40
Variable cost per unit	₹20
Fixed cost	₹10,00,000

The capital structure of the company as on 31st March, 2022 is as follows:

Particulars	₹
Equity share capital (1,00,000 shares of ₹10 each)	10,00,000
Reserve and Surplus	5,00,000
7% debentures	10,00,000
Current liabilities	5,00,000
Total	**30,00,000**

SK Ltd. has decided to undertake an expansion project to use the market potential, that will involve ₹10 lakhs. The company expects an increase in output by 50%. Fixed cost will be increase by ₹5,00,000 and variable cost per unit will be decreased by 10%. The additional output can be sold at the existing selling price without any adverse impact on the market.

The following alternatives schemes for financing the proposed expansion programme are planned:

(i) Entirely by equity shares of ₹10 each at par.

(ii) ₹5 lakh by issue of equity shares of ₹10 each and the balance by issue of 6% debentures of ₹100 each at par.

(iii) Entirely by 6% debentures of ₹100 each at par.

Find out which of the above-mentioned alternatives would you recommend for SK Ltd. with reference to the risk and return involved, assuming a corporate tax of 40%.

[**Sol.** EPS - ₹5.19; ₹6.80; ₹10.20; DCL – 1.91; 1.94; 1.98]

42. Kalyanam Ltd. has an operating profit of ₹34,50,000 and has employed Debt which gives total Interest Charge of ₹7,50,000. The firm has an existing cost of equity and cost of debt as 16% and 8% respectively. The firm has a new proposal before it, which requires funds of ₹75 lakhs and is expected to bring an additional profit of ₹14,25,000. To finance the proposal, the firm is expecting to issue an additional debt at 8% and will not be issuing any new equity shares in the market. Assume no tax culture. **[SM]**

You are required to calculate the Weighted Average Cost of capital (WACC) of Kalyanam Ltd:

(*a*) Before the new proposal (*b*) After the new proposal

[**Sol.** (*a*) 13.15%; (*b*) 14.45%]

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19. **EPS under alternative financing plans:**

Particulars	Equity Financing (₹)	Debt Financing (₹)	Preference Financing (₹)
EBIT	3,12,500	3,12,500	3,12,500
Less: Interest	0	20,000	0
PBT	3,12,500	2,92,500	3,12,500
Less: Taxes	1,56,250	1,46,250	1,56,250
PAT	1,56,250	1,46,250	1,56,250
Less: Preference dividend	0	0	20,000
Earnings available to ordinary shareholders	1,56,250	1,46,250	136,250
Shares outstanding	1,25,000	1,00,000	1,00,000
EPS	1.25	1.46	1.36

20.

Particulars	Option A	Option B
Fund from Equity	45,00,000	30,00,000
Fund from Debt	5,00,000	20,00,000

Particulars	Option A	Option B
EBIT	10,00,000	10,00,000
Less: Interest	60,000 [5,00,000×12%]	2,10,000 [(5,00,000×12%) + (15,00,000×10%)]
EBT	9,40,000	7,90,000
Less: Tax @ 25%	2,35,000	1,97,500
EAT/EAE (A)	7,05,000	5,92,500
No. of Equity Shares (B)	15,000 [45,00,000÷300]	10,000 [30,00,000÷300]
EPS (A ÷ B)	**47**	**59.25**

Financing Option B i.e. raising debt of ₹20,00,000 and equity of ₹30,00,000 is the option which maximizes the earning per share.

21.

Computation of EPS under (i) Plan

Particulars	₹	₹	₹	₹	₹
EBIT	20,000	40,000	80,000	1,20,000	2,00,000
Less: Interest	–	–	–	–	–
EBT	20,000	40,000	80,000	1,20,000	2,00,000
Less: Tax @ 50%	10,000	20,000	40,000	60,000	1,00,000
EAT	10,000	20,000	40,000	60,000	1,00,000
Less: Pref. Dividend	–	–	–	–	–
EAE	10,000	20,000	40,000	60,000	1,00,000
No. of Equity Shares	1,00,000	1,00,000	1,00,000	1,00,000	1,00,000
EPS	0.10	0.20	0.40	0.60	1

Computation of EPS under (ii) Plan

Particulars	₹	₹	₹	₹	₹
EBIT	20,000	40,000	80,000	1,20,000	2,00,000
Less: Interest	40,000	40,000	40,000	40,000	40,000
EBT	(20,000)	–	40,000	80,000	1,60,000
Less: Tax @ 50%	10,000*	–	20,000	40,000	80,000
EAT	(10,000)	–	20,000	40,000	80,000
Less: Pref. Dividend	–	–	–	–	–
EAE	(10,000)	–	20,000	40,000	80,000
No. of Equity Shares	50,000	50,000	50,000	50,000	50,000
EPS	(0.20)	–	0.40	0.80	1.60

*Assuming tax saving due to this loss

Computation of EPS under (iii) Plan

Particulars	₹	₹	₹	₹	₹
EBIT	20,000	40,000	80,000	1,20,000	2,00,000
Less: Interest	–	–	–	–	–
EBT	20,000	40,000	80,000	1,20,000	2,00,000
Less: Tax @ 50%	10,000	20,000	40,000	60,000	1,00,000
EAT	10,000	20,000	40,000	60,000	1,00,000
Less: Pref. Dividend	40,000*	40,000	40,000	40,000	40,000
EAE	(30,000)	(20,000)	–	20,000	60,000
No. of Equity Shares	50,000	50,000	50,000	50,000	50,000
EPS	(0.60)	(0.40)	–	0.40	1.20

*Assuming cumulative preference shares so dividend has to be paid to them.

From the above *EPS* calculation tables under the three financial plans we can see that when EBIT is ₹80,000 or more, Plan (ii) i.e. Debt-equity mix is preferable over the other plans as the *EPS* is more under it.

On the other hand, EBIT of less than ₹80,000 or less, Plan (i) i.e. equity financing is preferable over the other plans as the *EPS* is more under it.

The final choice of plan will depend on the performance of the company and other macro-economic conditions.

22. Existing capital employed = Equity + Retained Earnings + Debentures

= (80,000 ×10) + 12,00,000 + (1,20,000 ÷ 12%) = ₹30,00,000

Capital employed after expansion = 30,00,000 + 6,00,000 = ₹36,00,000

$$\text{New EBIT} = \frac{\text{Existing EBIT}}{\text{Existing Capital}} \times \text{New Capital} = \frac{4,50,000}{30,00,000} \times 36,00,000 = ₹5,40,000$$

Statement of EPS

Particulars	Existing	Additional fund as debt	Additional fund as equity
EBIT	4,50,000	5,40,000	5,40,000
Less: Interest			
– Existing Debt	1,20,000	1,20,000	1,20,000
– New Debt	–	72,000	–
EBT	3,30,000	3,48,000	4,20,000
Less: Tax @ 40%	1,32,000	1,39,200	1,68,000
EAT/EAE (A)	1,98,000	2,08,800	2,52,000
No. of Equity shares (B)	80,000	80,000	1,40,000
EPS (A ÷ B)	2.475	2.610	1.800

EPS is higher when the additional funds are raised through debt, thus it is the recommended option for the company.

23. **Calculation of EBIT**

Particulars	Existing	Proposed
Sale units	1,00,000	1,50,000
Contribution per unit	40 – 20 = 20	40 – (20×85%) = 23
Total contribution	20,00,000	34,50,000
Less: Fixed cost	10,00,000	15,00,000
EBIT	10,00,000	19,50,000

Statement of EPS

Particulars	Existing	Alternative – 1	Alternative – 2	Alternative – 3
EBIT	10,00,000	19,50,000	19,50,000	2,05,000
Less: Interest	–	50,000 (5,00,000 × 10%)	1,25,000 [(5lakh×10%) + (5lakh×15%)]	[(5lakh×10%) + (5lakh×15%) + (4lakh×20%)]
EBT	10,00,000	19,00,000	18,25,000	17,45,000
Less: Tax @ 40%	4,00,000	7,60,000	7,30,000	6,98,000
EAT / EAE (A)	6,00,000	11,40,000	10,95,000	10,47,000
No. of Equity Shares				
Existing	1,00,000	1,00,000	1,00,000	1,00,000
New	–	15,00,00 ÷ 200 = 7,500	10,00,00 ÷ 200 = 5,000	6,00,000 ÷ 200 = 3,000
Total Equity Shares (B)		1,07,500	1,05,000	1,03,000
EPS (A ÷ B)	6.00	10.60	10.43	10.17

Since, Alternative – 1 has highest *EPS*, thus it is recommended to raise funds in combination of debt of ₹5,00,000 and balance ₹15,00,000 from equity.

24. Working notes:

(*a*) Interest coverage ratio = 8

$$\frac{\text{EBIT}}{\text{Interest}} = 8$$

EBIT = 8 × 1,20,000 = ₹9,60,000

(*b*) Proposed EBIT = 9,60,000 + 6,15,000 = 15,75,000

(*c*) **Option – 1**

Debt = ₹10,00,000

Shareholder's fund = 8,00,000 + 20,00,000 + 12,00,000 + 34,50,000 = ₹74,50,000

$$\text{Debt equity ratio} = \frac{\text{Debt}}{\text{Shareholder's fund}} = \frac{10,00,000}{74,50,000} = 0.1342 = 13.42\%$$

PE Ratio in this case will be 25 times.

(*d*) **Option – 2**

Debt = 10,00,000 + 34,50,000 = ₹44,50,000

Shareholder's fund = 8,00,000 + 20,00,000 + 12,00,000 = ₹40,00,000

$$\text{Debt equity ratio} = \frac{\text{Debt}}{\text{Shareholder's fund}} = \frac{44,50,000}{40,00,000} = 1.1125 = 111.25\%$$

PE Ratio in this case will remain at 18 times

$$\text{New number of equity shares to be issued} = \frac{34,50,000}{150} = 23,000$$

(*e*) Calculation of Existing EPS and *MPS*

Particulars	₹
Current EBIT	9,60,000
(–) Interest	1,20,000
EBT	8,40,000
(–) Tax	2,52,000
EAT	5,88,000
(–) Preference dividend (12,00,000 × 9%)	1,08,000
Net earnings for equity	4,80,000
Number of equity shares	80,000
EPS	6
PE Ratio	25
MPS	150

Calculation of EPS and MPS under two financial options

Particulars	Option – 1	Option – 2
	Equity shares issued	16% long term debt
EBIT	15,75,000	15,75,000
(–) Interest on 12% debentures	1,20,000	1,20,000
(–) Interest on 16% debt	–	5,52,000
EBT	14,55,000	9,03,000
(–) Taxes @ 30%	4,36,500	2,70,900
EAT	10,18,500	6,32,100
(–) Preference dividend	1,08,000	1,08,000
Net earnings for equity	9,10,500	5,24,100
Number of equity shares	1,03,000	80,000
EPS	8.84	6.55
PE Ratio	25	18
MPS	221	117.90

Equity option has higher market price per share therefore company should raise additional fund through equity option.

25. Indifference level between two given plans is given as below:

EPS of (i) = EPS of (ii)

$$\frac{[EBIT-(40,00,000\times12\%)](1-0.35)}{60,000}=\frac{[EBIT-(40,00,000\times12\%)](1-0.35)-(20,00,000\times14\%)}{40,000}$$

$$\frac{0.65(EBIT)-3,12,000}{3}=\frac{0.65(EBIT)-5,92,000}{2}$$

$1.30(EBIT) - 6,24,000 = 1.95(EBIT) - 17,76,000$

EBIT = ₹17,72,308

26. Alternative-I By issue of 6,00,000 equity shares of ₹10 each amounting to ₹60 lakhs. No financial charges are involved.

Alternative-II By raising the funds in the following way:

debt = ₹40 Lakhs Equity = ₹20 Lakhs (2, 00, 000 equity shares of ₹10 each] Interest Payable on

$$\text{debt} = 40,00,000\times\frac{18}{100}=₹7,20,000$$

The indifference point between the two alternatives is calculated by:

$$\frac{(EBIT-I_1)(1-T)}{E_1}=\frac{(EBIT-I_2)(1-T)}{E_2}$$

$$\frac{(EBIT-0)(1-0.40}{6,00,000}=\frac{(EBIT-7,20,000\ (1-0.40)}{2,00,000}$$

$$\frac{(EBIT)(0.60)}{6,00,000}=\frac{(EBIT-7,20,000)(0.60)}{2,00,000}$$

$$\frac{EBIT(0.60)}{3}=\frac{0.60(EBIT-7,20,000)}{1}$$

EBIT = 3(EBIT] - 21,60,000

$$EBIT=\frac{21,60,000}{2}=10,80,000$$

Therefore, at EBIT of ₹10,80,000 earnings per share for the two alternatives is equal.

27. The capital investment can be financed in two ways i.e.

(i) By issuing equity shares only worth ₹9 crore or

(ii) By raising capital through taking a term loan of ₹6 crores and ₹3 crores through issuing equity shares (as the company has to comply with the 2 : 1 Debt Equity ratio insisted by financing agencies).

In first option interest will be Zero and in second option the interest will be ₹72, 00, 000

Point of Indifference between the above two alternatives

$$\frac{EBIT\times(1-t)}{\text{No. of equity shares}(N_1)}=\frac{(EBIT-\text{Interest})\times(1-t)}{\text{No. of equity shares}(N_2)}$$

$$\text{Or } \frac{\text{EBIT}(1-0.30)}{90,00,000\text{ shares}} = \frac{(\text{EBIT} - ₹72,00,000)\times(1-0.30)}{30,00,000\text{shares}}$$

Or 0.7 EBIT = 2 1EBIT – ₹1, 51, 20, 000

EBIT = ₹1, 08, 00, 000

EBIT at point of Indifference will be ₹1.08 crore.

(The face value of the equity shares is assumed as ₹10 per share. However, indifference point will be same irrespective of face value per share).

28. (*a*) Computation of EPS

Particulars	Plan-I	Plan-II
EBIT	40,00,000	40,00,000
Less: Interest	–	9,00,000 (75,00,000×12%)
EBT	40,00,000	31,00,000
Less: Tax @ 30%	12,00,000	9,30,000
EAT/EAE (A)	28,00,000	21,70,000
No. of Equity Shares (B)	4,00,000 [100,00,000÷25]	1,00,000 [25,00,000÷25]
EPS **(A ÷ B)**	7	21.70

(*b*) Computation of Financial Break-even Point

$$\text{Plan I} = \text{Interest} + \frac{\text{Preference Dividend}}{(1-t)} = 0 + 0 = ₹0$$

$$\text{Plan II} = \text{Interest} + \frac{\text{Preference Dividend}}{(1-t)} = 9,00,000 + 0 = ₹9,00,000$$

(*c*) Computation of Indifference Point

$$\frac{(\text{EBIT} - \text{Int})(1-t) - \text{PD}}{\text{No.of shares}} = \frac{(\text{EBIT} - \text{Int})(1-t) - \text{PD}}{\text{No. of shares}}$$

$$\frac{(\text{EBIT} - 0)(1 - 0.30) - 0}{4,00,000} = \frac{(\text{EBIT} - 9,00,000)(1-0.30) - 0}{1,00,000}$$

$$\frac{(0.70)\text{EBIT}}{4} = \frac{(0.70)\text{EBIT} - 6,30,000}{1}$$

(0.70)EBIT = (2.80)EBIT – 25,20,000

(0.21)EBIT = 25,20,000

EBIT = ₹12,00,000

29. Proposed Capital Structure

Capital	Proposal-I	Proposal-II
Equity	1,25,00,000 (5,00,00,000 × 25%)	2,50,00,000 (5,00,00,000 × 50%)

Capital	Proposal-I	Proposal-II
Debt @10%	3,75,00,000 (5,00,00,000 × 75%)	–
12% Preference shares	–	2,50,00,000 (5,00,00,000 × 50%)

Total Capital Structure (including new proposal)

Capital	Proposal-I	Proposal-II
Equity	(7,00,000 × 20) + 1,25,00,000 = 2,65,00,000	(7,00,000 × 20) + 2,50,00,000 = 3,90,00,000
Reserves	10,00,000	10,00,000
9% Bonds	3,00,00,000	3,00,00,000
10% Debt	3,75,00,000	–
11% Preference Shares	1,50,00,000	–
12% Preference Shares	–	2,50,00,000
Total	**11,00,00,000**	**11,00,00,000**

Let Indifference point be ₹y.

$$EPS \text{ of Proposal I} = \frac{[y - \{(3,00,00,000 \times 9\%) + (3,75,00,000 \times 10\%)\}(1 - 0.34) - (1,50,00,000 \times 11\%)}{[7,00,000 + (1,25,00,000 \div 20)]}$$

$$= \frac{(y - 64,50,000)(0.66) - 16,50,000}{13,25,000}$$

$$EPS \text{ of Proposal II} = \frac{[y - (3,00,00,000 \times 9\%)](1 - 0.34) - (2,50,00,000 \times 12\%)}{[7,00,000 + (2,50,00,000 \div 20]}$$

$$= \frac{(y - 27,00,000)(0.66) - 46,50,000}{19,50,000}$$

For calculation of indifference point,

$$\frac{(y - 64,50,000)(0.66) - 16,50,000}{13,25,000} = \frac{(y - 27,00,000)(0.66) - 46,50,000}{19,50,000}$$

$$\frac{0.66(y) - 42,57,000 - 16,50,000}{1,325} = \frac{(y)(0.66) - 17,82,000 - 46,50,000}{1,950}$$

$$\frac{0.66(y) - 59,07,000}{1,325} = \frac{(y)(0.66) - 64,32,000}{1,950}$$

$$(1,287)y - 11,51,86,50,000 = (874.50)y - 8,52,24,00,000$$

$$(412.50)y = 2,99,62,50,000$$

$$y = ₹72,63,636.36$$

30. Computation of Rate of Preference Dividend

$$\frac{(\text{EBIT} - \text{Interest})(1 - t)}{\text{No. of Equity Shares}(N_1)} = \frac{\text{EBIT}(1 - t)(-)\text{ Preference Dividend}}{\text{No. of Equity Shares}(N_2)}$$

$$\frac{(₹4,80,000-₹48,000)\times(1-0.30)}{80,000 \text{ shares}} = \frac{₹4,80,000(1-0.30) - \text{Preference Dividend}}{80,000 \text{ shares}}$$

$$\frac{₹3,02,400}{80,000 \text{ shares}} = \frac{₹3,36,000 - \text{Preference Dividend}}{80,000 \text{ shares}}$$

₹3,02,400 = EBIT ₹3,36,000 – Preference Dividend

Preference Dividend = ₹3,36,000 – ₹3,02,400 = ₹33,600

$$\text{Rate of Dividend} = \frac{\text{Preference Dividend}}{\text{Preference share capital}} \times 100 = \frac{₹33,600}{4,00,000} \times 100 = 8.4\%$$

31. (*a*) Calculation of EPS

Particulars	Alternatives		
	Alternative-I: Take additional Debt	Alternative- II: Issue 11% Preference Shares	Alternative-III: Issue further Equity Shares
	(₹)	(₹)	(₹)
EBIT	15,00,000	15,00,000	15,00,000
Interest on Debts:			
– on existing debt @ 10%	(3,60,000)	(3,60,000)	(3,60,000)
– on new debt @12%	(4,80,000)	.....	.....
Profit before taxes	6,60,000	11,40,000	11,40,000
Taxes@ 40%	(2,64,000)	(4,56,000)	(4,56,000)
Profit after taxes	3,96,000	6,84,000	6,84,000
Preference shares dividend	.....	(4,40,000)	.....
Earnings available to equity Shareholders	3,96,000	2,44,000	6,84,000
Number of shares	8,00,000	8,00,000	10,50,000
Earnings per share	0.495	0.305	0.651

(*b*) For the present *EBIT* level, equity shares are clearly preferable. *EBIT* would need to increase by ₹23,76,000 – ₹15,00,000 = ₹8,76,000 before an indifference point with debt is reached. One would want to be comfortably above this indifference point before a strong case for debt should be made. The lower the probability that actual EBIT will fall below the indifference point, the stronger the case that can be made for debt, all other things remain the same.

Working Note:

Calculation of indifference point between debt and equity shares -

$$\frac{\text{EBIT} - ₹8,40,000}{8,00,000} = \frac{\text{EBIT} - ₹3,60,000}{10,50,000}$$

$$\frac{\text{EBIT} - ₹8,40,000}{80} = \frac{\text{EBIT} - ₹3,60,000}{105}$$

$(EBIT - 8,40,000)(105) = (EBIT - 3,60,000)(80)$

$(105)EBIT - 8,82,00,000 = (80)(EBIT) - 2,88,00,000$

$(25)(EBIT) = 5,94,00,000$

$$EBIT = \frac{5,94,00,000}{25} = ₹23,76,000$$

32. (i) Calculation of total value of the firm

$$\text{Value of equity } (S) = \frac{\text{Earnings available for equity holders}}{K_e} = \frac{(1,00,000 - 50,000)}{0.15} = 3,33,333$$

Value of Debt (D) (given) = ₹5, 00, 000

Total value of the firm (V) = D + S = 5,00,000 + 3,33,333 = ₹8,33,333

(ii) $$\text{Overall cost of capital}(K_o) = K_e\left(\frac{S}{V}\right) + K_d\left(\frac{D}{V}\right) = 0.15\left(\frac{₹3,33,333}{₹8,33,333}\right) + 0.10\left(\frac{₹5,00,000}{₹8,33,333}\right) = 12.00\%$$

$$\text{Or, } K_0 = \frac{EBIT}{V} = \frac{₹1,00,000}{₹8,33,333} = 12.00\%$$

(iii) Value of debt $(D) = ₹5,00,000 + ₹2,00,000 = ₹7,00,000$

$$\text{Value of equity } (S) = \frac{\text{Earnings available for equity holders}}{K_e} = \frac{(1,00,000 - 70,000)}{0.15} = ₹2,00,000$$

Total value of the firm (V) = D + S = 7,00,000 + 2,00,000 = ₹9,00,000

$$\text{Overall cost of capital}(K_o) = K_e\left(\frac{S}{V}\right) + K_d\left(\frac{D}{V}\right) = 0.15\left(\frac{₹2,00,000}{₹9,00,000}\right) + 0.10\left(\frac{₹7,00,000}{₹9,00,000}\right)$$

$= 11.11\%$

$$\text{or, } K_0 = \frac{EBIT}{V} = \frac{₹1,00,000}{₹9,00,000} = 11.11\%$$

33. 1. Valuation of firms

Particulars	Levered Firm (₹)	Unlevered Firm (₹)
EBIT	30,000	30,000
Less: Interest on debt (10% × ₹1,00,000)	10,000	Nil
Earnings available to Equity shareholders	20,000	30,000
K_e	12.5%	12.5%
Value of Equity (S). (Earnings available to Equity shareholders / K_e)	1,60,000	2,40,000
Debt (D)	1,00,000	Nil
Value of Firm (V) = S + D	2,60,000	2,40,000

Value of Levered company is more than that of unlevered company. Therefore, investor will sell his shares in levered company and buy shares in unlevered company. To maintain the level of risk he will borrow proportionate amount and invest that amount also in shares of unlevered company.

2. Investment & Borrowings

Sell shares in Levered company (₹1,60,000 × 15%)	24,000
Borrow money (₹1,00,000 × 15%)	15, 000
Buy shares in Unlevered company	39, 000

3. Change in Return

Income from shares in Unlevered company (₹39,000 × 12.5%)	4,875
Less: Interest on loan (₹15,000 × 10%)	1,500
Net Income from unlevered firm	3,375
Less: Income from Levered firm (₹24,000 × 12.5%)	3,000
Incremental Income due to arbitrage	375

34. 1. Valuation of firms

Particulars	Levered Firm (₹)	Unlevered Firm (₹)
EBIT	30,000	30,000
Less: Interest on debt (10% × ₹1,00,000)	10,000	Nil
Earnings available to Equity shareholders	20,000	30,000
K_e	20%	12.5%
Value of Equity (S) (Earnings available to Equity shareholders/Ke)	1,00,000	2,40,000
Debt (D)	1,00,000	Nil
Value of Firm (V) = S + D	2,00,000	2,40,000

Value of Unlevered company is more than that of Levered company therefore investor will sell his shares in Unlevered company and buy shares in Levered company. Market value of Debt and Equity of Levered company are in the ratio of ₹1, 00, 000 : ₹1,00,000 i.e. 1:1. To maintain the level of risk he will lend proportionate amount (50%) and invest balance amount (50%) in shares of Levered company.

2. Investment & Borrowings

Sell shares in Unlevered company (₹2,40,000 × 15%)	36, 000
Lend money (₹36, 000 × 50%)	18,000
Buy shares in Levered company (₹36,000 × 50%)	18, 000
Total	36, 000

3. Change in Return

	₹
Income from shares in Levered company (₹18,000 × 20%)	3,600
Interest on money lent (₹18,000 × 10%)	1,800
Total Income after switch over	5,400
Less: Income from Unlevered firm (₹36,000 × 12.5%)	45, 500
Incremental Income due to arbitrage	900

35. Note that the ratio given in this question is not debt to equity ratio. Rather it is the debt to total value ratio. Therefore, if the ratio is 0.6, it means that capital employed comprises 60% debt and 40% equity.

$$K_O = \frac{(K_d \times D) + (K_e \times S)}{D + S}$$

In this question total of weight is equal to 1 in all cases, hence we need not to divide by it.

$K_0 = (11\% \times 0) + (13\% \times 1) = 13.00\%$

$K_0 = (11\% \times 0.1) + (13\% \times 0.9) = 12.80\%$

$K_0 = (11.6\% \times 0.2) + (14\% \times 0.8) = 13.52\%$

$K_0 = (12\% \times 0.3) + (15\% \times 0.7) = 14.10\%$

$K_0 = (13\% \times 0.4) + (16\% \times 0.6) = 14.80\%$

$K_0 = (15\% \times 0.5) + (18\% \times 0.5) = 16.50\%$

$K_0 = (18\% \times 0.6) + (20\% \times 0.4) = 18.80\%$

Decision: 2nd option is the best because it has lowest WACC.

36. (i) Statement showing total value of the firm

	₹
Net operating income (EBIT)	5,00,000
Less: Interest on debentures (10% of ₹15,00,000)	1,50,000
Earnings available for equity holders	3,50,000
Total cost of capital (K_0) (given)	15%
Value of the firm $(V) = \frac{EBIT}{K_0} = \frac{₹5,00,000}{0.15}$	33,33,333

(ii) Calculation of cost of equity

Market value of debt (D) = ₹15,00,000

Market value of equity $(S) = V - D$ = ₹33,33,3333 – ₹15,00,000 = ₹18,33,333

$$K_e = \frac{EBIT - \text{Interest paid on debt}}{\text{Market value of equity}} = \frac{₹3,50,000}{₹18,33,333} = 19.09\%$$

or

$$K_0 = K_e\left(\frac{S}{V}\right) + K_d\left(\frac{D}{V}\right)$$

$$= K_0\left(\frac{V}{S}\right) - K_d\left(\frac{D}{S}\right) = 0.15\left(\frac{₹33,33,333}{₹18,33,333}\right) - 0.10\left(\frac{₹15,00,000}{₹18,33,333}\right) = 19.09\%$$

37. As per MM approach, cost of the capital (Ko) remains constant, and cost of equity increases linearly with debt.

$$\text{Value of a Firm} = \frac{NOI}{K_0}$$

$$\therefore 1,20,00,000 = \frac{21,60,000}{K_0}$$

$\therefore K_0 = \frac{21,60,000}{1,20,00,000} = 18\%$

Under MM approach, $K_e = K_0 + \frac{D}{E}(K_0 - K_d)$

Statement of equity capitalization under MM approach

Debt Value (₹)	Equity Value (₹)	Debt/ Equity	K_d (%)	K_0 (%)	$K_0 - K_d$ (%)	$K_e = K_0 + (K_0 - K_d)\left(\frac{D}{E}\right)$
–	1,20,00,000	0.0000	NA	18.00	18.00	18.00
10,00,000	1,10,00,000	0.0909	7.00	18.00	11.00	19.00
20,00,000	1,00,00,000	0.2000	7.00	18.00	11.00	20.20
30,00,000	90,00,000	0.3333	7.50	18.00	10.50	21.50
40,00,000	80,00,000	0.5000	7.50	18.00	10.50	23.25
50,00,000	70,00,000	0.7143	8.00	18.00	10.00	25.14
60,00,000	60,00,000	1.0000	8.50	18.00	9.50	27.50
70,00,000	50,00,000	1.4000	9.00	18.00	9.00	30.60
80,00,000	40,00,000	2.0000	10.00	18.00	8.00	34.00

38. Here we are assuming that MM Approach 1958: Without tax, where capital structure has no relevance with the value of company and accordingly overall cost of capital of both levered as well as unlevered company is same. Therefore, the two companies should have similar WACCs. Because SK Limited is all-equity financed, its WACC is the same as its cost of equity finance, i.e. 16 percent. It follows that SK Limited should have WACC equal to 16 percent also.

Therefore, Cost of equity in SK Ltd. (levered company) will be calculated as follows:

$K_o = \frac{2}{3} \times K_e + \frac{1}{3} \times K_d = 16\%$ (i.e. equal to WACC of SK Ltd.)

Or, $16\% = \frac{2}{3} \times K_e + \frac{1}{3} \times 10\%$ Or, Ke = 19

39. (*a*) As per MM Model, Ko = Keu = 9.09%

Statement of Value of Firms

Particulars	Firm A	Firm B
EBIT (₹)	5,000	5,000
Ko	9.09%	9.09%
Equilibrium value (₹)	$\frac{5,000}{9.09\%} = 55,005.50$	$\frac{5,000}{9.09\%} = 55,005.50$

(*b*) **Statement of value of Equity**

Particulars	Firm A	Firm B
Equilibrium value	55,005.50	55,005.50
(–) Value of debt	–	30,000
Value of equity	55,005.50	25,005.50

Cost of equity of Firm A (unlevered) = 9.09%

Cost of equity of Firm B (levered) $= \frac{\text{Net Income}}{\text{Value of equity}} \times 100 = \frac{3,200}{25,005.50} \times 100 = 12.80\%$

Or

Cost of equity of firm B = Ko + (Ko – Kd) $\left(\frac{\text{Debt}}{\text{Equity}}\right) = 9.09 + (9.09 - 6)\left(\frac{30,000}{25,005.50}\right) = 12.80\%$

Cost of debt (Kd) $= \frac{1,800}{30,000} \times 100 = 6\%$

40. Working Note:

$$\text{Market value of equity} = \frac{\text{Net Income(NI) for Equity Holders}}{\text{Ke}}$$

$$₹25,00,000 = \frac{\text{Net Income(NI) for Equity Holders}}{0.21}$$

Net Income for Equity Holders = 25,00,000 × 0.21 = ₹5,25,000

$$\text{EBIT} = \frac{5,25,000}{1 - 0.30} = ₹7,50,000$$

(₹in lakhs)

Particulars	All Equity	Debt and Equity
EBIT	7,50,000	7,50,000
(–) Interest	–	(75,000)
EBT	7,50,000	6,75,000
(–) Tax @ 30%	2,25,000	2,02,500
Income to shareholders	5,25,000	4,72,500

(*a*) Market value of company = Value of equity + Value of debt

= ₹25,00,000 + (5,00,000 × 0.30) = ₹26,50,000

The impact is that the market value of the company has increased by ₹1,50,000.

(*b*) $K_e = \frac{\text{Net income to equity holders}}{\text{Equity value}} = \frac{4,72,500}{26,50,000 - 5,00,000} = 0.219 = 21.98\%$

(*c*) $K_d = I \times (1 - t) = 15\% \times (1 - 0.30) = 10.5\%$

Weighted Average Cost of Capital (WACC)

Source (1)	Amount (2)	Weights (3)	Cost of capital (4)	Weighted Average Cost (5) = (3) × (4)
Equity	21,50,000	0.81	21.98	17.80
Debt	5,00,000	0.19	10.50	2.00
	26,50,000	1		19.80

Weighted Average Cost of Capital (WACC) = 19.80%

The impact is that WACC has fallen by 1.20% due to benefit of lower cost of capital of debt.

41. Statement showing Profitability of Alternative Schemes for Financing (₹in 00, 000)

Particulars	Existing	Alternative Schemes		
		(i)	(ii)	(iii)
Equity Share capital (existing)	10	10	10	10
New issues	–	10	5	–
Total	**10**	**20**	**15**	**10**
7% debentures	10	10	10	10
6% debentures	–	–	5	10
Total	**20**	**30**	**30**	**30**
Debenture interest (7%)	0.7	0.7	0.7	0.7
Debenture interest (6%)	–	–	0.3	0.6
Total	**0.7**	**0.7**	**1.0**	**1.3**
Output (units in lakh)	1	1.5	1.5	1.5
Contribution per. Unit (₹) (Selling price – Variable Cost)	20	22	22	22
Contribution (₹lakh)	20	33	33	33
Less: Fixed cost	10	15	15	15
EBIT	10	18	18	18
Less: Interest (as calculated above)	0.7	0.7	1.0	1.3
EBT	9.3	17.3	17	16.7
Less: Tax (40%)	3.72	6.92	6.8	6.68
EAT	5.58	10.38	10.20	10.02
Operating Leverage (Contribution /EBIT)	2.00	1.83	1.83	1.83
Financial Leverage (EBIT/EBT)	1.08	1.04	1.06	1.08
Combined Leverage (Contribution/EBT)	2.15	1.91	1.94	1.98
EPS (EAT/No. of shares) (₹)	5.58	5.19	6.80	10.02
Risk	–	Lowest	Lower than option (3)	Highest
Return	–	Lowest	Lower than option (3)	Highest

From the above figures, we can see that the Operating Leverage is same in all alternatives though Financial Leverage differs. Alternative (iii) uses the maximum amount of debt and result into the highest degree of financial leverage, followed by alternative (ii). Accordingly, risk of the company will be maximum in these options. Corresponding to this scheme, however, maximum EPS (i.e., ₹10.02 per share) will be also in option (iii).

So, if SK Ltd. is ready to take a high degree of risk, then alternative (iii) is strongly recommended. In case of opting for less risk, alternative (ii) is the next best option with a reduced EPS of ₹6.80 per share. In case of alternative (i), EPS is even lower than the existing option, hence not recommended.

42. (i) Value of Debt $= \frac{\text{Interest}}{\text{Cost of debt}(K_d)} = \frac{₹7,50,000}{0.08} = ₹93,75,000$

(ii) Value of equity capital $= \frac{\text{Operating profit} - \text{Interest}}{\text{Cost of equity}(K_e)} = \frac{₹34,50,000 - ₹7,50,000}{0.16}$

$= ₹1,68,75,000$

(iii) New Cost of equity (K_e) after proposal $= \frac{\text{Increased Operating profit} - \text{Interest on Increased debt}}{\text{Equity capital}}$

$= \frac{(₹34,50,000 + ₹14,25,000) - (₹7,50,000 + ₹6,00,000)}{₹1,68,75,000} = \frac{₹35,25,000}{₹1,68,75,000} = 0.209$ or 20.9%

(a) Calculation of Weighted Average Cost of Capital (WACC) before the new proposal

Sources	(₹)	Weight	Cost of Capital	WACC
Equity	1,68,75,000	0.6429	0.160	0.1029
Debt	93,75,000	0.3571	0.080	0.0286
Total	**2,62,50,000**	**1**		**0.1315 or 13.15%**

(b) Calculation of Weighted Average Cost of Capital (WACC) after the new proposal

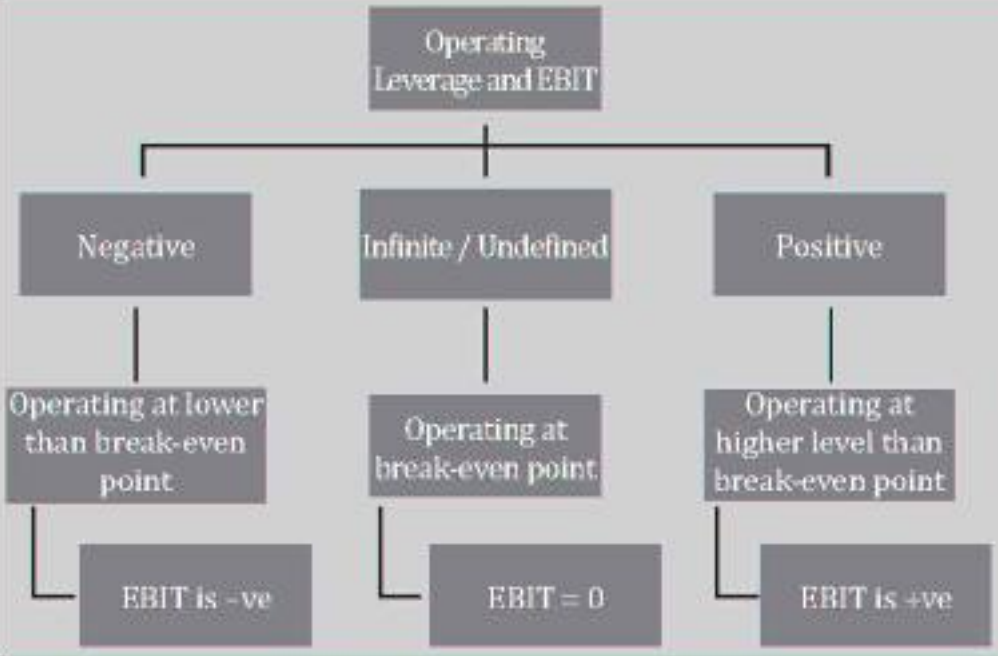
Sources	(₹)	Weight	Cost of Capital	WACC
Equity	1,68,75,000	0.5000	0.209	0.1045
Debt	1,68,75,000	0.5000	0.080	0.0400
Total	**3,37,50,000**	**1**		**0.1445 or 14.45%**

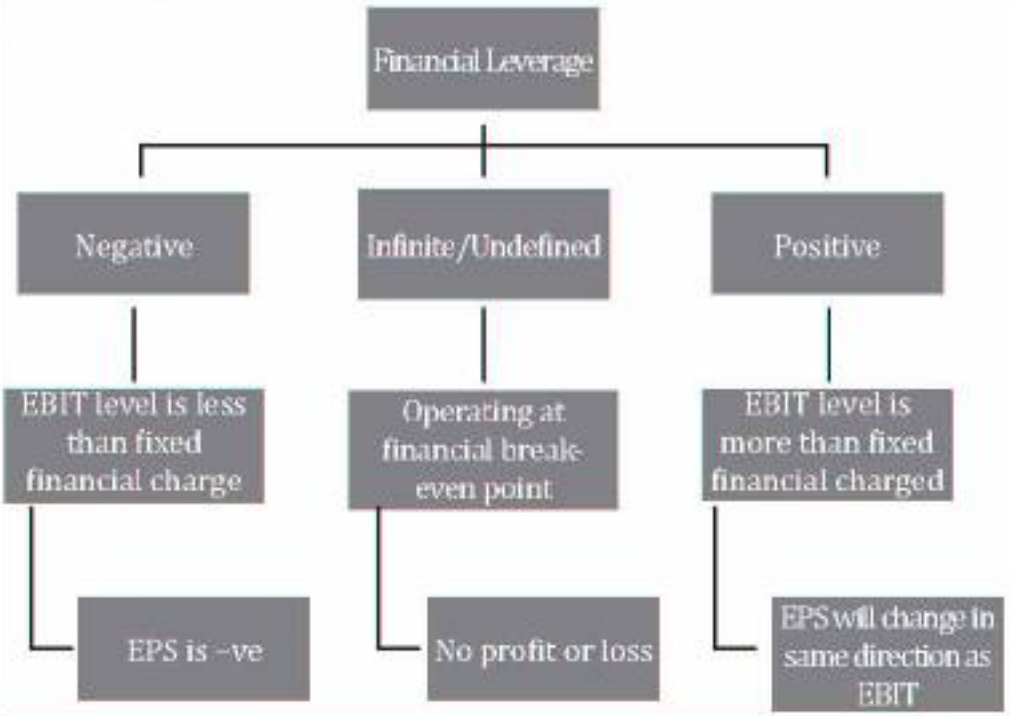
6 CHAPTER

Leverages

THEORY

Meaning of Leverage	❑ In financial analysis, leverage represents the influence of one financial variable over some other related financial variable. ❑ These financial variables may be costs, output, sales revenue, Earnings Before Interest and Tax (EBIT), Earning per share (EPS) etc.
Business Risk	❑ It refers to the risk associated with the firm's operations. This risk arises due to presence of fixed cost in the total cost. ❑ It is generally an unavoidable risk because a firm can't operate without incurring any fixed cost.
Financial Risk	❑ It refers to the risk associated with the firm's financing. This risk arises due to presence of interest and preference dividend. ❑ This risk can be avoided, if all the funds are raised from equity capital.
Operating Leverage	❑ It can be defined as the firm's ability to use fixed operating costs to magnify the effects of changes in sales on its earnings before interest and taxes. ❑ Degree of operating leverage (DOL) is equal to the percentage increase in the net operating income to the percentage increase in the output. ❑ $DOL = \frac{\text{Contribution}}{\text{EBIT}}$ $DOL = \frac{\%\text{ Change in EBIT}}{\%\text{ Change in Sales}}$
Operating Break-even Point	❑ It is the level of sale at which operating profit i.e. EBIT is zero. ❑ Operating BEP (Units) $= \frac{\text{EBIT}}{\text{EBT}} = \frac{\text{Fixed Cost}}{\text{Contribution per unit}}$ ❑ Operating BEP (₹) $= \frac{\text{Fixed Cost}}{\text{P/V Ratio}}$
Margin of Safety (MOS) and Operating Leverage	❑ $\text{DoI} = \frac{1}{\text{Margin of safety}}$

Relationship between MOS, Business Risk and DOL	❑ IF MOS rises, business risk falls and thereby DOL also falls. ❑ If MOS falls, business risk rises and thereby DOL also rises.
Operating Leverage and EBIT	
Interpretation of DOL	❑ If a firm has no fixed cost then it indicates no operating leverage. ❑ A firm with high operating leverage (i.e. high fixed cost) indicates it has higher break-even point ❑ A firm with low operating leverage (i.e. low fixed cost) indicates it has lower break-even point ❑ A positive DOL means that firm is operating at higher level than break-even and both sales and EBIT moves in the same direction. ❑ In case of negative DOL, firm operates at a level lower than operating break-even and EBIT is negative. ❑ DOL can never be between zero and one. It can be zero or less or it can be one or more.
Financial Leverage	❑ It can be defined as the potential use of fixed finance costs (i.e. interest and preference dividend) to magnify the effect of changes in the earnings before interest and taxes on the earning per share of the firm. ❑ Degree of financial leverage (DFL) is equal to percentage increase in the earning per share to the percentage increase in the net operating income. ❑ $DFL = \frac{EBIT}{EBT}$ $DFL = \frac{\%\ Changes\ in\ EPS}{\%\ Change\ in\ EBIT}$ ❑ DFL with Preference Dividend $= \frac{EBIT}{EBT - \frac{Preference\ Dividend}{(1-t)}}$

Financial Break-even Point	❑ It is the level of EBIT at which EPS of the firm is zero. ❑ Financial BEP (₹) = Interest + $\frac{\text{EBIT}}{\text{EBT}} = \frac{\text{Preference Dividend}}{(1-t)}$
Relationship between DFL and Financial Break-even Point	❑ A positive DFL means that firm is operating at higher level than financial break-even and both EBIT and EPS moves in the same direction. In case of negative DFL, firm operates at lower than the financial break-even and EPS is negative.
Financial Leverage with EPS	
Interpretation of Financial Leverage	❑ No fixed financial cost indicates no financial leverage ❑ Higher fixed financial cost indicates high financial leverage ❑ When EBIT is higher than financial break-even point then it indicates positive financial leverage i.e. EPS is positive ❑ When EBIT is lower than financial break-even point then it indicates negative financial leverage i.e. EPS is negative ❑ DFL can never be between zero and one. It can be zero or less or it can be one or more.
Trading on Equity	❑ It is the process of using securities with fixed financial burden (e.g. loan, preference shares, bonds etc.) to produce gain for the owners (equity shareholders). ❑ It is known as trading on equity because equity shareholders are the only one interested in the business income and lenders are willing to advance funds on the strength of the equity supplied by the owners. ❑ Trading on equity occurs if the firm takes debt to acquire assets on which it can earn return greater than the interest on cost of debt. In this case, the leverage is favourable for the firm.

Financial Leverage as a Double Edge Sword	❑ When return on investment (ROI) is more than fixed cost of fund (Interest) then financial leverage will help to increase return on equity and EPS. ❑ When return on investment (ROI) is less than fixed cost of fund (Interest) then financial leverage will affect return on equity and EPS unfavourably. ❑ Thus, financial leverage is also known as double edged sword.
Combined Leverage	❑ It may be defined as the potential use of fixed costs, both operating and financial, which magnifies the effect of sales volume change on the earning per share of the firm. ❑ Degree of combined leverage (DCL) is the ratio of percentage change in earning per share to the percentage change in sales. It indicates the effect the sales changes will have on EPS. ❑ $DCL = \frac{\text{Contribution}}{\text{EBT}}$ $DCL = \frac{\%\text{ Change in EPS}}{\%\text{ Change in Sales}}$ ❑ DCL = DOL × DFL ❑ DCL with Preference Dividend $= \frac{\text{Contribution}}{\text{EBT} - \frac{\text{Preference Dividend}}{(1-t)}}$
Overall Break-even Point	❑ It is the level of sale at which EPS of the firm is zero. ❑ Overall *BEP* (Units) $= \frac{\text{EBIT}}{\text{EBT}} \frac{\text{Fixed Cost + Interest} + \frac{\text{Preference Dividend}}{(1-t)}}{\text{Contribution per unit}}$ ❑ Overall BEP (₹) $= \frac{\text{EBIT}}{\text{EBT}} \frac{\text{Fixed Cost + Interest} + \frac{\text{Preference Dividend}}{(1-t)}}{\text{P/V Ratio}}$

PRACTICAL QUESTIONS

1. Calculate the operating leverage for each of the four firms *A*, *B*, *C* and *D* from the following price and cost data, assuming number of units to be 5,000: **[SM]**

	Firms			
	A (₹)	B (₹)	C (₹)	D (₹)
Sale price per unit	20	32	50	70
Variable cost per unit	6	16	20	50
Fixed operating cost	60,000	40,000	1,00,000	NIL

[Sol. 7; 2; 3; 1]

2. Annual sales of a company are ₹60,00,000. Sales to variable cost ratio is 150% and fixed cost other than interest is ₹5,00,000 per annum. Company has 11% debentures of ₹30,00,000. You are required to calculate the operating, financial and combined leverage of the company.

[**Sol.** DOL = 1.333; DFL = 1.282; DCL = 1.709]

3. A company produces and sells 10,000 shirts. The selling price per shirt is ₹500. Variable cost is ₹200 per shirt and fixed operating cost is ₹25,00,000. **[SM]**

   (*a*) Calculate operating leverage

   (*b*) If sales are up by 10%, then compute the impact on EBIT?

[**Sol.** (*a*) 6; (*b*) increase by 60%]

4. A firm's details are as under: **[SM]**

Sales (@100 per unit)	₹24,00,000
Variable cost	50%
Fixed cost	₹10,00,000

It has borrowed ₹10,00,000 @ 10% p.a. and its equity share capital is ₹10,00,000 (₹100 each). Consider tax @ 50%. Calculate:

(*a*) Operating leverage (*b*) Financial leverage

(*c*) Combined leverage (*d*) Return on investment

(*e*) If the sales increase by ₹6,00,000; what will be new *EBIT*?

[**Sol.** (*a*) 6; (*b*) 2; (*c*) 12; (*d*) 10%; (*e*) ₹5,00,000]

5. The following figures are available for SK & Co.

Net sales	₹15 crores
EBIT as % of Net Sales	12%

Capital employed: (*a*) Equity ₹5 crores; (*b*) Preference shares of ₹1 crores bearing 13% rate of dividend; (*c*) Debt @ 15% ₹3 crores.

Given that its combined leverage = 3 and the income tax rate applicable is 40%. You are required to calculate;

(*a*) The Return on Equity of the company; and (*b*) the Financial Leverage of the company and (*c*) the operating leverage of the company.

[**Sol.** (*a*) 13.60%; (*b*) 1.588; (*c*) 1.889]

6. SK Co. has three financial plans before it, plan I, plan II and plan III. Calculate operating and financial leverage for the firm on the basis of the following information and also find out the highest and lowest value of combined leverage.

Production	800 units
Selling price per unit	₹15
Variable cost per unit	₹10
Fixed cost Situation A	₹1,000
Situation B	₹2,000
Situation C	₹3,000

Capital Structure	Plan-I	Plan-II	Plan-III
Equity Capital	₹5,000	₹7,500	₹2,500
12% Debt	₹5,000	₹2,500	₹7,500

[**Sol.** DOL = 1.33, 2, 4; DFL = Plan-I: 1.25, 1.43, 2.5; Plan-II: 1.11, 1.18, 1.43; Plan-III: 1.43, 1.82, 10; DCL = Plan-I: 1.66, 2.86, 10; Plan-II: 1.48, 2.36, 5.72; Plan-III: 1.90, 3.64, 40]

7. From the following financial data for Company S and Company K; prepare their Income Statements.

	Company S	Company K
Variable cost	56,000	60% of sales
Fixed cost	20,000	–
Interest Expenses	12,000	9,000
Financial Leverage	5 : 1	–
Operating Leverage	–	4 : 1
Income tax rate	30%	30%
Sales	–	1,05,000

[**Sol.** EAT - Company S = ₹2,100; Company K = ₹1,050

8. The following information is related to SK Ltd. for the year ended 31st March, 2021 **[SM, RTP May 2020, Similar Jan 2021]**

Equity share capital (of ₹10 each)	₹50 lakhs
12% Bonds of ₹1,000 each	₹37 lakhs
Sales	₹84 lakhs
Fixed cost (excluding interest)	₹6.96 lakhs
Financial leverage	1.49
Profit volume ratio	27.55%
Income Tax Applicable	40%

You are required to calculate:

(*a*) Operating leverage

(*b*) Combined leverage and

(*c*) Earning per share

[**Sol.** (*a*) 1.43; (*b*) 2.13; (*c*) 1.30]

9. The following information is available for SS Ltd.: **[Nov 2022]**

Profit volume (PV) ratio	-	30%
Operating leverage	-	2.00
Financial leverage	-	1.50
Loan	-	₹1,25,000
Post-tax interest rate	-	5.6%
Tax rate	-	30%
Market price per share (MPS)	-	₹140
Price Earnings Ratio (PER)	-	10

You are required to:

(*a*) Prepare the profit-loss statement of SS Ltd. and

(*b*) Find out the number of equity shares

[**Sol.** (*a*) *EAT* = ₹14,000; (*b*) 10,000 shares]

10. Following information is given for *X* Ltd: **[May 2023]**

Total contribution (₹)	4,25,000
Operating leverage	3.125
15% Preference shares (₹100 each)	1,000
Number of equity shares	2,500
Tax rate	50%

Calculate *EPS* of *X* Ltd., if 40% decrease in sales will result *EPS* to zero.

[**Sol.** ₹28]

11. Information of A Ltd. is given below: **[Dec 2021]**

- Earnings after tax: 5% on sales
- Income tax rate: 50%
- Degree of operating leverage: 4 times
- 10% Debenture in capital structure: ₹3 lakhs
- Variable costs: ₹6 lakhs

Required:

(i) From the given data complete the following statement:

Sales	XXXX
Less: Variable costs	6,00,000
Contribution	XXXX
Less: Fixed costs	XXXX
EBIT	XXXX
Less: Interest expenses	XXXX
EBT	XXXX
Less: Income tax	XXXX
EAT	XXXX

(ii) Calculate Financial Leverage and Combined Leverage.

(iii) Calculate the percentage change in earning per share, if sales increased by 5%.

[**Sol.** (i) 1.25; 5; (ii) 25%]

12. A Company had the following Balance Sheet as on March 31, 2019?

[SM, Similar RTP May 2019, Similar July 2021]

Liabilities	₹in crores	Assets	₹in crores
Equity Share Capital	5	Fixed Assets (Net)	12.5
(50 lakhs shares of ₹10 each)		Current Assets	7.5
Reserve & Surplus	1		
15% Debentures	10		
Current Liabilities	4		
	20		20

The additional information given is as under:

Fixed costs per annum (excluding interest)	:	₹4 crores
Variable operating costs ratio	:	65%
Total Assets turnover ratio	:	2.5
Income-Tax Rate	:	30%

Required: Calculate the following and comment:

(*a*) Earnings per share (*b*) Operating Leverage

(*c*) Financial Leverage (*d*) Combined Leverage

[**Sol.** (*a*) ₹16.80; (*b*) 1.296; (*c*) 1.125; (*d*) 1.458]

13. A firm has sales of ₹75,00,000, variable cost is 56% and fixed cost of ₹6,00,000. It has a debt of ₹45,00,000 at 9% and equity of ₹55,00,000.

(*a*) What is the firm's ROI?

(*b*) Does it have favourable financial leverage?

(*c*) If the firm belongs to an industry whose capital turnover is 3, does it have a high or low capital turnover?

(*d*) What are the operating, financial and combined leverage of the firm?

(*e*) If the sales is increased by 10% by what percentage *EBIT* will increase?

(*f*) At what level of sales the *EBT* of the firm will be equal to zero?

(*g*) If *EBIT* increases by 20%, by what percentage *EBT* will increase?

[**Sol.** (*a*) 27%; (*b*) Yes; (*c*) Low; (*d*) 1.22; 1.176; 1.438; (*e*) 12.20%; (*f*) ₹22,84,091; (*g*) 23.52%]

14. Use the following data and solve the problem:

Total sales	1,50,000 units
Selling price	₹25 p.u.
Fixed cost	₹2,80,000
Variable cost	₹20
Debt	₹10,00,000 @ 11% interest rate
Equity	₹20,00,000
Face value of each share	₹10
Tax rate	45%

(*a*) How much the company's sale has to come down so that the earnings before taxes is equal to zero?

(*b*) If EBIT doubles, what will be the new level of EBT?

(*c*) What are the operating and combined leverages?

(*d*) If the assets turnover of the industry is 0.75, does the firm have a high or low degree of asset turnover?

[**Sol.** (*a*) 72,000 units; (*b*) ₹8,30,000; (*c*) 1.596; 2.083; (*d*) high]

PRACTICE QUESTIONS

15. You are given the following information of 5 firms of the same industry: **[SM, RTP Nov 2019]**

Name of the Firm	Change in Revenue	Change in Operating Income	Change in Earning per Share
A	28%	26%	32%
B	27%	34%	26%
C	25%	38%	23%
D	23%	43%	27%
E	25%	40%	28%

You are required to calculate for all firms:

(*a*) Degree of operating leverage (*b*) Degree of combined leverage

[**Sol.** (*a*) 0.929; 1.259; 1.520; 1.870; 1.60; (*b*) 1.143; 0.963; 0.920; 1.174; 1.120]

16. From the following information extracted from the books of accounts of SK Ltd., calculate percentage change in earning per share, if sales increase by 10% and fixed operating costs is ₹1,57,500. **[SM]**

Particulars	Amount in (₹)
EBIT (Earnings before interest and tax)	31,50,000
Earnings before tax (EBT)	14,00,000

[**Sol.** 23.625%]

17. The capital structure of SK Ltd. for the year ended 31st March, 2021 consisted as follows:

[SM, Similar RTP Nov 2023, Similar May 2019]

Particulars	Amount in (₹)
Equity share capital (face value ₹100 each)	10,00,000
10% Debentures (₹100 each)	10,00,000

During the year 2020-21, sales decreased to 1,00,000 units as compared to 1,20,000 units in the previous year. However, the selling price stood at ₹12 per unit and variable cost at ₹8 per unit for both the years. The fixed expenses were at ₹2,00,000 p.a. and the income tax rate is 30%.

You are required to calculate the following:

(*a*) The degree of operating leverage at 1,20,000 units and 1,00,000 units

(*b*) The degree of financial leverage at 1,20,000 units and 1,00,000 units

(*c*) The percentage change in *EPS*

[**Sol.** (*a*) 1.71; 2; (*b*) 1.56; 2; (*c*) 44.44%]

18. SK Ltd. has the following balance sheet and income statement information:

[SM, Similar MTP Nov 2020]

Balance Sheet as on March 31st 2021

Liabilities	₹	Assets	₹
Equity Share Capital (₹10 per share)	8,00,000	Net Fixed Assets	10,00,000
		Current Assets	9,00,000
10% Debt	6,00,000		
Retained Earnings	3,50,000		
Current Liabilities	1,50,000		
	19,00,000		19,00,000

Income Statement for the year ending March 31st 2021

Particulars	₹
Sales	3,40,000
Operating expenses (including ₹60,000 depreciation)	1,20,000
EBIT	2,20,000
Less: Interest	60,000
Earning before tax	1,60,000
Less: Taxes	56,000
Net Earning (EAT)	1,04,000

(*a*) Determine the degree of operating, financial and combined leverages at the current sales level, if all operating expenses, other than depreciation, are variable costs.

(*b*) If total assets remain at the same level, but sales (i) increase by 20% and (ii) decrease by 20%, compute the earnings per share at the new sales level?

[**Sol.** (*a*) DOL = 1.27; DFL = 1.38; DCL = 1.75]

19. Following information has been extracted from the accounts of newly incorporated Textyl Pvt. Ltd. for the financial year 2020-21: **[RTP May 2021, Similar Nov 2020]**

Sales	₹15,00,000
P/V Ratio	70%
Operating Leverage	1.4 times
Financial Leverage	1.25 times

Using the concept of leverage, find out and verify in each case:

(i) The percentage change in taxable income if sales increase by 15%.

(ii) The percentage change in EBIT if sales decrease by 10%.

(iii) The percentage change in taxable income if EBIT increase by 15%.

[**Sol.** (i) 26.25%; (ii) 14%; (iii) 18,.75%]

20. Calculate the operating leverage, financial leverage and combined leverage from the following data under Situation-I and II and financial Plan *A* and *B*: **[SM]**

Installed capacity	4,000 units
Actual production and sales	75% of the capacity
Selling price	₹30 per unit
Variable cost	₹15 per unit
Fixed Cost:	
Under Situation-I	₹15,000
Under situation-II	₹20,000

Capital Structure:

	Financial Plan	
	A (₹)	B (₹)
Equity	10,000	15,000
Debt (Rate of Interest at 20%)	10,000	5,000
Total	**20,000**	**20,000**

[**Sol.** DOL = 1.5, 1.8; DFL = Situation-I: 1.07, 1.034; Situation-II: 1.09, 1.04; DCL = Situation-I: 1.61, 1.55; Situation-II: 1.96, 1.872]

21. Following are the selected financial information of *A* Ltd. and *B* Ltd. for the year ended March 31st, 2021: **[SM, Similar RTP May 2023]**

	A Ltd.	B Ltd.
Variable Cost Ratio	60%	50%
Interest	₹20,000	₹1,00,000
Operating leverage	5	2
Financial leverage	3	2
Tax Rate	30%	30%

You are required to find out:

(*a*) EBIT

(*b*) Sales

(*c*) Fixed Cost

(*d*) Identify the company which is better placed with reasons based on leverages

[Sol. (*a*) ₹30,000; ₹2,00,000; (*b*) ₹3,75,000; ₹8,00,000; (*c*) ₹1,20,000; ₹2,00,000; (*d*) Company B]

22. Consider the following information for SK Ltd: **[SM]**

Production level	2,500 units
Contribution per unit	₹150
Operating leverage	6
Combined Leverage	24
Tax rate	30%

Required to compute its earning after tax.

[Sol. ₹10,938]

23. From the following information, prepare Income Statement of company *A* & *B*:

[SM, RTP May 2022]

Particulars	Company A	Company B
Margin of Safety	0.20	0.25
Interest	₹3,000	₹2,000
Profit volume ratio	25%	33.33%
Financial Leverage	4	3
Tax Rate	45%	45%

[Sol. EAT = ₹550; ₹550]

24. The following data have been extracted from the books of SK Ltd: **[SM, May 2018]**

Sales – ₹100 lakhs

Interest payable per annum – ₹10 lakhs

Operating leverage – 1.2

Combined leverage – 2.16

You are required to calculate:

(*a*) The financial leverage (*b*) Fixed cost (*c*) PV Ratio

[Sol. (*a*) 1.80; (*b*) ₹4,50,000; (*c*) 27%]

25. The sales revenue of SK Ltd. @₹20 per unit of output is ₹20 lakhs and contribution is ₹10 lakhs. At the present level of output, the *DOL* of the company is 2.5. the company does not have any Preference Shares. The number of Equity Shares are 1 lakh. Applicable corporate income tax rate is 50% and the rate of interest on Debt Capital is 16% p.a. Calculate the EPS (at sales revenue of ₹20 lakhs) and amount of debt capital of the company if a 25% decline in Sales will wipe out *EPS*. **[SM]**

[**Sol.** *EPS* = ₹1.25; Debt amount = ₹9,37,500]

26. Following is the Balance Sheet of Gitashree Ltd. is given below: **[Nov 2019, Similar Nov 2018]**

Liabilities	Amount (₹)
Shareholder's Fund	
Equity Share Capital (₹10 each)	1,80,000
Reserve & Surplus	60,000
Non-Current Liabilities (10% Debentures)	2,40,000
Current Liabilities	1,20,000
Total	**6,00,000**
Non-Current Assets	4,50,000
Current Assets	1,50,000
Total	**6,00,000**

The company's total assets turnover ratio is 4. Its fixed operating cost is ₹2,00,000 and its variable operating cost ratio is 60%. The income tax rate is 30%. Calculate:

(1) (*a*) Degree of operating leverage
(*b*) Degree of financial leverage
(*c*) Degree of combined leverage
(2) Find out EBIT if EPS is (*a*) ₹1, (*b*) ₹2 and (*c*) ₹0.

[**Sol.** (1) (*a*) 1.263, (*b*) 1.033, (*c*) 1.304; (2) (*a*) ₹49,714; (*b*) ₹75,429; (*c*) ₹24,000]

27. Details of a company for the year ended 31st March, 2022 are given below: **[May 2022]**

Sales	₹86 lakhs
Profit Volume (P/V) Ratio	35%
Fixed cost excluding interest expenses	₹10 lakhs
10% Debt	₹55 lakhs
Equity Share Capital of ₹10 each	₹75 lakhs
Income Tax rate	40%

Required:

(i) Determine company's return on capital employed (pre-tax) and Eps.
(ii) Does the company have a favourable financial leverage?
(iii) Calculate operating and combine leverages of the company
(iv) Calculate percentage change in EBIT, if sales increases by 10%.
(v) At what level of sales, the Earning before Tax (EBT) of the company will be equal to zero?

[**Sol.** (i) 15.46%; (ii) favourable; (iii) 1.498; 2.062; (iv) 14.98%; (v) ₹44,28,571]

28. The following details of a company for the year ended 31st March, 2021 are given below: **[SM]**

Operating leverage	2 : 1
Combined leverage	2.5 : 1
Fixed cost excluding interest	₹3.4 lakhs
Sales	₹50 lakhs
8% Debentures of ₹100 each	₹30.25 lakhs
Equity share capital of ₹10 each	34 lakhs
Income tax rate	30%

Calculate:

(*a*) Financial leverage

(*b*) PV Ratio and Earning per Share (*EPS*)

(*c*) If the company belongs to an industry, whose assets turnover is 1.5, does it have a high or low assets turnover?

(*d*) At what level of sales, the Earning before Tax (*EBT*) of the company will be equal to zero?

[**Sol.** (*a*) 1.25; (*b*) 13.6%; ₹0.202; (*c*) low; (*d*) ₹42,79,412]

SOLUTIONS

15. **Statement of degree of combined leverage and degree of financial leverage**

Firm	(a) $DCL = \frac{\%\text{ change in operating income}}{\%\text{ change in revenue}}$	(b) $DFL = \frac{\%\text{ change in EPS}}{\%\text{ change in revenue}}$
M	$\frac{26\%}{28\%} = 0.929$	$\frac{32\%}{28\%} = 1.143$
N	$\frac{34\%}{27\%} = 1.259$	$\frac{26\%}{27\%} = 0.963$
P	$\frac{38\%}{25\%} = 1.520$	$\frac{23\%}{25\%} = 0.920$
Q	$\frac{43\%}{23\%} = 1.870$	$\frac{27\%}{23\%} = 1.174$
R	$\frac{40\%}{25\%} = 1.60$	$\frac{28\%}{25\%} = 1.120$

16. Operating Leverage (OL) $\frac{\text{Contribution}}{EBIT} = \frac{EBIT + \text{Fixed Cost}}{EBIT} = \frac{₹31,50,000 + ₹1,57,500}{31,50,000} = 1.05$

Financial Leverage (FL) $= \frac{EBIT}{EBT} = \frac{₹31,50,000}{₹14,00,000} = 2.25$

Combined Leverage (CL) $= 1.025 \times 2.25 = 2.3625$

Percentage Change in Earnings per share

$$DCL = \frac{\%\text{ change in } EPS}{\%\text{ change in Sales}} = 2.3625 = \frac{\%\text{ change in EPS}}{10\%}$$

$\therefore$ % change in $EPS = 23.625\%$

Hence, if sales increases by 10%, EPS will be increased by 23.625%.

17. Income Statement with required calculations

Particulars	₹	₹
Sales in units	1,20,000	1,00,000
Sales Value	14,40,000	12,00,000
(–) Variable Cost	(9,60,000)	(8,00,000)
Contribution	4,80,000	4,00,000
(–) Fixed expenses	(2,00,000)	(2,00,000)
EBIT	2,80,000	2,00,000
(–) Debenture Interest	(1,00,000)	(1,00,000)
EBT	1,80,000	1,00,000
(–) Tax@30%	(54,000)	(30,000)
Profit after tax (PAT)	1,26,000	70,000
No. of shares	10,000	10,000
(i) Financial Leverage = $\frac{EBIT}{EBT}$	$\frac{₹2,80,000}{₹1,80,000} = 1.56$	$\frac{₹2,00,000}{₹1,00,000} = 2$
(ii) Operating leverage = $\frac{Contribution}{EBIT}$	$\frac{₹4,80,000}{₹2,80,000} = 1.71$	$\frac{₹4,00,000}{₹2,00,000} = 2$
(iii) Earnings per share (EPS) = $\frac{PAT}{No.\ of\ shares}$	$\frac{1,26,000}{10,000} = 12.6$	$\frac{₹70,000}{10,000} = ₹7$
Decrease in EPS	= ₹12.6 – ₹7 = ₹5.6	
	% decrease in $EPS = \frac{5.6}{12.6} \times 100 = 44.44\%$	

18. (*a*) Calculation of Degree of Operating (DOL), Financial (DFL) and Combined leverages (DCL).

$$DOL = \frac{₹3,40,000 - ₹60,000}{₹2,20,000} = 1.27$$

$$DFL = \frac{2,20,000}{1,60,000} = 1.38$$

$DCL = DOL \times DFL = 1.27 \times 1.38 = 1.75.$

(*b*) Earnings per share at the new sales level

	(i) Increase by 20%	(ii) Decrease by 20%
	(₹)	(₹)
Sales level	4,08,000	2,72,000
Less: Variable expenses	72,000	48,000
Less: Fixed cost	60,000	60,000
Earnings before interest and taxes	2,76,000	1,64,000
Less: Interest	60,000	60,000
Earnings before taxes	2,16,000	1,04,000
Less: Taxes	75,600	36,400
Earnings after taxes (EAT)	1,40,400	67,600
Number of equity shares	80,000	80,000
EPS	1.76	0.85

Working Notes:

(i) Variable Costs = ₹60,000 (total cost – depreciation)

(ii) Variable Costs at:

(*a*) Sales level of ₹4,08,000 = ₹72,000 (increase by 20%)

(*b*) Sales level of ₹2,72,000 = ₹48,000 (decrease by 20%)

19. Workings:

(*a*) Operating leverage = $\frac{\text{Contribution}}{\text{EBIT}}$

$$1.4 = \frac{15,00,00 \times 70\%}{\text{EBIT}}$$

(*b*) Financial leverage = $\frac{\text{EBIT}}{\text{EBT}}$

$$1.25 = \frac{7,50,000}{\text{EBT}}$$

EBT = ₹6,00,000

(*c*) Income Statement

Particulars	Amount (₹)
Sales	15,00,000
Less: Variable cost (15,00,000 × 30%)	4,50,000
Contribution (15,00,000 × 70%)	10,50,000
Less: Fixed cost (Bal. fig.)	3,00,000
EBIT [working (a)]	7,50,000
Less: Interest (Bal. fig.)	1,50,000
EBT [working (b)]	6,00,000

Combined leverage = DOL × DFL = 1.4 × 1.25 = 1.75 times

(i) If sales increased by 15% than taxable income will be increased by 1.75 × 15% = 26.25%.

Verification:

Particulars	Amount (₹)
Sales (15,00,000 + 15%)	17,25,000
Less: Variable cost (17,25,000 × 30%)	5,17,500
Contribution (17,25,000 × 70%)	12,07,500
Less: Fixed cost	3,00,000
EBIT	9,07,500
Less: Interest	1,50,000
EBT	7,57,500

$$\text{Percentage change in EBT} = \frac{(7,57,500 - 6,00,000)}{(6,00,000)} \times 100 = 26.25\%$$

(ii) If sales decreased by 10% than EBIT will be decreased by 1.40 × 10% = 14%

Verification:

Particulars	Amount (₹)
Sales (15,00,000 – 10%)	13,50,000
Less: Variable cost (13,50,000 × 30%)	4,05,000
Contribution (13,50,000 × 70%)	9,45,000
Less: Fixed cost	3,00,000
EBIT	6,45,000

$$\text{Percentage change in } EBIT = \frac{(7,50,000 - 6,45,000)}{(7,50,000)} \times 100 = 14\%$$

(iii) If EBIT increased by 15% than taxable income will he increased by 1.25 × 15% = 18.75%

Verification:

Particulars	Amount (₹)
EBIT (7,50,000 + 15%)	8,62,500
Less: Interest	1,50,000
EBT	7,12,500

$$\text{Percentage change in } EBT = \frac{(7,12,500 - 6,00,000)}{(6,00,000)} \times 100 = 18.75\%$$

20. (i) Operating Leverage (*OL*)

	Situation-I	Situation-II
	(₹)	(₹)
Sales (3000 units @ ₹30 per unit)	90,000	90,000
Less: Variable Cost (@ ₹15 per unit)	45,000	45,000
Contribution (C)	45,000	45,000
Less: Fixed Cost	15,000	20,000
EBIT	30,000	25,000
Operating Leverage $(OL) = \frac{C}{EBIT}$	$\frac{₹45,000}{₹30,000} = 1.5$	$\frac{₹45,000}{₹25,000} = 1.8$

(ii) Financial Leverage (*FL*)

Particulars	Situation-I		Situation-II	
	A (₹)	B (₹)	A (₹)	B (₹)
EBIT	30,000	30,000	25,000	25,000
(-) Interest on debt	2,000	1,000	2,000	1,000
EBT	28,000	29,000	23,000	24,000
$DFL = \frac{EBIT}{EBT}$	$\frac{30,000}{28,000} = 1.07$	$\frac{30,000}{29,000} = 1.034$	$\frac{25,000}{23,000} = 1.09$	$\frac{25,000}{24,000} = 1.04$

(iii) Combined Leverage (*CL*)

Particulars	Situation-I		Situation-II	
	A (₹)	B (₹)	A (₹)	B (₹)
DOL	1.5	1.5	1.8	1.8
DFL	1.07	1.034	1.09	1.04
DCL = DOL × DFL	1.61	1.55	1.96	1.872

21. Company A

(*i*) Financial Leverage $= \frac{EBIT}{EBIT \text{ i.e. } EBIT - Interest}$

So, $3 = \frac{EBIT}{EBIT - ₹20,000}$

or, $3 (EBIT - 20,000) = EBIT$

or, $2\ EBIT = 60,000$

or, $EBIT = 30,000$

(*ii*) Operating Leverage $= \frac{Contribution}{EBIT}$ or, $5 = \frac{Contribution}{30,000}$

or, contribution = ₹1,50,000

$$Sale = \frac{contribution}{P/V(Ratio)(1 - variable\ cost\ ratio)} = \frac{₹1,50,000}{40\%} = ₹3,75,000$$

Company B

(*i*) Financial Leverage $= \frac{EBIT}{EBIT \text{ i.e } EBIT - Interest}$

So, $2 = \frac{EBIT}{EBIT - 1,00,000}$

Or, $2 (EBIT - ₹1,00,000) = EBIT$

Or, $2 (EBIT - ₹2,00,000) = EBIT$

Or, EBIT = ₹2,00,000

(*ii*) Operating Leverage $= \frac{\text{Contribution}}{\text{EBIT}}$

or, 2 $= \frac{\text{Contribution}}{₹2,00,000}$

or, Contribution $= ₹4,00,000$

$$\text{Sale} = \frac{\text{Contribution}}{\text{P/V Ratio (1 – variable cost ratio)}} = \frac{₹4,00,000}{50\%} = 8,00,000$$

(*iii*) Fixed Cost = Contribution – EBIT = ₹4,00,000 – ₹2,00,000 = ₹2,00,000

Income Statements of Company A and Company B

	Company A (₹)	Company B (₹)
Sales	3,75,000	8,00,000
Less: Variable cost	2,25,000	4,00,000
Contribution	1,50,000	4,00,000
Less: Fixed Cost	1,20,000	2,00,000
Earnings before interest and tax (*EBIT*)	30,000	2,00,000
Less: Interest	20,000	1,00,000
Earnings before tax (*EBT*)	10,000	1,00,000
Less: Tax @ 30%	3,000	30,000
Earnings after tax (*EAT*)	7,000	70,000

Comment based on Leverage

Comment based on leverage – Company B is better than company A of the following reasons:

- Capacity of Company B to meet interest liability is better than that of companies A (from EBIT/Interest

$$\left[A = \frac{₹30,000}{₹20,000} = 1.5, B = \frac{₹2,00,000}{₹1,00,000} = 2\right]$$

- Company B has the least financial risk as the total risk (business and financial) of company B is lower (combined leverage of Company A – 15 and Company B – 4).

22. Workings:

1. Operating Leverage $= \frac{\text{Contribution}}{\text{EBIT}} = \frac{\text{Contribution}}{\text{EBIT}} = \frac{₹150 \times 2,500}{\text{EBIT}} = \frac{₹3,75,000}{\text{EBIT}} = 6$

   $\therefore \text{EBIT} = \frac{₹3,75,000}{6} = ₹62,500$

2. Operating Leverage (*OL*) × Financial Leverage (*FL*) = Combined Leverage (*CL*)

   6 × Financial Leverage = 24

   ∴ Financial Leverage = 4

   Also, Financial Leverage $= \frac{\text{EBIT}}{\text{EBT}} = 4$

   $\therefore \text{EBT} = \frac{\text{EBIT}}{4} = \frac{₹62,500}{4} = ₹15,625$

   Computation of Earnings after tax

   Earnings after Tax(EAT) = EBT (1 – t) = ₹15,625(1 – 0.30) = ₹10,938.

23. **Income Statement**

Particulars	Company A (₹)	Company B (₹)
Sales	80,000	36,000
Less: Variable Cost	60,000	24,000
Contribution	20,000	12,000
Less: Fixed Cost	16,000	9,000
EBIT	4,000	3,000
Less: Interest	3,000	2,000
EBT	1,000	1,000
Tax @ 45%	450	450
EAT	550	550

Workings:

(i) Company A

Financial Leverage = EBIT/(EBIT – Interest)

4 = EBIT/(EBIT – ₹3,000)

4EBIT – ₹12,000 = EBIT

3EBIT = ₹12,000

EBIT = ₹4,000

Company B

Financial Leverage = EBIT/(EBIT – Interest)

3 = EBIT/(EBIT – ₹2,000)

3EBIT – ₹6000 = EBIT

2EBIT = ₹6,000

EBIT = ₹3,000

(ii) Company A

Operating Leverage = 1/ Margin of Safety =1/0.20=5

Operating Leverage = Contribution/EBIT

5 = Contribution/₹4,000

5 = Contribution/₹4,000

Company B

$$\text{Operating Leverage} = \frac{1}{\text{Margin of Safety}} = \frac{1}{0.25} = 4$$

$$\text{Operating Leverage} = \frac{\text{Contribution}}{\text{EBIT}}$$

$$4 = \frac{\text{Contribution}}{₹3,000} = \text{Contribution} = 12,000$$

(iii) Company A

Profit Volume Ratio = 25%(Given) Profit Volume Ratio = Contribution/Sales × 100 25%

= ₹20,000/Sales, Sales = ₹20,000/25% Sales = ₹80,000

Company B

Profit Volume Ratio = 33.33%

Therefore, Sales = 12,000/33.33%

Sales = ₹36,000

24. (*a*) Combined leverage = Financial Leverage × Operating Leverage

2.16 = Financial Leverage × 1.2

Financial Leverage = 1.8

(*b*) $\text{Financial Leverage} = \frac{\text{EBIT}}{\text{EBT}}$

$$1.8 = \frac{\text{EBIT}}{\text{EBIT} - \text{Interest}}$$

$$1.8 = \frac{\text{EBIT}}{\text{EBIT} - 10{,}00{,}000}$$

$1.8(EBIT - 10{,}00{,}000) = EBIT$

$(0.8)EBIT = 18{,}00{,}000$

$EBIT$ = ₹22,50,000

$$\text{Operating Leverage} = \frac{\text{Contribution}}{\text{EBIT}}$$

$$1.2 = \frac{\text{EBIT} + \text{Fixed Cost}}{\text{EBIT}}$$

(1.2) $EBIT = EBIT$ + Fixed Cost

1.2 × 22,50,000 = 22,50,000 + Fixed Cost

Fixed Cost = ₹4,50,000

(*c*) Contribution = $EBIT$ + Fixed Cost = 22,50,000 + 4,50,000 = ₹27,00,000

$$\text{P/V Ratio} = \frac{\text{Contribution}}{\text{Sales}} \times 100 = \frac{27{,}00{,}000}{100{,}00{,}000} \times 100 = 27\%$$

25. (i) Calculation of Fixed Cost

$$\text{DOL} = \frac{\text{Contribution}}{\text{Contribution} - \text{Fixed Cost}} \text{ or } 2.5 = \frac{₹10{,}00{,}000}{\text{EBIT}} \text{ or EBIT} = ₹4{,}00{,}000$$

EBIT = Contribution - Fixed Cost

₹4,00,000 = ₹10,00,000 - Fixed Cost

Fixed Cost = ₹10,00,000 - ₹4,00,000 = ₹6,00,000

(ii) Calculation of Degree of Combined Leverage (*DFL*)

Question says that 25% change in sales will wipe out *EPS*. Here, wipe out means it will reduce *EPS* by 100%.

$$\text{DCL} = \frac{\text{Percentage Change in EPS}}{\text{Percentage Change in Sales}} = \frac{100\%}{25\%} = 4$$

(iii) Calculation of Degree of Financial Leverage (*DFL*)

DCL = DOL × DFL 4 = 2.5 × DFL So, DFL =1.6

(iv) Calculation of Interest and amount of Debt

$$DFL = \frac{EBIT}{EBIT - Int} \text{ or, } 1.6 = \frac{₹4,00,000}{₹4,00,000 - Int} \text{ or, } Int = ₹1,50,000$$

Debt × Interest rate = Amount of Interest

Debt × 16% = ₹1,50,000

Debt = ₹9,37,500

(v) Calculation of Earnings per share (*EPS*)

$$EPS = \frac{(EBIT - Int)(1-t)}{N} = \frac{(₹4,00,000 - ₹1,50,000)}{1,00,000} = ₹1.25$$

26. Total assets turnover ratio $= \frac{Sales}{Total\ Assets}$

$$4 = \frac{Sales}{6,00,000}$$

Sales = ₹24,00,000

Income Statement

Particulars	Amount (₹)
Sales	24,00,000
Less: Variable Cost@ 60%	14,40,000
Contribution	9,60,000
Less: Fixed Cost	2,00,000
EBIT	7,60,000
Less: Interest (2,40,000 × 10%)	24,000
EBT	7,36,000
Less: Income tax @ 30%	2,20,800
EAT/EAE	5,15,200

(1)(*a*) Operating leverage $= \frac{Contribution}{EBIT} = \frac{9,60,000}{7,60,000} = 1.263$ **times**

(*b*) Financial Leverage $= \frac{EBIT}{EBT} = \frac{7,60,000}{7,36,000} = 1.033$ **times**

(*c*) Combined Leverage = $OL \times FL = 1.263 \times 1.033 = 1.304$ **times**

(2) (*a*) $EPS = \frac{(EBIT - Interest)(1-t)}{No.\ of\ equity\ shares}$

$$1 = \frac{(EBIT - 24,000)(1-0.30)}{18,000}$$

EBIT = ₹49,714.

(*b*) $EPS = \frac{(EBIT - Interest)(1-t)}{No.\ of\ equity\ shares}$

$$2 = \frac{(EBIT - 24,000)(1-0.30)}{18,000}$$

EBIT = ₹75,429

(*c*) $EPS = \frac{(EBIT - Interest)(1-t)}{No.\ of\ equity\ shares}$

$$0 = \frac{(EBIT - 24,000)(1-0.30)}{18,000}$$

EBIT = ₹24,000

27. **Income Statement**

Particulars	Amount (₹)
Sales	86,00,000
Less: Variable cost (86,00,000 ₹65%)	55,90,000
Contribution	30,10,000
Less: Fixed cost	10,00,000
EBIT	20,10,000
Less: Interest (10% ₹55,00,000)	5,50,000
EBT	14,60,000
Less: Tax @ 40%	5,84,000
EAT/EAE	8,76,000

(*i*) Return on capital employed = $\frac{EBIT}{Capital\ employed} \times 100 = \frac{20,10,000}{1,30,00,000} \times 100 = 15.46\%$

Earning per share = EAE/No. of Equity Shares = 8,76,000/7,50,000 = ₹1.168

(*ii*) Since, the return on capital employed (15.46%) is more than the interest rate (10%), thus the company has a favourable financial leverage.

(*iii*) Operating leverage $= \frac{\text{Contribution}}{\text{EBIT}} = \frac{30,10,000}{20,10,000} = 1.498$ times

Combined leverage $= \frac{\text{Contribution}}{\text{EBIT}} = \frac{30,10,000}{14,60,000} = 2.062$ times

(*iv*) Operating leverage $= \frac{\text{\% Change in EBIT}}{\text{\% Change in Sales}}$

$1.498 = \frac{\text{\% Change in EBT}}{+10}$

% Change in EBIT = +14.98

Thus, EBIT increases by 14.98%

(*v*) Required sales $= \frac{\text{Fixed cost + Interest}}{\text{PV Ratio}} = \frac{(10,00,000 + 5,50,000)}{35\%} = ₹\ 44.28,571$

28. (*i*) Financial leverage

Combined Leverage = Operating Leverage (OL) × Financial Leverage (FL)

2.5 $= 2 \times$ FL

Or, FL $= 1.25$

Financial Leverage $= 1.25$

(*ii*) P/V Ratio and earning per share (*EPS*)

Operating leverage $= \frac{\text{Contribution (C)}}{\text{Contribution-Fixed Cost (FC)}} = 2 = \frac{C}{C - 3,40,000}$

Or, $C = 2(C - 3,40,000)$

Or, $C = 2(C - 6,80,000)$

Or, Contribution $= ₹6,80,000$

Now, P / V ratio $= \frac{\text{Contribution (C)}}{\text{Sales (S)}} \times 100 = \frac{6,80,000}{50,00,000} \times 100 = 13.6\%$

EBT = Sales – Variable Cost – Fixed Cost – Interest

= ₹50,00,000 – ₹50,00,000 (1 – 0.136) – ₹3,40,000 – (8% × ₹30,25,000)

= ₹50,00,000 – ₹43,20,000 – ₹3,40,000 – ₹2,42,000 = ₹98,000

PAT = *EBT* (1 – T) = ₹98,000 (1 – 0.3) = ₹68,600

$EPS = \frac{\text{Profit after tax}}{\text{No. of equity shares}} = \frac{₹\ 68,600}{3,40,000 \text{ shares}} = ₹\ 0.202$

(*iii*) **Assets turnover**

$$\text{Assets turnover} = \frac{\text{Sales}}{\text{Total Assets*}} = \frac{₹50,00,000}{₹34,00,000 + ₹30,25,000} = 0.78$$

0.78 < 1.5 means lower than industry turnover.

*Total Asset = Equity share capital + 8% Debentures.

(*iv*) EBT zero means 100% reduction in EBT. Since combined leverage is 2.5, sales have to be dropped by 100/2.5 = 40%. Hence new sales will be ₹50,00,000 × (100 – 40)% = ₹30,00,000. Therefore, at ₹30,00,000 level of sales, the Earnings before Tax (EBT) of the company will be zero.

Alternatively

Required sales when EBT is zero =

$$\frac{\text{Fixed cost + Interest + desired Profit}}{\text{P / v ratio}} = \frac{₹3,40,000 + ₹2,42,000 + \text{zero}}{13.60\%}$$

$$= \frac{₹5,82,000}{13.60\%} = ₹42,79,412$$

Note: The question can also be solved by first calculating *EBIT* with the help of Financial Leverage. Accordingly, answer to the requirement (*ii*) and (*iv*) will also vary.

7 Investment Decisions

CHAPTER

THEORY

Meaning of Capital Budgeting	▫ Capital budgeting may be defined as the whole process of planning expenditure which aims at maximizing the long term profitability. ▫ The capital budgeting decisions have enormous impact on the basic character of the firm on a long-term basis. ▫ The decisions normally involve substantial outlays and are generally irreversible without incurring substantial losses.
Need for Capital Budgeting	(*a*) Involvement of huge funds (*b*) Irreversible decisions (*c*) Vitally affects profitability and financial position (*d*) Long term implications (*e*) Most difficult to make (*f*) Wealth maximization of shareholders (*g*) Maintaining firm's competitive position
Steps in Capital Budgeting Process	(*a*) Planning (*b*) Evaluation (*c*) Selection (*d*) Implementation (*e*) Control (*f*) Follow-up or review
Data Required for use of Capital Budgeting Techniques	(i) Costs and benefit of proposal (ii) Required rate of return (iii) Economic life of the project (iv) Available funds (v) Risk of Obsolescence (vi) Depreciation (vii) Estimates of opportunity cost (viii) Intangible factors

Types of Capital Budgeting Decisions	▫ **On the basis of Firm's Existence** ○ Replacement & Modernization decisions ○ Expansion decisions ○ Diversification decisions ▫ **On the basis of Decision Situation** ○ Independent Projects or Accept-reject decisions ○ Mutually Exclusive Projects ○ Complementary Projects or Dependable Projects
Cash Flows	▫ Capital outflows ▫ Working capital outflows ▫ Net Revenue cash inflows (Revenue outflow – Revenue Inflow) ▫ Terminal value
Meaning of Time Value of Money	Time value of money means that worth of a rupee received today is different from the worth of a rupee to be received in future. The preference of money now as compared to future money is known as time preference for money.
Reasons for using Time Value of Money	▫ **Risk:** There is uncertainty about the receipt of money in future. ▫ **Preference for present consumption:** Most of the persons and companies in general, prefer current consumption over future consumption. ▫ **Inflation:** In an inflationary period a rupee today represents a greater real purchasing power than a rupee a year hence. ▫ **Investment opportunities:** Most of the persons and companies have a preference for present money because of availabilities of opportunities of investment for earning additional cash flow.
Present Value	Present value is the current value of a future amount. It can also be defined as the amount to be invested today (Present value) at a given rate over specified period to equal the future amount.
Perpetuity	Perpetuity is an annuity in which the periodic payments or receipts begin on a fixed date and continue indefinitely or perpetually. Fixed coupon payments on permanently invested (irredeemable) sums of money are prime examples of perpetuity.
Accounting Rate of Return (ARR)	▫ It is the average annual yield earned on the project. It is calculated by dividing the annual average profits after taxes by the initial or average investments. ▫ When initial investment is taken, it is called Return on Investment (ROI) and when we use average investment, it is called Average Rate of Return (ARR). ▫ $ARR = \frac{\text{Annual Average Earnings After Tax}}{\text{Average Investment}} \times 100$

Merits of Accounting Rate of Return	(*a*) It is easy to understand and calculate (*b*) It considers the entire profits over the entire life of the projects (*c*) It uses the accounting data with which managers are familiar.
Demerits of Accounting Rate of Return	(*a*) It ignores the time value of money. (*b*) It does not use the cash flows. (*c*) There is no objective way to calculate the minimum acceptable rate of return. (*d*) In this method, the income and investment words are used which have got many meanings. So there is uncertainty.
Payback Period (PBP)	▫ It is the time that is required for a stream of cash flows (i.e. cash inflows) from an investment to recover the original cash outlays required by the investment. ▫ **If Annual Cash Inflows are equal:** $PBP = \frac{\text{Initial Cash Outflows}}{\text{Annual Cash Inflow}}$ ▫ **If Annual Cash Inflows are unequal:** PBP = Years upto which Cummulative CFAT is less than Total Cash Outflows $+\left(\frac{\text{Total Cash Outflow} - \text{Cummulative CF in which CF is less than total cash outflow}}{\text{CFAT for the next year for which Cummulative CFAT was considered in numerator}}\right)$
Merits of Payback Period	(*a*) It is easy to understand and calculate (*b*) It emphasis liquidity by stressing earlier cash inflows. (*c*) It uses cash flows rather than accounting data which is more realistic. (*d*) It enables the management to cope with the risk associated with the project by having a shorter payback period. (*e*) Projects in which the technological development is quite fast and there is more risk of obsolescence, then such projects are chosen in which the payback period is quite small.
Demerits of Payback Period	(*a*) It ignores the time value of money. (*b*) It ignores the cash flows occurring after the payback period. (*c*) There is no objective way to determine the maximum acceptable payback period. (*d*) It does not necessarily maximize the wealth of the shareholders (*e*) The cost of capital is the strong basis for investment decisions but this method ignores cost of capital. (*f*) This method does not measure risks in the project. If a project has shorter payback period but more risk, it may be accepted which is not good.

Payback Reciprocal	It is the reciprocal of payback period. It is close approximation of internal rate of return. $\text{Payback Reciprocal} = \frac{\text{Annual Average cash inflows}}{\text{Initial Investment}}$
Discounted Payback Period (Disc. PBP)	❑ It refers to the period within which the entire cost of the project is expected to be completely recovered by way of discounted cash inflows Disc. PBP = Years upto which Commulative PV of CFAT is less than PV of Cash Outflows $+\left(\frac{\text{PV of Cash Outflow - Cummulative PV of CF in which CF is lesss than PV of cash outflow}}{\text{PV of CF for the next year for which Cummulative PV of CF was considered in numerator}}\right)$
Merits of Discounted Payback Period	(*a*) It is easy to understand and calculate. (*b*) It considers the time value of money. (*c*) It emphasis liquidity by stressing earlier cash inflows (*d*) It uses the cash flows rather than accounting data. (*e*) It enables management to cope with the risk associated with the project by having a shorter payback period.
Demerits of Discounted Payback Period	(*a*) It ignores the cash flows occurring after the payback period. (*b*) There is no objective way to determine the maximum acceptable payback period. (*c*) It is not a measure of profitability since the cash flows occurring after the payback period are ignored. (*d*) It does not necessarily maximize the wealth of the shareholders.
Net Present Value	❑ The net present value method uses a specified discount rate to bring all subsequent net cash inflows after the initial investment to their present values (the time of the initial investment or year 0). ❑ The Net Present Value is obtained by subtracting the present value of cash outflows from the present value of cash inflows. ❑ $NPV = \frac{CF_0}{(1+k)^0} + \frac{CF1}{(1+k)^1} + \ldots + \frac{CF_n}{(1+k)^n} - CO_0$
Merits of NPV	(*a*) It recognizes the time value of money (*b*) It considers entire cash flows over entire life of the project. (*c*) It is consistent with the objective of maximizing the wealth of owners since NPV may be interpreted as an immediate increase in firm's wealth if the project is accepted. (*d*) It enables the comparison of relative profitability between projects of different life span and cash inflows occurring at different times.

Demerits of NPV	(*a*) It requires the estimation of cash inflows and cash outflows, which is a difficult task. (*b*) It requires the computation of the cost of capital to be used as discount rate. (*c*) It is a difficult concept to understand in case of mutually exclusive projects when projects involve different amount of cash outflows.
Internal Rate of Return (IRR)	❑ It is the highest rate of interest, which a firm would be ready to pay on funds borrowed to finance the project without being financially worse off by repaying loan along with interest thereon out of cash inflows generate by the project. ❑ In other words, it is the rate at which NPV is zero. ❑ $\text{IRR} = \text{Lower Rate} + \left(\frac{\text{Lower rate NPV}}{\text{Lowe rate NPV} - \text{Higher rate NPV}}\right)$ (Higher Rate – Lower Rate)
Merits of IRR	(*a*) It considers the time value of money. (*b*) It considers entire cash flows over entire life of the project. (*c*) It is consistent with the objective of wealth maximization of owner. (*d*) It is not based upon assumed cost of capital.
Demerits of IRR	(*a*) It is difficult to understand and compute. (*b*) The method is based upon an assumption of reinvestment rate of intermediate cash flows being the same as IRR of each individual project. (*c*) The estimation of appropriate rate of discount is quite difficult. (*d*) It may yield multiple IRR under circumstances when project cash flows reverse during the life of the project.
Multiple IRR	In cases where project cash flows change signs or reverse during the life of a project e.g. an initial cash outflow is followed by cash inflows and subsequently followed by a major cash outflow , there may be more than one IRR.
Profitability Index or Desirability Factor	❑ Profitability index is the ratio of present value of cash inflows to the present value of cash outflow i.e. investment. ❑ It is also known as Benefit-Cost Ratio. ❑ $\text{Profitability Index} = \frac{\text{PV of Cash inflow}}{\text{PV of cash outflows}}$ $= \frac{\text{Present Value of cash Inflows}}{\text{Present Value of cash Outflows}}$

Merits of Profitability Index	(*a*) In this method, full life of the project is taken into consideration. (*b*) It considers time value of money (*c*) It helps in determination of most desirable project mix in case of capital rationing when projects are divisible. (*d*) It helps in selection of mutually exclusive projects having same NPV.
Demerits of Profitability Index	(*a*) It is based on cost of capital which is difficult to calculate. (*b*) It does not provide satisfactory result in case of mutually exclusive projects having unequal lives. (*c*) It fails in determination of most desirable project mix in case of capital rationing when projects are indivisible.
Reasons for difference between NPV and IRR	(*a*) Scale or size disparity (*b*) Time disparity in cash flows (*c*) Disparity in life of proposals (unequal lives)
Similarities between NPV & IRR	(*a*) Both techniques uses Discounted Cash Flow Method i.e., both are Time Adjusted Techniques of Evaluation of Capital Project Proposals. (*b*) Both take into account the Cash Flows After Tax (CFAT) over the entire life of the Project. (*c*) Both are, consistent with the objective of maximizing the wealth of shareholders. (*d*) Both are difficult to compute. (*e*) Both the techniques may often give contradictory results especially in case of mutually exclusive projects.
Differences between NPV & IRR	(*a*) NPV uses the firm's cost of capital as the rate of discount. Unless the cost of capital is known. NPV technique cannot be applied. Whereas calculation of cost of capital is not the pre-requisite to apply IRR. (*b*) NPV may mislead while dealing with alternative projects or limited funds under the conditions of unequal lives. IRR allows a sound comparison of the project having different lives and different timings of cash inflows. (*c*) NPV may give different ranking in case of complicated projects as comparison to IRR. (*d*) NPV assumes that intermediate cash flows are reinvested at firm's cost of capital whereas IRR assumes that intermediate Cash Inflows are reinvested at the internal rate of the project. (*e*) IRR method favours short-term projects so long as it promises return in excess of cut-off rate whereas NPV method favours long-term projects. (*f*) IRR may give negative rate or multiple rates under certain circumstances. NPV does not suffer from the limitation of multiple rates.

NPV is Superior to IRR because	(*a*) NPV is simple to compute as compared to IRR. (*b*) NPV does not suffer from the limitation of multiple rates. (*c*) NPV assumes that intermediate cash flows are reinvested at firm's cost of capital. The reinvestment assumption of NPV is more realistic than IRR method.
IRR is Favoured than NPV because	(*a*) IRR is easier to visualize and to interpret as compared to NPV method, (*b*) Even in the absence of cost of capital, IRR gives an idea of project's profitability (*c*) IRR method is preferable to NPV in the evaluation of risky projects. In general, to resolve the inconsistency, it is necessary to have common (*i*) terminal date and (ii) expected reinvestment rate and calculate thereby the Terminal Value of the Project.
Modified Internal Rate of Return (MIRR)	▫ Under this method, all cash flows , apart from the initial investment, are brought to the terminal value using an appropriate discount rate (usually the Cost of Capital). ▫ This results in a single stream of cash inflow in the terminal year. The MIRR is obtained by assuming a single outflow in the zero year and the terminal cash inflow as mentioned above. ▫ The discount rate which equates the present value of the terminal cash in flow to the zero year outflow is called the MIRR. ▫ In other words, MIRR is the rate of compounding which makes the initial cash outflow in zero year equal to the terminal value of the cash inflows. ▫ Algebraically: Initial cash Outflow $(1 + r)^{nth}$ = Total Terminal value of all Cash Inflows Where, r = Modified Internal Rate of Return
Merits of MIRR	(*a*) It considers time value of money (*b*) It considers entire cash flows over entire life of the project (*c*) It is consistent with the objective of maximizing the wealth of owners (*d*) It is a measure of profitability since entire cash flows over entire life of the project are considered
Demerits of MIRR	(*a*) It requires the estimation of cash inflows and cash outflows, which is a difficult task (*b*) It is relatively difficult to compute. (*c*) It ignores the absolute amount of NPV while taking decision. A project having lower IRR but higher absolute NPV may be rejected although it increases the shareholder's wealth.

Capital Rationing	(*a*) **Projects are independent and divisible:** In this case decision will be based on NPV per rupee of capital or Profitability index. (*b*) **Projects are not divisible:** In this case, decision will be based on absolute NPV by making various possible combinations within the spending limit.
Projects with Unequal Lives	It can be delt by following methods: (*a*) Replacement chain method (*b*) Equivalent annualized criterion
Cut-Off Rate	It is the minimum rate which the management wishes to have from any project. Usually this is based upon the cost of capital. The management gains only if a project gives return of more than the cut-off rate. Therefore, the cut-off rate can be used as the discount rate or the opportunity cost rate.

PRACTICAL QUESTIONS

1. SK Ltd. provides you the following information:

Purchase price	₹80,000
Installation charges	₹20,000
Estimated salvage value at the end of useful life	₹40,000
Useful life	4 years
Working capital required	₹10,000
Annual earnings before depreciation and tax	₹65,000
Tax rate	30%

Calculate the Accounting Rate of Return if the method of Depreciation is

(*a*) Straight line method;

(*b*) Written down value method (assuming depreciation @ 20%).

[**Sol.** (*a*) 43.75%; (*b*) 46.02%]

2. From the following data calculate cash flows from operations:

Year	1	2	3	4	5
Sales	30,000	50,000	80,000	2,00,000	10,00,000

- Variable cost 40%
- Fixed cost ₹2,000
- Cost of assets ₹50,000
- Life 5 years
- Tax rate 30%

[**Sol.** ₹14,200; 22,600; ₹35,200; ₹85,600; ₹4,21,600]

3. From the following data calculate cash flows from operations:

Year	1	2	3	4	5
Sales	30,000	50,000	80,000	2,00,000	10,00,000

- Variable cost 30%
- Fixed cost ₹5,000
- Cost of assets ₹1,40,000
- Life 5 years
- Tax rate 30%

[**Sol.** ₹19,600; ₹29,400; ₹44,100; ₹1,02,900; ₹4,94,900]

4. From the following data calculate cash flows from sales of assets if assets is sold for
(*a*) ₹7; (*b*) ₹10 and (*c*) ₹16

- Cost of assets ₹1,000
- Life 5 years
- Scrap ₹10
- Tax 30%

[**Sol.** (*a*) ₹7.90; (*b*) ₹10; (*c*) ₹14.20]

5. From the following data calculate cash inflows
(*a*) if complete block is sold and (*b*) there are other remaining assets in block:

Year	1	2	3	4	5
Sales	40,000	50,000	80,000	2,00,000	10,00,000

- Variable cost 30%
- Fixed cost ₹3,000
- Cost of assets ₹1,30,000
- Scrap value ₹5,000
- Life 5 years
- Tax rate 30%
- Depreciation 20% WDV

[**Sol.** (*a*) ₹25,300; ₹28,640; ₹42,092; ₹99,894; ₹5,07,374; (*b*) ₹25,300; ₹28,640; ₹42,092; ₹99,894; ₹4,95,795]

6. From the following data calculate pay back period:

Year	1	2	3	4	5
Profit before depreciation	40,000	60,000	2,00,000	3,00,000	10,00,000

- Variable cost 30%
- Fixed cost ₹15,000
- Cost of assets ₹3,00,000
- Working capital ₹50,000
- Life 5 years
- Tax rate 30%

[**Sol.** 3,377 years]

7. From the following data calculate pay back period:

Year	1	2	3	4	5
Profit after depreciation & tax	40,000	60,000	2,00,000	3,00,000	10,00,000

Variable cost	30%
Fixed cost	₹30,000
Cost of assets	₹4,37,500
Scrap value	₹30,000
Working capital	₹20,000
Life	5 years
Depreciation	20% WDV
Tax rate	30%

[**Sol.** 2.78 years]

8. From the following data calculate

(*a*) pay back period and (*b*) discounted pay back period:

- Cost of project ₹2,50,000
- Annual cash inflow ₹90,000 upto 4 years and ₹10,00,000 in 5th year
- Cut off rate 9%

[**Sol.** (*a*) 2.78 years; (*b*) 3.35 years]

9. From the following data calculate discounted pay back period:

Year	1	2	3	4	5
Profit before depreciation & tax	40,000	60,000	2,00,000	3,00,000	10,00,000

- Variable cost 30%
- Fixed cost ₹25,000
- Cost of assets ₹3,20,000
- Scrap value ₹20,000
- Working capital ₹30,000
- Life 5 years
- Depreciation Sum of Year's Digit Method
- Tax rate 30%
- Minimum required return 11%

[**Sol.** 3.88 years]

10. From the following data calculate discounted pay back period:

Year	1	2	3	4
Profit before tax	10,000	15,000	40,000	1,00,000

- While computing above figures, depreciation was charged on straight line basis to write off an assets of ₹35,000 over 4 years to a ₹3,000 book value.

- Income tax rate at 30%.
- Written down value method at 20% is allowed as depreciation under income tax act.
- Minimum required return is 9%

[**Sol.** 2.24 years]

11. A Project requiring an investment of ₹10,00,000 and it yields profit after tax and depreciation which is as follows: **[SM]**

Year	Profit after tax and depreciation (₹)
1	50,000
2	75,000
3	1,25,000
4	1,30,000
5	80,000
Total	**4,60,000**

Suppose further that at the end of the 5th year, the plant and machinery of the project can be sold for ₹80,000. Determine average rate of return.

[**Sol.** 17.04%]

12. SK Company is evaluating three investment situations: (1) produce a new line of aluminium cookers, (2) expand its existing cooker line to include several new sizes and (3) develop a new, higher-quality line of cookers. If only the project in question is undertaken, the expected present values and the amounts of investment required are: **[SM]**

Project	Investment Required (₹)	Present value of future cash flows (₹)
1	2,00,000	2,90,000
2	1,15,000	1,85,000
3	2,70,000	4,00,000

If projects 1 and 2 are jointly undertaken, there will be no economies; the investment required and present values will simply be the sum of the parts. With project 1 and 3, economies are possible in investment because one of the machines acquired can be used in both production process. The total investment required for projects 1 and 3 combined is ₹4,40,000. If projects 2 and 3 are undertaken, there are economies to be achieved in marketing and producing the products but not in investment. The expected present value of future cash flows for projects 2 and 3 is ₹6,20,000. If all three projects are undertaken simultaneously, the economies noted will still hod. However, a ₹1,12,500 extension on the plant will be necessary, as space is not available for all three projects. Calculate NPV of the projects and state which project or projects should be chosen?

[**Sol.** NPV = ₹90,000; ₹70,000; ₹1,30,000; ₹1,60,000; ₹2,50,000; ₹2,35,000; ₹2,42,500]

13. Compute the net present value for a project with a net investment of ₹1,00,000 and net cash flows for year one is ₹55,000; for year two is ₹80,000 and for year three is ₹15,000. Further the company's cost of capital is 10%? **[SM]**

[PVIF @ 10% for three years are 0.909, 0.826 and 0.751]

[**Sol.** ₹27,340]

14. SK Ltd. is planning to invest in machinery, for which it has to make a choice between the two identical machines, in terms of Capacity, 'X' and 'Y'. Despite being designed differently, both machines do the same job. Further, details regarding both the machines are given below: **[SM]**

Particulars	Machine X	Machine Y
Purchase cost of the machine (₹)	15,00,000	10,00,000
Life (Years)	3	2
Running cost per year (₹)	4,00,000	6,00,000

The opportunity cost of capital is 9%. You are required to identify the machine the company should buy?

The present value (PV) factors at 9% are:

Year	t_1	t_2	t_3
$PVIF_{0.09,t}$	0.917	0.842	0.772

[**Sol.** PVCO = ₹25,12,400; ₹20,55,400]

15. A firm is in need of a small vehicle to make deliveries. It is intending to choose between two options. One option is to buy a new three wheeler that would cost ₹1,50,000 and will remain in service for 10 years.

The other alternative is to buy a second hand vehicle for ₹80,000 that could remain in service for 5 years. Thereafter the firm, can buy another second hand vehicle for ₹60,000 that will last for another 5 years. The scrap value of the discarded vehicle will be equal to it written down value (WDV). The firm pays 30% tax and is allowed to claim depreciation on vehicles @ 25% on WDV basis. The cost of capital of the firm is 12%.

You are required to advise the best option. **[Nov 2022]**

[**Sol.** New vehicle = ₹1,17,452; Second hand vehicle = ₹78,685]

16. SK ltd. is considering buying a new machine which would have a useful economic life of five years, a cost of ₹1,25,000 and a scrap value of ₹30,000, with 80 percent of the cost being payable at the start of the project and 20 percent at the end of the first year. The machine would produce 50,000 units per annum of a new project with an estimated selling price of ₹3 per unit. Direct cost would be ₹1.75 per unit and annual fixed costs, including depreciation calculated on straight-line basis, would be ₹40,000 per annum.

In the first year and the second year, special sales promotion expenditure, not included in the above costs, would be incurred, amounting to ₹10,000 and ₹15,000 respectively. Calculate NPV of the project for investment appraisal, assuming the company's cost of capital is 10 percent.

[SM, RTP Nov 2019, Similar RTP Nov 2023]

[**Sol.** NPV = ₹31,711]

17. SK Ltd. is planning to introduce a new product with a project life of 8 years. Initial equipment cost will be ₹3.5 crores. Additional equipment cost ₹25,00,000 will be purchased at the end of the third year from the cash inflow of this year. At the end of 8 years, the original equipment will have no resale value, but additional equipment can be sold for ₹2,50,000. A working capital of ₹40,00,000 will be needed and it will be released at the end of eight year. The project will be financed with sufficient amount of Equity capital. The sales volumes over eight years have been estimated as follows:

Year	1	2	3	4 & 5	6 – 8
Units	72,000	1,08,000	2,60,000	2,70,000	1,80,000

A sales price of ₹240 per unit is expected and variable expenses will amount to 60% of sales revenue. Fixed cash operating costs will amount to ₹36,00,000 per year. The loss of any year will be set off from the profits of subsequent two years. The company is subject to 30% tax rate and consider 12% to be an appropriate after tax cost of capital for this project. The company follows straight line method of depreciation. Required: Calculate the net present value of the project and advise the management to take appropriate decision. **[SM, Similar RTP May 2023]**

Note: The PV Factors at 12% are:

Year	1	2	3	4	5	6	7	8
PVIF	0.893	0.797	0.712	0.636	0.567	0.507	0.452	0.404

[**Sol.** NPV = ₹1,61,13,079]

18. A chemical company is presently paying an outside firm ₹1 per gallon to dispose off the waste material resulting from its manufacturing operations. At normal operating capacity, the waste is about 50,000 gallons per year.

After spending ₹60,000 on research, the company discovered that the waste could be sold for ₹10 per gallon if it was processed further. Additional processing would however, require an investment of ₹6,00,000 in new equipment, which would have an estimated life of 10 years with no salvage value. Depreciation would be calculated by straight line method.

Except for the costs incurred in advertising ₹20,000 per year, no change in the present selling and administration expenses is expected, if the new product is sold. The details of additional processing costs are as follows:

Variable – ₹5 per gallon of waste put into process

Fixed (excluding depreciation) – ₹30,000 per year

In costing the new product, general administrative overheads will be allocated at the rate of ₹2 per gallon. There will be no losses in processing and it is assumed that the total waste processed in a given year will be sold in that year. Estimates indicate that 40,000 gallons, of the product could be sold each year. The management when confronted with the choice of disposing off the waste or processing it further and selling it, seeks your advice. Which alternative would you recommend? Assume that the firm's cost of capital is 15% and it pays on an average 35% tax on its income.

Note: Present value of annuity of ₹1 at 15% rate of discount for 10 years is 5.019. **[SM]**

[**Sol.** ₹1,25,246]

19. A large profit making company is considering the installation of a machine to process the waste produced by one of its existing manufacturing process to be converted into a marketable product. At present the waste is removed by a contractor for disposal on payment by the company of ₹150 lakhs per annum for the next four years. The contract can be terminated upon installation of the aforesaid machine on payment of a compensation of ₹90 lakhs before the processing operation starts. This compensation is not allowed as deduction for tax purposes.

The machine required for carrying out the processing will cost ₹600 lakhs to be financed by a loan repayable in 4 equal instalments commencing from the end of the year-1. The interest rate is 14% per annum. At the end of the 4th year, the machine can be sold for ₹60 lakhs and the cost of

dismantling and removal will be ₹45 lakhs. Sales and direct costs of the produce emerging from waste processing for 4 years are estimated as under:

	(₹in lakhs)			
Year	1	2	3	4
Sales	966	966	1,254	1,254
Material Consumption	90	120	255	255
Wages	225	225	255	300
Other expenses	120	135	162	210
Factory Overheads	165	180	330	435
Depreciation (as per income tax rules)	150	114	84	63

Initial stock of material required before commencement of the processing operation ₹60 lakhs at the start of year 1. The stock levels of material to be maintained at the end of year 1, 2 and 3 will be ₹165 lakhs and the stocks at the end of year 4 will be nil. The storage of materials will utilize space which would otherwise have been rented out for ₹30 lakhs per annum. Labour costs include wages of 40 workers, whose transfer to this process will reduce idle time payments of ₹45 lakhs in year 1 and ₹30 lakhs in year 2. Factory overheads include apportionment of general factory overheads except to the extent of insurance charges of ₹90 lakhs per annum payable on this venture. The company's tax rate is 30%. Present value factors for four years are as under:

Year	1	2	3	4
PV Factors @ 14%	0.877	0.769	0.674	0.592

Advice the management on the desirability of installing the machine for processing the waste. All calculation should form part of the answer. **[SM, RTP Nov 2020]**

[**Sol.** ₹578.14 lakhs]

20. SK Lab Ltd. is using a X-ray machines which reached at the end of their useful lives. Following new X-ray machines of two different brands with same features are available for the purchase.

Brand	Cost of machine	Life of machine	Maintenance cost			Rate of depreciation
			Year 1-5	Year 6-10	Year 11-15	
XYZ	₹6,00,000	15 years	₹20,000	₹28,000	₹39,000	4%
ABC	₹4,50,000	10 years	₹31,000	₹53,000	...	6%

Residual Value of both of above machines shall be dropped by 1/3 of Purchase price in the first year and thereafter shall be depreciated at the rate mentioned above.

Alternatively, the machine of Brand ABC can also be taken on rent to be returned back to the owner after use on the following terms and conditions:

- Annual Rent shall be paid in the beginning of each year and for first year it shall be ₹1,02,000.
- Annual Rent for the subsequent 4 years shall be ₹1,02,500.
- Annual Rent for the final 5 years shall be ₹1,09,950.
- The Rent Agreement can be terminated by SK Labs by making a payment of ₹1,00,000 as penalty. This penalty would be reduced by ₹10,000 each year of the period of rental agreement.

You are required to:

(*a*) Advise which brand of X-ray machine should be acquired assuming that the use of machine shall be continued for a period of 20 years.

(*b*) Which of the option is most economical if machine is likely to be used for a period of 5 years?

The cost of capital of SK Labs is 12%. **[MTP May 2021]**

[Sol. (*a*) XYZ = ₹1,12,014; ABC = ₹1,15,360; Rent = ₹1,17,732; (*b*) XYZ = ₹4,99,732; ABC = ₹4,52,891; Rent = ₹4,41,643]

21. Alpha limited is a manufacturer of computers. It wants to introduce artificial intelligence while making computers. The estimated annual saving from introduction of the artificial intelligence (AI) is as follows:

- Reduction of five employees with annual salaries of ₹3,00,000 each,
- Reduction of ₹3,00,000 in production delays caused by inventory problem,
- Reduction in lost sales ₹2,50,000 and
- Gain due to timely billing ₹2,00,000.

The purchase price of the system for installation of artificial intelligence is ₹20,00,000 and installation cost is ₹1,00,000. 80% of the purchase price will be paid in the year of purchase and remaining will be paid in next year. The estimated life of the system is 5 years and it will be depreciated on a straight-line basis.

However, the operation of the new system requires two computer specialists with annual salaries of ₹5,00,000 per person.

In addition to above, annual maintenance and operating cost for five years are as below:

(Amount in ₹)

Year	1	2	3	4	5
Maintenance & Operating cost	2,00,000	1,80,000	1,60,000	1,40,000	1,20,000

Maintenance and operating cost are payable in advance.

The company's tax rate is 30% and its required rate of return is 15%.

Year	1	2	3	4	5
$PVIF_{0.10,t}$	0.909	0.826	0.751	0.683	0.621
$PVIF_{0.12,t}$	0.893	0.797	0.712	0.636	0.567
$PVIF_{0.15,t}$	0.870	0.756	0.658	0.572	0.497

Evaluate the project by using Net Present Value and Profitability Index. **[May 2022]**

[Sol. NPV = ₹8,36,557; PR = 1.41]

22. A share of the face value of ₹100 has current market price of ₹480. Annual expected dividend is 30%. During the fifth year, the shareholder is expecting a bonus issue in the ratio of 1:5. Dividend rate is expected to be maintained on the expanded capital base. The shareholder intends to retain the share till the end of the eighth year. At that time the value of share is expected to be ₹1,000. Incidental expenses at the time of purchase and sale are estimated at 5% on the market price. There is no tax on dividend income and capital gain. The shareholder expects a minimum return of 15% per annum. Should he buy the share? What is the maximum price he can pay for the share? Show complete workings.

[Sol. NPV = ₹13.18; Price = ₹492.55]

23. Suppose we have three projects involving discounted cash outflow of ₹5,50,000, ₹75,000 and ₹1,00,20,000 respectively. Suppose further that the sum of discounted cash inflows for these projects are ₹6,50,000, ₹95,000 and ₹1,00,30,000 respectively. Calculate the desirability factors for the three projects. **[SM]**

[Sol. 1.18; 1.27; 1.001]

24. SK Ltd. is planning its capital investment programmed for next year. It has five projects all of which give a positive NPV at the company cut-off rate of 15 percent, the investment outflows and present values being as follows: **[SM]**

Project	Investment (₹)	NPV @ 15% (₹)
A	(50,000)	15,400
B	(40,000)	18,700
C	(25,000)	10,100
D	(30,000)	11,200
E	(35,000)	19,300

The company is limited to a capital spending of ₹1,20,000. You are required to illustrate the return from a package of projects within the capital spending limit.

(*a*) The projects are independent of each other and are divisible (i.e. par-project is possible)

(*b*) Project C and D are dependent on each other and all other projects are divisible.

(*c*) The projects are independent of each other and are indivisible.

[**Sol.** (*a*) E, B, C, D; NPV = ₹55,567]

25. A company has following cash flows and its cost of capital is 10%.

Year	0	1	2	3	4
Cash flows	–2,00,000	60,000	90,000	1,30,000	70,000

Compute internal rate of return.

[**Sol.** 25.25%]

26. Given below are the data on a capital project 'S': **[SM]**

Annual cost saving	₹60,000
Useful life	4 years
Internal rate of return	15%
Profitability index	1.064
Salvage value	0

You are required to calculate for this project *S*:

(*a*) Cost of project

(*b*) Payback period

(*c*) Cost of capital

(*d*) Net Present Value

Given the following table of discount factors:

Discounting Factor	15%	14%	13%	12%
1 year	0.869	0.877	0.885	0.893
2 year	0.756	0.769	0.783	0.797
3 year	0.658	0.675	0.693	0.712
4 year	0.572	0.592	0.613	0.636
	2.855	2.913	2.974	3.038

[**Sol.** (*a*) ₹1,71,300; (*b*) 2.855 years; (*c*) 12%; (*d*) ₹10,980]

27. A company proposes to install machine involving a capital cost of ₹3,60,000. The life of the machine is 5 years and its salvage value at the end of the life is nil. The machine will produce the net operating income after depreciation of ₹68,000 per annum. The company's tax rate is 45%. The Net Present Value factors for 5 years are as under: **[SM]**

Discounting rate	14	15	16	17	18
Cumulative factor	3.43	3.35	3.27	3.20	3.13

You are required to compute the internal rate of return of the proposal.

[**Sol.** 15.74%]

28. An investment of ₹1,36,000 yields the following cash inflows (profit before depreciation but after tax). Determine MIRR considering 8% as cost of capital. **[SM]**

Year	₹
1	30,000
2	40,000
3	60,000
4	30,000
5	20,000
	1,80,000

[**Sol.** 9.45%]

29. SK Company is contemplating to replace one of its bottling machines with a newer and more efficient machine. The old machine was purchased at ₹10,00,000 and had a useful life of 10 years. The machine was bought 5 years back. The company does not expect to realize any return from scrapping the old machine at the end of 10 years but if it is sold now to another company in the industry, SK Company would receive ₹6,00,000 for it. The new machine has a purchase price of ₹20,00,000. It has an estimated salvage value of ₹2,00,000 and has useful life of 5 years.

The new machine will have a greater capacity and annual sales are expected to increase from ₹10,00,000 to ₹12,00,000. Operating efficiencies with the new machine will also produce savings of ₹2,00,000 a year. Depreciation is on a straight – line basis over useful life 5 years. The cost of capital is 8% and a 50% tax rate is applicable.

[**Sol.** ₹3,890]

30. SK Limited is thinking of replacing its existing machine by a new machine which would cost ₹60 lakhs. The company's current production is 80,000 units, and is expected to increase to 1,00,000 units, if the new machine is bought. The selling price of the product would remain unchanged at ₹200 per unit. The following is the cost of producing one unit of product using both the existing and new machine:

	Existing Machine (80,000 units)	New Machine (1,00,000 units)	Unit Cost (₹) Difference
Materials	75.0	63.75	(11.25)
Wages & Salaries	51.25	37.5	(13.75)
Supervision	20.0	25.0	5.0

	Existing Machine (80,000 units)	New Machine (1,00,000 units)	Unit Cost (₹) Difference
Repairs & Maintenance	11.25	7.5	(3.75)
Power & Fuel	15.5	14.25	(1.25)
Depreciation	0.25	5.0	4.75
Allocated Corporate Overheads	10.0	12.5	2.5
	183.25	**165.5**	**(17.75)**

The existing machine has an account book value of ₹1,00,000, and it has been fully depreciated for tax purpose. It is estimated that machine will be useful for 5 years. The supplier of the new machine has offered to accept the old machine for ₹2,50,000. However, the market price of old machine today is ₹1,50,000 and it is expected to be ₹35,000 after 5 years. The new machine has a life of 5 years and a salvage value of ₹2,50,000 at the end of its economic life. Assume corporate income tax rate of 40% and depreciation is charged on straight line basis for income tax purposes. Further assume that book profit is treated as ordinary income for tax purpose. The opportunity cost of capital of the company is 15%. Required: **[RTP Nov 2018]**

(*a*) Estimate net present value of the replacement decision

(*b*) Estimate the internal rate of return of the replacement decision

(*c*) Should company go ahead with the replacement decision? Suggest.

Year	1	2	3	4	5
$PVIF_{0.15,t}$	0.8696	0.7561	0.6575	0.5718	0.4972
$PVIF_{0.20,t}$	0.8333	0.6944	0.5787	0.4823	0.4019
$PVIF_{0.25,t}$	0.8000	0.6400	0.5120	0.4096	0.3277
$PVIF_{0.30,t}$	0.7692	0.5917	0.4552	0.3501	0.2693
$PVIF_{0.35,t}$	0.7407	0.5487	0.4064	0.3011	0.2230

[**Sol.** (*a*) ₹19,20,284; (*b*) 28.26%; (*c*) Yes]

31. SK Ltd. is contemplating replacement of one of its machines which has become outdated and inefficient. Its financial manager has prepared a report outlining two possible replacement machines. The details of each machine are as follows:

	Machine 1	Machine 2
Initial investment	₹12,00,000	₹16,00,000
Estimated useful life	3 years	5 years
Residual value	₹1,20,000	₹1,00,000
Contribution per annum	₹11,60,000	₹12,00,000
Fixed maintenance costs per annum	₹40,000	₹80,000
Other fixed operating cost per annum	₹7,20,000	₹6,10,000

The maintenance costs are payable annually in advance. All other cash flows apart from the initial investment assumed to occur at the end of each year. Depreciation has been calculated by straight line method and has been included in other fixed operating costs. The expected cost of capital for this project is assumed at 12% p.a.

Required to compute which machine is more beneficial, using annualized equivalent approach. Ignore tax. **[Dec 2021]**

Year	1	2	3	4	5	6
$PVIF_{0.12,t}$	0.893	0.797	0.712	0.636	0.567	0.507
$PVIFA_{0.12,t}$	0.893	1.690	2.402	3.038	3.605	4.112

[**Sol.** Machine 1 = ₹2,91,191; Machine 2 = ₹3,72,291]

32. SK Ltd. has a machine which has been in operation for 3 years. The machine has a remaining estimated useful life of 5 years with no salvage value in the end. Its current market value is ₹2,00,000. The company is considering a proposal to purchase a new model of machine to replace the existing machine. The relevant information is as follows: **[SM]**

	Existing Machine	New Machine
Cost of machine	₹3,30,000	₹10,00,000
Estimated life	8 years	5 years
Salvage value	Nil	₹40,000
Annual output	30,000 units	75,000 units
Selling price per unit	₹15	₹15
Annual operating hours	3,000	3,000
Material cost per unit	₹4	₹4
Labour cost per hour	₹40	₹70
Indirect cash cost per annum	₹50,000	₹65,000

The company uses written down value of depreciation @20% and it has several other machines in the block of assets. The income tax rate is 30 percent and SK Ltd. does not make any investment, if it yields less than 12 percent. Advise SK ltd. whether the existing machine should be replaced or not. PV Factors @12% are:

Year	1	2	3	4	5
PVF	0.893	0.797	0.712	0.636	0.567

[**Sol.** ₹3,28,965]

33. SK Ltd. is considering replacing a manually operated old machine with a fully automatic new machine. The old machine had been fully depreciated for tax purpose but has a book value of ₹2,40,000 on 31st March, 2021. The machine has begun causing problems with breakdowns and it cannot fetch more than ₹30,000 if sold in the market at present. It will have no realizable value after 10 years. The company has been offered ₹1,00,000 for the old machine as a trade in on the new machine which has a price (before allowance for trade in) of ₹4,50,000. The expected life of new machine is 10 years with salvage value of ₹35,000.

Further the company follows straight line depreciation method but for tax purpose, written down value method depreciation @7.5%is allowed taking that this is the only machine in the block of assets.

Given below are the expected sales and costs from both old and new machine:

	Old Machine (₹)	New Machine (₹)
Sales	8,10,000	8,10,000
Material cost	1,80,000	1,26,250
Labour cost	1,35,000	1,10,000
Variable overhead	56,250	47,500
Fixed overhead	90,000	97,500
Depreciation	24,000	41,500
PBT	3,24,750	3,87,250
Tax @ 30%	97,425	1,16,175
PAT	2,27,325	2,71,075

From the above information, analyse whether the old machine should be replaced or not if required rate of return is 10%? Ignore capital gain tax. **[SM, RTP Dec 2021]**

PF Factors at 10%:

Year	1	2	3	4	5	6	7	8	9	10
PVF	0.909	0.826	0.751	0.683	0.621	0.564	0.513	0.467	0.424	0.386

[**Sol.** ₹44,612.44]

34. SK Ltd. is presently all equity financed. The directors of the company have been evaluating investment in a project which will required ₹270 lakhs capital expenditure on new machinery. They expect the capital investment to provide annual cash flows of ₹42 lakhs indefinitely which is net of all tax adjustments. The discount rate which it applies to such investment decisions is 14% net.

The directors of the company believe that the current capital structure fails to take advantage of tax benefits of debt and propose to finance the new project with undated perpetual debt secured on the company's assets. The company intends to issue sufficient debt to cover the cost of capital expenditure and the after tax cost of issue.

The current annual gross rate of interest required by the market on corporate undated debt of similar risk is 10%. The after tax costs of issue are expected to be ₹10 lakhs. Company's tax rate is 30%. **[SM]**

You are required to:

(*a*) Calculate the adjusted present value of the investment,

(*b*) Calculate the adjusted discount rate and

(*c*) Explain the circumstances under which the adjusted discount rate may be used to evaluate the future investments.

[**Sol.** (*i*) ₹104 lakh; (*ii*) 8.8%]

PRACTICE QUESTIONS

35. SK ltd. is a small company that is currently analysing capital expenditure proposals for the purchase of equipment; the company uses the net present value technique to evaluate projects. The capital budget is limited to ₹5,00,000 which SK Ltd. believes is the maximum capital it can raise. The initial investment and projected net cash flows for each project are shown below. The cost of capital of SK Ltd. is 12%. You are required to compute the NPV of the different projects.

(Amount in ₹)

	Project A	Project B	Project C	Project D
Initial Investment	2,00,000	1,90,000	2,50,000	2,10,000
Project Cash Inflows				
Year 1	50,000	40,000	75,000	75,000
Year 2	50,000	50,000	75,000	75,000
Year 3	50,000	70,000	60,000	60,000
Year 4	50,000	75,000	80,000	40,000
Year 5	50,000	75,000	1,00,000	20,000

[SM]

[**Sol.** NPV = (–) ₹19,750; ₹25,635; ₹27,050; (–)₹3,750]

36. A company is evaluating a project that requires initial investment of ₹60 lakhs in fixed assets and ₹12 lakhs towards additional working capital.

The project is expected to increase annual real cash inflow before taxes by ₹24,00,000 during its life. The fixed assets would have zero residual value at the end of life of 5 years. The company follows straight line method of depreciation which is expected for tax purposes also. Inflation is expected to be 6% per year. For evaluating similar projects, the company uses discounting rate of 12% in real terms. Company's tax rate is 30%. **[May 2018]**

Advise whether the company should accept the project, by calculating NPV in real terms.

PVIF (12%, 5 years)		PVIF (6%, 5 years)	
Year 1	0.893	Year 1	0.943
Year 2	0.797	Year 2	0.890
Year 3	0.712	Year 3	0.840
Year 4	0.636	Year 4	0.792
Year 5	0.567	Year 5	0.747

[**Sol.** NPV = ₹8,34,600]

37. AT Limited is considering three projects A, B and C. The cash flows associated with the projects are given below:

Cash flows associated with the Three Projects (₹)

Project	C_0	C_1	C_2	C_3	C_4
A	(10,000)	2,000	2,000	6,000	0
B	(2,000)	0	2,000	4,000	6,000
C	(10,000)	2,000	2,000	6,000	10,000

You are required to:

(*a*) Calculate the payback period of each of the three projects.

(*b*) If the cut-off period is two years, then which projects should be accepted?

(*c*) Projects with positive NPVs if the opportunity cost of capital is 10%.

(*d*) "Payback gives too much weight to cash flows that occur after the cut-off date" True of false?

(*e*) "If a firm used a single cutoff period for all projects, it is likely to accept too many short-lived projects". True or false? **[May 2019]**

PV Factor @ 10%

Year	0	1	2	3	4	5
P.V.	1	0.909	0.826	0.751	0.683	0.621

[**Sol.** (*a*) 3 years; 2 years; 3 years; (*b*) Project B; (*c*) (–)₹2,024; ₹6,754; ₹4,806; (*d*) False; (*e*) True]

38. CK Ltd. is planning to buy a new machine. Details of which are as follows:

Cost of the Machine at the commencement	₹2,50,000
Economic Life of the Machine	8 years
Residual Value	Nil
Annual Production Capacity of the machine	1,00,000 units
Estimated Selling Price per unit	₹6
Estimated annual fixed cost (excluding depreciation)	₹1,00,000
Estimated variable cost per unit (excluding depreciation)	₹3
Advertisement expenses in 1st year in addition of annual fixed cost	₹20,000
Maintenance expenses in 5th year in addition of annual fixed cost	₹30,000
Cost of capital	12%
Ignore tax	

Analyze the above mentioned proposal using the Net Present Value Method and advice. **[Nov 2020]**

PV Factor at 12% are as under:

Year	1	2	3	4	5	6	7	8
PV Factor	0.893	0.797	0.712	0.636	0.567	0.507	0.452	0.404

[**Sol.** NPV = ₹7,08,730]

39. PD Ltd. an existing company, is planning to introduce a new product with projected life of 8 years. Project cost will be ₹2,40,00,000. At the end of 8 years no residual value will be realized. Working capital of ₹30,00,000 will be needed. The 100% capacity of the project is 2,00,000 units p.a. but the Production and Sales Volume is expected are as under:

Year	Number of Units
1	60,000 units
2	80,000 units
3 – 5	1,40,000 units
6 – 8	1,20,000 units

Other information:

(*i*) Selling price per unit ₹200

(*ii*) Variable cost is 40% of sales

(*iii*) Fixed cost p.a. ₹30,00,000

(*iv*) In addition to this advertisement expenditure will have to be incurred as under:

Year	1	2	3 - 5	6 - 8
Expenditure (₹)	50,00,000	25,00,000	10,00,000	5,00,000

(*v*) Income tax is 25%

(*vi*) Straight line method of depreciation is permissible for tax purpose

(*vii*) Cost of capital is 10%

(*viii*) Assume that loss cannot be carried forward. **[Nov 2018]**

Present Value Table

Year	1	2	3	4	5	6	7	8
PVF @ 10%	0.909	0.826	0.751	0.683	0.621	0.564	0.513	0.467

[**Sol.** NPV = ₹1,18,82,700]

40. SK Hospital is considering to purchase a machine for medical projectional radiography which is price at ₹2,00,000. The projected life of the machine is 8 years and has an expected salvage value of ₹18,000 at the end of 8th year. The annual operating cost of the machine is ₹22,500. It is expected to generate revenues of ₹1,20,000 per year for eight years. Presently, the hospital is outsourcing the radiography work to its neighbour Test Center and is earning commission income of ₹36,000 per annum, net of taxes.

Required to analyse whether it would be profitable for the hospital to purchase the machine? Give your recommendation under:

(*i*) Net Present Value method

(*ii*) Profitability Index method **[SM, Similar RTP Nov 2022]**

Consider tax @30%. PV factors at 10% are given below:

Year 1	Year 2	Year 3	Year 4	Year 5	Year 6	Year 7	Year 8
0.909	0.826	0.751	0.683	0.621	0.564	0.513	0.467

[**Sol.** (*i*) ₹16,832.06; (*ii*) 1.084]

41. A hospital is considering to purchase a diagnostic machine costing ₹80,000. The projected life of the machine is 8 years and has an expected salvage value of ₹6,000 at the end of 8 years. The annual operating cost of the machine is ₹7,500. It is expected to generate revenues of ₹40,000 per year for eight years. Presently, the hospital is outsourcing the diagnostic work and is earning commission income of ₹12,000 per annum. Consider tax rate of 30% Discounting Rate as 10%.

Advise: Whether it would be profitable for the hospital to purchase the machine?

Give your recommendation as per Net Present Value method and Present Value Index method under below mentioned two situations:

(*i*) If Commission income of ₹12,000 p.a. is before taxes.

(*ii*) If Commission income of ₹12,000 p.a. is net of taxes. **[Nov 2022]**

[**Sol.** (*i*) ₹14,146.76; 1.18; (*ii*) (–)₹5,055.64; 0.94]

42. SK Ltd. is a News broadcasting channel having its broadcasting Centre in Mumbai. There are total 200 employees in the organisation including top management. As a part of employee benefit expenses, the company serves tea or coffee to its employees, which is outsourced from a third party. The company offers tea or coffee three times a day to each of its employees. 120 employees prefer tea all three times, 40 employees prefer coffee all three times and remaining prefer tea only once in a day. The third party charges ₹10 for each cup of tea and ₹15 for each cup of coffee. The company works for 200 days in a year.

Looking at the substantial amount of expenditure on tea and coffee, the finance department has proposed to the management on installation of a master tea and coffee vending machine which will cost ₹10,00,000 with a useful life of five years. Upon purchasing the machine, the company will have to enter into an annual maintenance contract with the vendor, which will require a payment of ₹75,000 every year. The machine would require electricity consumption of 500 units p.m. and current incremental cost of electricity for the company is ₹12 per unit. Apart from these running costs, the company will have to incur the following consumables expenditure also: **[SM]**

(*a*) Packets of coffee beans at a cost of ₹90 per packet

(*b*) Packet of tea powder at a cost of ₹70 per packet

(*c*) Sugar at a cost of ₹50 per kg

(*d*) Milk at a cost of ₹50 per litre

(*e*) Paper cup at a cost of 20 paise per cup.

Each packet of coffee beans would produce 200 cups of coffee and same goes for tea powder packet. Each cup of tea or coffee would consist of 10g of sugar on an average and 100ml of milk.

The company anticipates that due to ready availability of tea and coffee through vending machines its employees would end up consuming more tea and coffee.

It estimates that the consumption will increase by on an average 20% for all class of employees. Also, the paper cups consumption will be 10% more than the actual cups swerved due to leakages in them.

The company is in the 25% tax bracket and has a current cost of capital at 12% per annum. Straight line method of depreciation is allowed for the purpose of taxation. You as a financial consultant is required to advise on the feasibility of acquiring the vending machine.

PV factors @12%:

Year	1	2	3	4	5
PVF	0.8929	0.7972	0.7118	0.6355	0.5674

[Sol. (–) ₹1,36,874]

43. A company wants to buy a machine, and two different models namely A and B are available. Following further particulars are available:

Particulars	Machine – A	Machine – B
Original Cost (₹)	8,00,000	6,00,000
Estimated Life in years	4	4
Salvage Value (₹)	0	0

The company provides depreciation under straight line method. Income tax rate applicable is 30%.

The present value of ₹1 at 12% discounting factor and net profit before depreciation and tax are as under:

Year	Net Profit Before Depreciation and tax		PV Factor
	Machine – A (₹)	Machine – B (₹)	
1	2,30,000	1,75,000	0.893
2	2,40,000	2,60,000	0.797
3	2,20,000	3,20,000	0.712
4	5,60,000	1,50,000	0.636

Calculate:

(1) NPV (Net Present Value)

(2) Discounted pay-back period

(3) PI (Profitability Index)

Suggest: Purchase of which is more beneficial under Discounted pay-back period method, NPV method and PI method. **[Jan 2021]**

[Sol. (1) ₹18,909; ₹17,909; (2) 3.93 years; 3.82 years; (3) 1.024; 1.029]

44. A company has ₹1,00,000 available for investment and has identified the following four investments in which to invest.

Project	Investment (₹)	NPV (₹)
C	40,000	20,000
D	1,00,000	35,000
E	50,000	24,000
F	60,000	18,000

You are required to optimize the returns from a package of projects within the capital spending limit if:

(*a*) The projects are independent of each other and are divisible

(*b*) The projects are not divisible **[Nov 2019]**

[Sol. (*a*) C, E & D; NPV = ₹47,500; (*b*) C & E; NPV = ₹44,000]

45. SK Ltd. is evaluating a project involving an outlay of ₹10,00,000 resulting in an annual cash inflow of ₹2,50,000 for 6 years. Assuming salvage value of the project is zero; determine the IRR of the project. **[SM]**

[Sol. 12.978%]

46. Calculate the internal rate of return of an investment of ₹1,36,000 which yields the following cash inflows: **[SM]**

Year	Cash Inflows (in ₹)
1	30,000
2	40,000
3	60,000
4	30,000
5	20,000

You may use following discount rates:

Year	1	2	3	4	5
PVF @ 10%	0.909	0.826	0.751	0.683	0.621
PVF @ 12%	0.893	0.797	0.712	0.636	0.567

[**Sol.** 10.704%]

47. Suppose there are two Project A and Project B are under consideration. The cash flows associated with these projects are as follows: **[SM]**

Year	Project A	Project B
0	(1,00,000)	(3,00,000)
1	50,000	1,40,000
2	60,000	1,90,000
3	40,000	1,00,000

Assuming cost of capital equal to 10%, identify which project should be accepted as per NPV Method and IRR Method.

Year	1	2	3
PVF @ 10%	0.909	0.826	0.751
PVF @ 20%	0.833	0.694	0.579

[**Sol.** NPV – A = ₹25,050; B = ₹59,300; IRR – A = 24.26%; B = 21.48%]

48. Suppose SK Ltd. is considering two projects X and Y for investment. The cash flows associated with these projects are as follows: **[SM]**

Year	Project X (₹)	Project Y (₹)
0	(2,50,000)	(3,00,000)
1	2,00,000	50,000
2	1,00,000	1,00,000
3	50,000	3,00,000

Assuming cost of capital be 10%, identify which project should be accepted as per NPV Method and IRR Method.

Year	1	2	3
PVF @ 10%	0.909	0.826	0.751
PVF @ 20%	0.833	0.694	0.579

[Sol. NPV – A = ₹51,950; B = ₹53,350; IRR – A = 24.87%; B = 17.60%]

49. Suppose SK Ltd. is considering two projects A and B for investment. The cash flows associated with these projects are as follows: **[SM]**

Year	Project A (₹)	Project B (₹)
0	(5,00,000)	(5,00,000)
1	7,50,000	2,00,000
2	0	2,00,000
3	0	7,00,000

Assuming cost of capital be 12%, identify which project should be accepted as per NPV Method and IRR Method.

Year	1	2	3
PVF @ 12%	0.893	0.797	0.712
PVF @ 50%	0.677	0.444	0.296

[**Sol.** NPV – A = ₹1,69,750; B = ₹3,36,400; IRR – A = 50%; B = 43.07%]

50. SK Company is considering the following investment projects: **[SM]**

	Cash Flows (₹)			
Projects	C_0	C_1	C_2	C_3
A	–10,000	+10,000		
B	–10,000	+7,500	+7,500	
C	–10,000	+2,000	+4,000	+12,000
D	–10,000	+10,000	+3,000	+3,000

(*a*) Analyse and rank the projects according to each of the following methods: (*i*) Payback; (*ii*) ARR, (*iii*) IRR and (*iv*) NPV, assuming discount rates of 10 and 30 percent.

(*b*) Assuming the projects are independent, which one should be accepted? If the projects are mutually exclusive, identify which project is the best?

[**Sol.** (*a*) (*i*) 1 year; 1.33 year; 2.33 year; 1 year; (*ii*) 0; 50%; 53%; 40%; (*iii*) 0%; 32%; 26.5%; 37.6%; (*iv*) (–)₹910; ₹3,013; ₹4.134; ₹3,821]

51. The expected cash flows of three projects are given below. The cost of capital is 10 percent. **[SM]**

(*a*) Calculate the payback period, net present value, internal rate of return and accounting rate of return of each project.

(*b*) Identify the rankings of the projects by each of the four methods.

(Figures in '000)

Period	Project A (₹)	Project B (₹)	Project C (₹)
0	(5,000)	(5,000)	(5,000)
1	900	700	2,000
2	900	800	2,000
3	900	900	2,000
4	900	1,000	1,000
5	900	1,100	

Period	Project A (₹)	Project B (₹)	Project C (₹)
6	900	1,200	
7	900	1,300	
8	900	1,400	
9	900	1,500	
10	900	1,600	

[Sol. (*a*) PBP = 5.56 year; 5.42 years; 2.5 years; NPV = ₹530.5; ₹655; IRR = 12.42%; 15.94%; 16.52%; ARR = 16%; 26%; 20%]

52. A company is considering the proposal of taking up a new project which requires an investment of ₹800 lakh on machinery and other assets. The project is expected to yield the following earnings (before depreciation and taxes) over the next five years: **[RTP May 2020]**

Year	Earnings (₹in lakhs)
1	320
2	320
3	360
4	360
5	300

The cost of raising the additional capital is 12% and assets have to be depreciated at 20% on Written Down Value basis. The scrap value at the end of the five year's period may be taken as zero. Income-tax applicable to the company is 40%. You are required to calculate the net present value of the project and advise the management to take appropriate decision. Also calculate the Internal Rate of Return of the Project.

Note: Present value of ₹1 at different rates of interest are as follows:

Year	10%	12%	14%	16%	20%
1	91%	0.89	0.88	0.86	0.83
2	0.83	0.8	0.77	0.74	0.69
3	0.75	0.71	0.67	0.64	0.58
4	0.68	0.64	0.59	0.55	0.48
5	0.62	0.57	0.52	0.48	0.40

[Sol. NPV = ₹141.94 lakhs; IRR = 18.64%]

53. SK Company is considering a new product line to supplement its range of products. It is anticipated that the new product line will involve cash investments of ₹7,00,000 at time 0 and ₹10,00,000 in year 1. After-tax cash inflows of ₹2,50,000 are expected in year 2, ₹3,00,000 in year 3, ₹3,50,000 in year 4 and ₹4,00,000 each year thereafter through year 10. Although the product line might be viable after year 10, the company prefers to be conservative and end all calculations at that time. **[SM]**

(*a*) If the required rate of return is 15 percent, compute net present value of the project? Is it acceptable?

(*b*) Analyse what would be the case if the required rate of return were 10 percent?

(*c*) Calculate its internal rate of return?

(*d*) Compute the project's payback period?

[**Sol.** (*a*) (–)₹1,18,200; (*b*) ₹2,51,450; (*c*) 13.40%; (*d*) 6 years]

54. SK Ltd. is considering purchasing of new plant worth ₹80,00,000. The expected net cash flows after taxes and before depreciation are as follows: **[SM]**

Year	Net Cash Flows (₹)
1	14,00,000
2	14,00,000
3	14,00,000
4	14,00,000
5	14,00,000
6	16,00,000
7	20,00,000
8	30,00,000
9	20,00,000
10	8,00,000

The rate of cost of capital is 10%. You are required to calculate:

(*i*) Pay back period

(*ii*) Net present value at 10 discount factor

(*iii*) Profitability index at 10 discount factor

(*iv*) Internal rate of return with the help of 10% and 15% discount factor

The following present value table is given for you:

Year	Present Value of ₹1 at 10% discount rate	Present Value of ₹1 at 15% discount rate
1	0.909	0.87
2	0.826	0.756
3	0.751	0.658
4	0.683	0.572
5	0.621	0.497
6	0.564	0.432
7	0.513	0.376
8	0.467	0.327
9	0.424	0.284
10	0.386	0.247

[**Sol.** (*i*) 5.625 years;(*ii*) ₹17,92,200; (*iii*) 1.224; (*iv*) 14.7%]

55. SK Ltd. wants to replace its old machine with a new automatic machine. Two models A and B are available at the same cost of ₹5 lakhs each. Salvage value of the old machine is ₹1 lakhs. The utilities of the existing machine can be used if the company purchases A. Additional cost of utilities

to be purchased in that case are ₹1 lakh. If the company purchases B then all the existing utilities will have to be replaced with new utilities costing ₹2 lakhs. The salvage value of the old utilities will be ₹0.20 lakhs. The earnings after taxation are expected to be: **[SM]**

Year	Cash in Flows of		P.F. Factor @ 15%
	A (₹)	B (₹)	
1	1,00,000	2,00,000	0.870
2	1,50,000	2,10,000	0.756
3	1,80,000	1,80,000	0.658
4	2,00,000	1,70,000	0.572
5	1,70,000	40,000	0.497
Salvage value at the end of year 5	50,000	60,000	

The targeted return on capital is 15%. You are required to (*i*) compute for the two machines separately, net present value, discounted payback period and desirability factor and (*ii*) state which of the machines is to be selected?

[**Sol.** (*i*) NPV = ₹42,580; ₹18,140; DPBP = 4.61 years; 4.63 years; PI = 1.08; 1.03]

56. The General Manager of Merry Ltd. is considering the replacement of five-year old equipment. The company has to incur excessive maintenance cost of the equipment. The equipment has zero written down value. It can be modernized at a cost of ₹1,40,000 enhancing its economic life to 5 years. The equipment could be sold for ₹30,000 after 5 years. The modernization would help in material handling and in reducing labour, maintenance & repairs costs.

The company has another alternative to buy a new machine at a cost of ₹3,50,000 with an economic life of 5 years and salvage value of ₹60,000. The new machine is expected to be more efficient in reducing costs of material handling, labour, maintenance & repairs etc. **[RTP May 2021]**

The annual cost are as follows:

	Existing Equipment (₹)	Modernization (₹)	New Machine (₹)
Wages & Salaries	45,000	35,500	15,000
Supervision	20,000	10,000	7,000
Maintenance	25,000	5,000	2,500
Power	30,000	20,000	15,000
	1,20,000	70,500	39,500

Assuming tax rate of 50% and required rate of return of 10%, should the company modernize the equipment or buy a new machine? **[RTP May 2021]**

PV factor at 10% are as follows:

Year	1	2	3	4	5
PV Factor	0.909	0.826	0.751	0.683	0.621

[**Sol.** NPV = ₹14,123; (–)₹50,282]

57. Four years ago, Z Ltd. had purchased a machine of ₹4,80,000 having estimated useful life of 8 years with zero salvage value. Depreciation is charged using SLM method over the useful life. The company want to replace this machine with a new machine. Details of new machine are as below:

- Cost of new machine is ₹12,00,000, Vendor of this machine is agreed to take old machine at a value of ₹2,40,000. Cost of dismantling and removal of old machine will be ₹40,000. 80% of net purchase price will be paid on spot and remaining will be paid at the end of one year.
- Depreciation will be charged @ 20% p.a. under WDV method.
- Estimated useful life of new machine is four years and it has salvage value of ₹1,00,000 at the end of year four.
- Incremental annual sales revenue is ₹12,25,000.
- Contribution margin is 50%.
- Incremental indirect cost (excluding depreciation) is ₹1,18,750 per year.
- Additional working capital of ₹2,50,000 is required at the beginning of year and ₹3,00,000 at the beginning of year three. Working capital at the end of year four will be nil.
- Tax rate is 30%.
- Ignore tax on capital gain.

Z Ltd. will not make any additional investment, if it yields less than 12%.

Advice, whether existing machine should be replaced or not. **[May 2023]**

Year	1	2	3	4	5
PVIF0.12, t	0.893	0.797	0.712	0.636	0.567

[Sol. Incremental NPV = ₹79,739.47]

58. SK Ltd. is planning to invest in a machinery that would cost ₹1,00,000 at the beginning of year 1. Net cash inflows from operations have been estimated at ₹36,000 per annum for 3 years. The company has two options for smooth functioning of the machinery – one is service and another is replacement of parts. If the company opts to service a part of the machinery at the end of year 1 at ₹20,000, in such a case, the scrap value at the end of year 3 will be ₹25,000. However, if the company decides not to service the part, then it will have to be replaced at the end of year 2 at ₹30,800. And in this case, the machinery will work for the 4th year also and get operational cash inflow of ₹36,000 for the 4th year. It will have to be scrapped at the end of year 4 at ₹18,000.

Assuming cost of capital at 10% and ignoring taxes, determine the purchase of this machinery based on the net present value of its cash flows?

If the supplier gives a discount of ₹10,000 for purchase, what would be your decision?

Note: The PV Factors at 10% are: **[SM]**

Year	0	1	2	3	4	5	6
PV Factor	1	0.9091	0.8264	0.7513	0.6830	0.6290	0.5645

[Sol. NPV = (–)₹9,874.7; NPV = ₹953.68]

59. An existing company has a machine which has been in operation for two years, its estimated remaining useful life is 4 years with no residual value in the end. Its current market value is ₹3 lakhs. The management is considering a proposal to purchase an improved model of a machine gives increase output. The details are as under:

Particulars	Existing Machine	New Machine
Purchase Price	₹6,00,000	₹10,00,000
Estimated Life	6 years	4 years
Residual Value	0	0
Annual Operating days	300	300
Operating hours per day	6	6
Selling price per unit	₹10	₹10
Material cost per unit	₹2	₹2
Output per hour in units	20	40
Labour cost per hour	₹20	₹30
Fixed overhead per annum excluding depreciation	₹1,00,000	₹60,000
Working Capital	₹1,00,000	₹2,00,000
Income-tax rate	30%	30%

Assuming that - cost of capital is 10% and the company uses written down value of depreciation @ 20% and it has several machines in 20% block. **[July 2021]**

Advice the management on the Replacement of Machine as per the NPV method. The discounting factors table given below:

Discounting Factors	Year 1	Year 2	Year 3	Year 4
10%	0.909	0.826	0.751	0.683

[**Sol.** NPV = ₹56,779]

60. SK Ltd. is contemplating whether to replace an existing machine or to spend money on overhauling it. SK Ltd. currently pays no taxes. The replacement machine costs ₹90,000 now and requires maintenance of ₹10,000 at the end of every year for eight years. At the end of eight years it would have a salvage value of ₹20,000 and would be sold. The existing machine requires increasing amounts of maintenance each year and its salvage value falls each year as follows:

Year	Maintenance (₹)	Salvage (₹)
Present	0	40,000
1	10,000	25,000
2	20,000	15,000
3	30,000	10,000
4	40,000	0

The opportunity cost of capital for SK Ltd. is 15%. When should the company replace the machine?

(Note: Present value of an annuity of ₹1 per period for 8 years at interest rate of 15%: 4.4873l present value of ₹1 to be received after 8 years at interest rate of 15%: 0.3269)

[SM, Similar RTP May 2022]

[Sol. PV = ₹11,400; (–)₹11,832; (–)₹34,102; (–)₹55,799; (–)₹82,799]

SOLUTIONS

35. **Calculation of net present value:**

Period	PV factor	Project A (₹)	Project B (₹)	Project C (₹)	Project D (₹)
0	1.000	(2,00,000)	(1,90,000)	(2,50,000)	(2,10,000)
1	0.893	44,650	35,720	66,975	66,975
2	0.797	39,850	39,850	59,775	59,775
3	0.712	35,600	49,840	42,720	42,720
4	0.636	31,800	47,700	50,880	25,440
5	0.567	28,350	42,525	56,700	11,340
Net Present Value		(19,750)	25,635	27,050	(3,750)

36. **Statement of NPV**

Particulars	Time	PVF	Amount	Present Value
Cost of equipment	0	1	60,00,000	60,00,000
Working capital	0	1	12,00,000	12,00,000
			PVCO	**72,00,000**
Cash flows (w.n.-1)	1-5	3.605	20,40,000	73,54,200
Working capital realization	5	0.567	12,00,000	6,80,400
			PVCI	**80,34,600**
NPV (PVCI – PVCO)				**8,34,600**

It is recommended to accept the project in view of positive NPV.

Working Note-1:

Year	1
PBD (A)	24,00,000
Depreciation (60,00,000 ÷ 5)	12,00,000
PBT	12,00,000
Tax @ 30% (B)	3,60,000
Cash Inflow (A – B)	**20,40,000**

37.

Year	Project A		Project B		Project C	
	CF	Cumulative	CF	Cumulative	CF	Cumulative
1	2,000	2,000	0	0	2,000	2,000
2	2,000	4,000	2,000	2,000	2,000	4,000
3	6,000	10,000	4,000	6,000	6,000	10,000
4	–	–	6,000	12,000	10,000	20,000

(*a*) Payback period of Project A = 3 years

Payback period of Project B = 2 years

Payback period of Project C = 3 years

(*b*) Project B is the only acceptable project if cut-off period is 2 years.

(*c*) **Statement of NPV**

Year	PVF @10%	Project A		Project B		Project C	
		CF	PV	CF	PV	CF	PV
0	1	(10,000)	(10,000)	(2,000)	(2,000)	(10,000)	(10,000)
1	0.909	2,000	1,818	-	-	2,000	1,818
2	0.826	2,000	1,652	2,000	1,652	2,000	1,652
3	0.751	6,000	4,506	4,000	3,004	6,000	4,506
4	0.683	-	-	6,000	4,098	10,000	6,830
NPV			**(2,024)**		**6,754**		**4,806**

Project B and C have positive NPVs.

(*d*) Payback period doesn't give weightage to the cash flows after the cut off date so the statement given is false.

(*e*) The statement given is true. Payback period ignores all cash flows after the cut off date which means that future cash flows are not considered. Thus, payback period is biased towards short-term projects.

38. **Statement of Present Value of Cash Flows**

Particulars	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6	Year 7	Year 8
Units	1,00,000	1,00,000	1,00,000	1,00,000	1,00,000	1,00,000	1,00,000	1,00,000
Contribution per unit (6–3)	3	3	3	3	3	3	3	3
Total Contribution	3,00,000	3,00,000	3,00,000	3,00,000	3,00,000	3,00,000	3,00,000	3,00,000
(–) Fixed Cost	1,00,000	1,00,000	1,00,000	1,00,000	1,00,000	1,00,000	1,00,000	1,00,000
(–) Advert.	20,000	–	–	–	–	–	–	–
(–) Maint.	–	–	–	–	30,000	–	–	–
Profit Before Dep. or CF	1,80,000	2,00,000	2,00,000	2,00,000	1,70,000	2,00,000	2,00,000	2,00,000
PVF @ 12%	0.893	0.797	0.712	0.636	0.567	0.507	0.452	0.404
Present Value	1,60,740	1,59,400	1,42,400	1,27,200	96,390	1,01,400	90,400	80,800

Total Present value of cash inflows = 9,58,730 (from above table)

NPV = PVCI – PVCO = 9,58,730 – 2,50,000 = ₹7,08,730

It is recommended to accept the proposal as it has positive NPV.

39. **Statement of NPV**

Particulars	Time	PVF	Amount	Present Value
Cost of equipment	0	1	2,40,00,000	2,40,00,000
Working capital	0	1	30,00,000	30,00,000
			PVCO	**2,70,00,000**
Incremental Cash flows (w.n.-1)	1	0.909	(8,00,000)	(7,27,200)
	2	0.826	38,25,000	31,59,450
	3-5	2.055	1,03,50,000	2,12,69,250
	6-8	1.544	89,25,000	1,37,80,200
Working capital realization	8	0.467	30,00,000	14,01,000
			PVCI	**3,88,82,700**
NPV (PVCI – PVCO)				**1,18,82,700**

It is recommended to accept the project in view of positive NPV.

Working Note-1:

Year	1	2	3 -5	6 -8
Sales (units)	60,000	80,000	1,40,000	1,20,000
Contribution @ ₹120 p.u.	72,00,000	96,00,000	1,68,00,000	1,44,00,000
Fixed Cost	30,00,000	30,00,000	30,00,000	30,00,000
Advertisement	50,00,000	25,00,000	10,00,000	5,00,000
PBD (A)	(8,00,000)	41,00,000	1,28,00,000	1,09,00,000
Depreciation	30,00,000	30,00,000	30,00,000	30,00,000
PBT	(38,00,000)	11,00,000	98,00,000	79,00,000
Tax @ 25% (B)	–	2,75,000	24,50,000	19,75,000
Cash Inflow (A – B)	**(8,00,000)**	**38,25,000**	**1,03,50,000**	**89,25,000**

40. **Determination of Cash inflows**

Particulars	(₹)
Sales Revenue	1,20,000
Less: Operating Cost	22,500
	97,500
Less: Depreciation (₹2,00,000 – ₹18,000)/8	22,750
Net Income	74,750
Less: Tax @ 30%	22,425
Earnings after Tax (EAT)	52,325

Particulars	(₹)
Add: Depreciation	22,750
Cash inflow after tax per annum	75,075
Less: Loss of Commission Income	36,000
Net Cash inflow after tax per annum	39,075
In 8th Year :	
New Cash inflow after tax	39,075
Add: Salvage Value of Machine	18,000
Net Cash inflow in year 8	57,075

(*i*) Calculation of Net Present Value (NPV)

Year	CFAT (₹)	PV Factor @10%	Present Value of Cash inflows (₹)
1 to 7	39,075	4.867	1,90,178.03
8	57,075	0.467	26,654.03
			2,16,832.06
Less: Cash Outflows			2,00,000.00
NPV			16,832.06

(*ii*) Calculation of Profitability Index

$$\text{Profitability Index} = \frac{\text{Sum of discounted cash in flows}}{\text{Present value of cash out flows}} = \frac{2,16,832.06}{2,00,000} = 1.084$$

Advise: Since the net present value (NPV) is positive and profitability index is also greater than 1, the hospital may purchase the machine.

41. Analysis of Investment Decisions

Determination of Cash inflows	Situation-(i) Commission Income before taxes	Situation-(ii) Commission Income after taxes
Cash flow up-to 7th year:		
Sales Revenue	40,000	40,000
Less: Operating Cost	(7,500)	(7,500)
	32,500	32,500
Less: Depreciation (80,000 – 6,000) ÷ 8	(9,250)	(9,250)
Net Income	23,250	23,250
Less: Tax @ 30%	(6,975)	(6,975)
Earnings after Tax (EAT)	16,275	16,275
Add: Depreciation	9,250	9,250
Cash inflow after tax per annum	25,525	25,525
Less: Loss of Commission Income	(8,400)	(12,000)
Net Cash inflow after tax per annum	17,125	13,525

Determination of Cash inflows	Situation-(i) Commission Income before taxes	Situation-(ii) Commission Income after taxes
In 8th Year.		
Net Cash inflow after tax	17,125	13,525
Add: Salvage Value of Machine	6,000	6,000
Net Cash inflow in year 8	**23,125**	**19,525**

Calculation of NPV and Profitability Index

	Particulars	PV factor @10%	Situation-(i) [Commission Income before taxes]	Situation-(ii) [Commission Income after taxes]
A	Present value of cash inflows (1^{st} to 7^{th} year)	4.867	83,347.38 (17,125 × 4,867)	65,826.18 (13,525 × 4.867)
B	Present value of cash inflow at 8^{th} year	0.467	10,799.38 (23,125 × 0.467)	9,118.18 (19,525 × 0.467)
C	PV of cash inflows	1.00	94,146.76	74,944.36
D	Less: Cash Outflow		(80,000)	(80,000)
E	**Net Present Value (NPV)**		**14,146.76**	**(5,055.64)**
F	**PI = (C ÷ D)**		**1.18**	**0.94**

Recommendation: The hospital may consider purchasing of diagnostic machine in situation (*i*) where commission income is 12,000 before tax as NPV is positive and PI is also greater than 1. Contrary to situation (*i*), in situation (*ii*) where the commission income is net of tax, the recommendation is reversed to not purchase the machine as NPV is negative and PI is also less than 1.

42. **A. Computation of CFAT (Year 1 to 5)**

Particulars		Amount (₹)
(*a*) Savings in existing Tea & Coffee charges [{(120 × 10 × 3) + (40 × 15 × 3) + (40 × 10 × 1)} × 200 days]		11,60,000
(*b*) AMC of machine		(75,000)
(*c*) Electricity charges	500 × 12 × 12	(72,000)
(*d*) Coffee Beans	(W.N.) 144 × 90	(12,960)
(*e*) Tea Powder	(W.N.) 480 × 70	(33,600)
(*f*) Sugar	(W.N.) 1248 × 50	(62,400)
(*g*) Milk	(W.N.) 12480 × 50	(6,24,000)
(*h*) Paper Cup	(W.N.) 1,37,280 × 0.2	(27,456)
(*i*) Depreciation	10,00,000/5	(2,00,000)

Particulars		Amount (₹)
Profit before Tax		52,584
(–) Tax @ 25%		(13,146)
Profit after Tax		39,438
Depreciation		2,00,000
CFAT		2,39,438

B. **Computation of NPV**

Year	Particulars	CF	PVF @ 12%	PV
0	Cost of machine	(10,00,00)	1	(10,00,000)
1–5	CFAT	2,39,438	3.6048	8,63,126
Net Present Value				(1,36,874)

Since NPV of the machine is negative, it should not be purchased.

Working Note:

Computation of Qty of consumable

No. of Tea Cups = [(120 × 3 × 200 days) + (40 × 1 × 200 days)] × 1.2 = 96,000

No. of Coffee cups = (40 × 3 × 200 days × 1.2) = 28,800

$$\text{No. of coffee beans packet} = \frac{28,800}{200} = 144$$

$$\text{No. of Tea Powder Packets} = \frac{96,000}{200} = 480$$

$$\text{Qty of Sugar} = \frac{(96,000+28,800)\times 10}{1,000g} - 1248kgs$$

$$\text{Qty of Milk litres} = \frac{(96,000+28,800)\times 100}{1,000ml} = 12,480$$

No. of paper cups = (96,000+28,800) × 1.1 = 1,37,280

43. **Statement of Cash flows and PV of Cash flows of Machine A**

Year	CFBT	Depreciation	PBT	Tax @30%	CFAT	PVF	PVCI
	A	B	C = A – B	D = C × 30%	E = A – D	F	E × F
1	2,30,000	2,00,000	30,000	9,000	2,21,000	0.893	1,97,353
2	2,40,000	2,00,000	40,000	12,000	2,28,000	0.797	1,81,716
3	2,20,000	2,00,000	20,000	6,000	2,14,000	0.712	1,52,368
4	5,60,000	2,00,000	3,60,000	1,08,000	4,52,000	0.636	2,87,472
Total					**11,15,000**		**8,18,909**

Statement of Cash flows and PV of Cash flows of Machine B

Year	CFBT	Depreciation	PBT	Tax @30%	CFAT	PVF	PVCI
	A	B	C = A – B	D = C × 30%	E = A – D	F	E × F
1	1,75,000	1,50,000	25,000	7,500	1,67,500	0.893	1,49,578
2	2,60,000	1,50,000	1,10,000	33,000	2,27,000	0.797	1,80,919
3	3,20,000	1,50,000	1,70,000	51,000	2,69,000	0.712	1,91,528
4	1,50,000	1,50,000	–	–	1,50,000	0.636	95,400
Total					**8,13,500**		**6,17,425**

(1) NPV of Machine A = PVCI – PVCO = 8,18,909 – 8,00,000 = ₹18,909

NPV of Machine B = PVCI – PVCO = 6,17,425 – 6,00,000 = ₹17,425

(2) Statement of Cumulative PVCI

	Year 1	Year 2	Year 3	Year 4
PVCI – Machine A	1,97,353	1,81,716	1,52,368	2,87,472
Cumulative PVCI – Machine A	1,97,353	3,79,069	5,31,437	8,16,909
PVCI – Machine B	1,49,578	1,80,919	1,91,528	95,400
Cumulative PVCI – Machine B	1,49,578	3,30,497	5,22,025	6,17,425

$$\text{Discounted Pay-back period of Machine A} = 3 + \frac{(8,00,00 - 5,31,437)}{2,87,472} = 3.93 \text{ years}$$

$$\text{Discounted Pay-back period of Machine B} = 3 + \frac{(6,00,00 - 5,22,025)}{95,400} = 3.82 \text{ years}$$

(3) $\text{Profitability Index of Machine A} = \frac{PVCI}{PVCO} = \frac{8,18,909}{8,00,000} = 1.024$

$\text{Profitability Index of Machine B} = \frac{PVCI}{PVCO} = \frac{6,17,425}{6,00,000} = 1.029$

Method	Recommendation
Discounted Pay-back period	Machine B as it has lower discounted pay-back period
NPV	Machine A as it has higher NPV
Profitability Index	Machine B as it has higher PI

44. (a) Computation of NPV per ₹1 of investment and Ranking of Projects

Project	Investment (₹)	NPV (₹)	NPV per ₹1 invested (₹)	Ranking
C	40,000	20,000	0.50	1
D	1,00,000	35,000	0.35	3

Project	Investment (₹)	NPV (₹)	NPV per ₹1 invested (₹)	Ranking
E	50,000	24,000	0.48	2
F	60,000	18,000	0.30	4

Calculation of Package of Projects

Project	Investment (₹)	NPV (₹)
C	40,000	20,000
E	50,000	24,000
D (1/10th of Project)	10,000	3,500
Total	**1,00,000**	**47,500**

The company would be well advised to invest in Project C, E and D ($1/10^{th}$) and reject Project F to optimize return within the amount of ₹1,00,000 available for investment.

(*b*) Calculation of Package of Projects

Package of Project	Investment (₹)	NPV (₹)
C and E	90 000 (40,000 + 50,000)	44,000 (20,000 + 24,000)
C and F	1,00,000 (40,000 + 60,000)	38,000 (20,000 + 18,000)
Only D	1,00,000	35,000

The company would be well advised to invest in Projects C and E to optimize return within the amount of ₹1,00,000 available for investment.

45. First of all, we shall find an approximation of the payback period: $= \frac{10,00,000}{2,50,000} = 4$

Now, we shall search this figure in the PVAF table corresponding to 6-year row. The value 4 lies between values 4.111 and 3.998 , correspondingly discounting rates are and respectively NPV @ 12% and 13% is:

$NPV_{12\%} = (10,00,000) + 4.111 \times 2,50,000 = +27,750$

$NPV_{13\%} = (10,00,000) + 3.998 \times 2,50,000 = -500$

The internal rate of return is, thus, more than 12% but less than 13%. The exact rate can be obtained by interpolation:

$$\text{IRR} = 12\% + \frac{27,750}{27,750 - (-500)} \times (13\% - 12\%) = 12\% + \frac{27,750}{28,250} = 12.978\%$$

$\text{IRR} = 2.978\%$

46. Let us discount cash flows by 10%.

Year	Cash Inflows(₹)	Discounting factor at 10%	Present Value (₹)
1	30,000	0.909	27,270
2	40,000	0.826	33,040
3	60,000	0.751	45,060

Year	Cash Inflows(₹)	Discounting factor at 10%	Present Value (₹)
4	30,000	0.683	20,490
5	20,000	0.621	12,420
Total present value			1,38,280
Less: Initial Investment			1,36,000
NPV			+2,280

The NPV calculated @ 10% is positive. Therefore, a higher discount rate is suggested, say, 12%.

Year	Cash Inflows (₹)	Discounting factor at 12%	Present Value (₹)
1	30,000	0.893	26,790
2	40,000	0.797	31,880
3	60,000	0.712	42,720
4	30,000	0.636	19,080
5	20,000	0.567	11,340
Total present value			1,31,810
Less: Initial Investment			1,36,000
NPV			- 4,190

The internal rate of return is, thus, more than 10% but less than 12%. The exact rate can be obtained by interpolation:

$$IRR = LR + \frac{\text{NPV at LR}}{\text{NPV at LR} - \text{NPV at HR}} \times (HR - LR) = 10 + \frac{₹2,280}{₹2,280 - (-4,190)} \times (12 - 10)$$

$$= 10 + \frac{₹2,280}{₹6,470} \times (12 - 10) = 10 + 0.704 = 10.704\%$$

47. **Net Present Value (NPV) of Projects**

Year	Cash Inflows of Project A (₹)	Cash Inflows of Project B (₹)	Present Value Factor @10%	PV of Project A (₹)	PV of Project B (₹)
0	(1,00,000)	(3,00,000)	1.000	(1,00,000)	(3,00,000)
1	50,000	1,40,000	0.909	45,450	1,27,260
2	60,000	1,90,000	0.826	49,560	1,56,940
3	40,000	1,00,000	0.751	30,040	75,100
NPV				25,050	59,300

Internal Rate of Returns (IRR) of Projects

Since by discounting cash flows at 10%, we are getting values very far from zero. Therefore, let us discount cash flows using 20% discounting rate.

Year	Cash Inflows of Project A (₹)	Cash Inflows of Project B (₹)	Present Value Factor @20%	PV of Project A (₹)	PV of Project B (₹)
0	(1,00,000)	(3,00,000)	1.000	(1,00,000)	(3,00,000)
1	50,000	1,40,000	0.833	41,650	1,16,620
2	60,000	1,90,000	0.694	41,640	1,31,860
3	40,000	1,00,000	0.579	23,160	57,900
NPV				6,450	6,380

Even by discounting cash flows at 20%, we are getting values far from zero. Therefore, let us discount cash flows using 25% discounting rate.

Year	Cash Inflows of Project A (₹)	Cash Inflows of Project B (₹)	Present Value Factor @25%	PV of Project A (₹)	PV of Project B (₹)
0	(1,00,000)	(3,00,000)	1.000	(1,00,000)	(3,00,000)
1	50,000	1,40,000	0.800	40,000	1,12,000
2	60,000	1,90,000	0.640	38,400	1,21,600
3	40,000	1,00,000	0.512	20,480	51,200
NPV				(1,120)	(15,200)

The internal rate of return is, thus, more than 20% but less than 25%. The exact rate can be obtained by interpolation:

$$IRR_A = 20\% + \frac{6,450}{6,450-(1,120)} \times (25\% - 20\%) = 20\% + \left(\frac{6,450}{7,570} \times 5\%\right) = 24.26\%$$

$$IRR_B = 20\% + \frac{6,380}{6,380-(15,200)} \times (25\% - 20\%) = 20\% + \left(\frac{6,380}{21,580} \times 5\%\right) = 21.48\%$$

Overall Position

	Project A	Project B
NPV @ 10%	₹25,050	₹59,300
IRR	24.26%	21.48%

Thus, there is contradiction in ranking by two methods.

48. Net Present Value of Projects

Year	Cash Inflows of Project X (₹)	Cash Inflows of Project Y (₹)	Present Value Factor @ 10%	PV of Project X (₹)	PV of Project Y (₹)
0	(2,50,000)	(3,00,000)	1.000	(2,50,000)	(3,00,000)
1	2,00,000	50,000	0.909	1,81,800	45,450
2	1,00,000	1,00,000	0.826	82,600	82,600

Year	Cash Inflows of Project X (₹)	Cash Inflows of Project Y (₹)	Present Value Factor @ 10%	PV of Project X (₹)	PV of Project Y (₹)
3	50,000	3,00,000	0.751	37,550	2,25,300
NPV				51,950	53,350

Internal Rate of Returns of projects

Since, by discounting cash flows at 10%, we are getting values far from zero. Therefore, let us discount cash flows using 20% discounting rate.

Year	Cash Inflows of Project X (₹)	Cash Inflows of Project Y (₹)	Present Value Factor @ 20%	PV of Project X (₹)	PV of Project Y (₹)
0	(2,50,000)	(3,00,000)	1.000	(2,50,000)	(3,00,000)
1	2,00,000	50,000	0.833	1,66,600	41,650
2	1,00,000	1,00,000	0.694	69,400	69,400
3	50,000	3,00,000	0.579	28,950	1,73,700
NPV				14,950	(15,250)

Since, by discounting cash flows at 20% we are getting that value of Project *X* is positive and value of Project *Y* is negative. Therefore, let us discount cash flows of Project *X* using 25% discounting rate and Project *Y* using discount rate of 15%.

Year	Cash Inflows of Project X (₹)	Present Value Factor @ 25%	PV of Project X (₹)	Cash Inflows of Project Y (₹)	Present Value Factor @ 15%	PV of Project Y (₹)
0	(2,50,000)	1.000	(2,50,000)	(3,00,000)	1.000	(3,00,000)
1	2,00,000	0.800	1,60,000	50,000	0.870	43,500
2	1,00,000	0.640	64,000	1,00,000	0.756	75,600
3	50,000	0.512	25,600	3,00,000	0.658	1,97,400
NPV			(400)			16,500

The internal rate can be obtained by interpolation:

$$IRR_X = 20\% + \frac{14,950}{14,950-(400)} \times (25\% - 20\%) = 20\% + \left(\frac{14,950}{15,350} \times 5\%\right) = 24.87\%$$

$$IRR_B = 15\% + \frac{16,500}{16,500-(15,250)} \times (20\% - 15\%) = 15\% + \left(\frac{16,500}{31,750} \times 5\%\right) = 17.60\%$$

Overall Position

	Project A	Project B
NPV @ 10%	₹51,950	₹53,350
IRR	24.87%	17.60%

Thus, there is contradiction in ranking by two methods.

49. Net Present Value of Projects

Year	Cash Inflows of Project A (₹)	Cash Inflows of Project B (₹)	Present Value Factor @ 12%	PV of Project A (₹)	PV of Project B (₹)
0	(5,00,000)	(5,00,000)	1.000	(5,00,000)	(5,00,000)
1	7,50,000	2,00,000	0.893	6,69,750	1,78,600
2	0	2,00,000	0.797	0	1,59,400
3	0	7,00,000	0.712	0	4,98,400
NPV				1,69,750	3,36,400

Internal Rate of Returns of projects

Let us discount cash flows using 50% discounting rate.

Year	Cash Inflows of Project A (₹)	Cash Inflows of Project B(₹)	Present Value Factor @ 50%	PV of Project A (₹)	PV of Project B (₹)
0	(5,00,000)	(5,00,000)	1.000	(5,00,000)	(5,00,000)
1	7,50,000	2,00,000	0.667	5,00,250	1,33,400
2	0	2,00,000	0.444	0	88,800
3	0	7,00,000	0.296	0	2,07,200
NPV				250	(70,600)

Since, IRR of project *A* shall be 50% as NPV is very small. Further, by discounting cash flows at 50%, we are getting NPV of Project *B* negative. Therefore, let us discount cash flows of Project *B* using 15% discounting rate.

Year	Cash Inflows of Project B (₹)	Present Value Factor @ 15%	PV of Project B (₹)
0	(5,00,000)	1.000	(5,00,000)
1	2,00,000	0.870	1,74,000
2	2,00,000	0.756	1,51,200
3	7,00,000	0.658	4,60,600
NPV			2,85,800

The internal rate can be obtained by interpolation:

$$IRR_B = 15\% + \frac{2,85,800}{2,85,800 - (70,600)} \times (50\% - 15\%)$$

$$= 15\% + \left(\frac{2,85,800}{3,56,400} \times 35\%\right) = 43.07\%$$

Overall Position

	Project A	Project B
NPV @ 12%	₹1,69,750	₹3,36,400
IRR	50.00%	43.07%

Thus, there is contradiction in ranking by two methods.

50. (*i*) Payback Period

Project A: ₹10,000/₹10,000 = 1 year

Project B: ₹10,000/₹7,500 = 1.33 years

Project C: $2 \text{ years} + \frac{₹10,000 - ₹6,000}{₹12,000} = 2\frac{1}{3}$ years

Project D: 1 year

(*ii*) ARR (Figures in ₹)

$$\text{Project A}: \frac{(10,000 - 10,000)}{(10,000)1/2} = 0$$

$$\text{Project B}: \frac{(15,000 - 10,000)1/2}{(10,000)1/2} = \frac{2,500}{5,000} = 50\%$$

$$\text{Project C}: \frac{(18,000 - 10,000)1/3}{(10,000)1/2} = \frac{2,667}{5,000} = 53\%$$

$$\text{Project D}: \frac{(16,000 - 10,000)1/3}{(10,000)1/2} = \frac{2,000}{5,000} = 40\%$$

Note: This net cash proceed includes recovery of investment also. Therefore, net cash earnings are found by deducting initial investment.

(*iii*) IRR

Project A:	The net cash proceeds in year 1 are just equal to investment. Therefore, r = 0%.
Project B:	This project produces an annuity of ₹7,500 for two years. Therefore, the required PVAF is ₹10,000/₹7,500 = 1.33. This factor is found under 32% column. Therefore, r = 32%
Project C:	Since cash flows are uneven, the trial and error method will be followed. Using 20% rate of discount, the NPV is +₹1,389. At 30% rate of discount, the NPV is – ₹633. The true rate of return should be less than 30%. At 27% rate of discount, it is found that the NPV is –₹86 and +₹105 at 26%. Through interpolation, we find r = 26.5%
Project D:	In this case also by using the trial and error method, it is found that at 37.6% rate of discount, NPV becomes almost zero. Therefore, r = 37.6%.

(*iv*) NPV

Project A:

at 10% $-10,000 + 10,000 \times 0.909 = -910$

at 30% $-10,000 + 10,000 \times 0.769 = -2,310$

Project B:

at 10% $-10,000 + 7,500(0.909 + 0.826) = +3,013$

at 30% $-10,000 + 7,500(0.769 + 0.592) = + 208$

Project C:

at 10% $-10,000 + 2,000 \times 0.909 + 4,000 \times 0.826 + 12,000 \times 0.751 = + 4,134$

at 30% $-10,000 + 2,000 \times 0.769 + 4,000 \times 0.592 + 12,000 \times 0.455 = - 633$

Project D:

at 10% $-10,000 + 10,000 \times 0.909 + 3,000 \times (0.826 + 0.751) = + 3,821$

at 30% $-10,000 + 10,000 \times 0.769 + 3,000 \times (0.592 + 0.455) = + 831$

The projects are ranked as follows according to the various methods:

Projects	PBP	ARR	IRR	NPV (10%)	NPV (30%)
A	1	4	4	4	4
B	2	2	2	3	2
C	3	1	3	1	3
D	1	3	1	2	1

(*b*) Payback and ARR are theoretically unsound method for choosing between the investment projects. Between the two time-adjusted (DCF) investment criteria, NPV and IRR, NPV gives consistent results. If the projects are independent (and there is no capital rationing), either IRR or NPV can be used since the same set of projects will be accepted by any of the methods. In the present case, except Project *A* all the three projects should be accepted if the discount rate is 10%. Only Projects *B* and *D* should be undertaken if the discount rate is 30%.

If it is assumed that the projects are mutually exclusive, then under the assumption of 30% discount rate, the choice is between *B* and *D* (and *C* are unprofitable). Both criteria IRR and NPV give the same results - *D* is the best. Under the assumption of 10% discount rate, ranking according to IRR and NPV conflict (except for Project *A*). If the IRR rule is followed, Project *D* should be accepted. But the NPV rule tells that Project is the best. The NPV rule generally gives consistent results in conformity with the wealth maximization principle. Therefore, Project *C* should be accepted following the NPV rule.

51. Payback Period Method:

$A = 5 + (500/900) = 5.56$ years

$B = 5 + (500/1,200) = 5.42$ years

$C = 2 + (1,000/2,000] = 2.5$ years

Net Present Value Method:

$NPV_A = (-5,000) + (900 \times 6.145) = (5,000) + 5,530.5 = ₹530.5$

NPV_B is calculated as follows:

Year	Cash flow (₹)	10% discount factor	Present value (₹)
0	(5000)	1.000	(5,000)
1	700	0.909	636
2	800	0.826	661
3	900	0.751	676
4	1000	0.683	683

Year	Cash flow (₹)	10% discount factor	Present value (₹)
5	1100	0.621	683
6	1200	0.564	677
7	1300	0.513	667
8	1400	0.467	654
9	1500	0.424	636
10	1600	0.386	618
			1591

NPV_C is calculated as follows:

Year	Cash flow (₹)	10% discount factor	Present value (₹)
0	(5000)	1.000	(5,000)
1	2000	0.909	1,818
2	2000	0.826	1,652
3	2000	0.751	1,502
4	1000	0.683	683
			655

Internal Rate of Return

Project *A*

NPV at 12% = (5,000) + 900 × 5.650 = (5,000) + 5085 = 85

NPV at 13% = (5,000) + 900 × 5.426 = (5,000) + 4,883.40 = −116.60

$$= 12 + \left[\frac{85}{85+116.60}\right] \times (13-12) = 12 + 0.42 = 12.42\%.$$

Project *B*

IRR_B

Year	Cash flow (₹)	10% discount factor	Present value (₹)	16% discount factor	Present value (₹)
0	(5000)	1.000	(5000)	1.000	(5000)
1	700	0.909	636	0.862	603
2	800	0.826	661	0.743	595
3	900	0.751	676	0.641	577
4	1,000	0.683	683	0.552	552
5	1,100	0.621	683	0.476	524
6	1,200	0.564	677	0.410	493
7	1,300	0.513	667	0.354	460
8	1,400	0.467	654	0.305	427
9	1,500	0.424	636	0.263	394
10	1,600	0.386	618	0.227	363
			1,591		(12)

Interpolating: $IRR_B = 10\% + \frac{1,591}{(1,591+12)} \times (16\% - 10\%) = 10\% + 5.94\% = 15.94\%$

Project *C* IRR_C

Year	Cash flow (₹)	15% discount factor	Present value (₹)	18% discount factor	Present value (₹)
0	(5,000)	1.000	(5,000)	1.000	(5,000)
1	2,000	0.870	1,740	0.847	1,694
2	2,000	0.756	1,512	0.718	1,436
3	2,000	0.658	1,316	0.609	1,218
4	1,000	0.572	572	0.516	516
			140		(136)

Interpolating: $IR_C = 15\% + \frac{140}{(140+136)} \times (18\% - 15\%) = 15\% + 1.52\% = 16.52\%$

Accounting Rate of Return:

ARR_A: Average capital employed $= \frac{5,000}{2} =$ ₹2,500

Average accounting profit $= \frac{(9,000 - 5,000)}{10} =$ ₹400

$ARR_A = \frac{(400 \times 100)}{2,500} = 16$ percent

ARR_B: Average accounting profit $= \frac{(11,500 - 5,000)}{10} =$ ₹650

$ARR_B = \frac{(650 \times 100)}{2,500} = 26$ percent

ARR_C: Average accounting profit $= \frac{(7,000 - 5,000)}{4} =$ ₹500

$ARR_C = \frac{(500 \times 100)}{2,500} = 20$ percent

(*b*) **Summary of Results**

	A	B	C
Payback (years)	5.5	5.4	2.5
NPV (₹)	530.50	1,591	655
IRR (%)	12.42	15.94	16.52
ARR (%)	16	26	20

Comparison of Rankings

Method	Payback	NPV	IRR	ARR
1	C	B	C	B
2	B	C	B	C
3	A	A	A	A

52. Computation of Cash flows **(₹in lakhs)**

	1	2	3	4	5
CFBT (A)	320	320	360	360	300
Less: Depreciation (20%)	160	128	102.4	81.92	65.54
EBT	160	192	257.60	278.08	234.46
Tax (40%) (B)	64	76.80	103.04	111.23	93.78
CFAT (A – B)	256	243.20	256.96	248.77	206.22
Add: CF from sale of assets	-	-	-	-	104.86
Total Cash Flow	256	243.20	256.96	248.77	311.08

***CF from sale of Assets**

Book value = 800 – 160 – 128 – 102.4 – 81.92 – 65.54 = ₹262.14 lakhs

Loss on sale of assets = 0 – 262.14 = ₹262.14 lakhs

Tax saving on loss = 262.14 × 40% = ₹104.86 lakhs

Cash flow from sale of assets = Sale value + tax saving on loss = 0 + 104.86 = ₹104.86 lakhs

Statement of NPV

Particulars	Time	Amount	12%		16%		20%	
			PVF	PV	PVF	PV	PVF	PV
Investment	0	800	1	800	1	800	1	800
		PVCO		**800**		**800**		**800**
Cash flows	1	256	0.89	227.84	0.86	220.16	0.83	212.48
	2	243.20	0.80	194.56	0.74	179.97	0.69	167.81
	3	256.96	0.71	182.44	0.64	164.45	0.58	149.03
	4	248.77	0.64	159.21	0.55	136.82	0.48	119.41
	5	311.08	0.57	177.32	0.48	149.32	0.40	124.43
		PVCI		**941.37**		**850.72**		**773.16**
		NPV		**141.37**		**50.72**		**(26.84)**

Since NPV is positive at 12%, therefore the project should be implemented.

$$IRR = 16\% + \left[\frac{50.72}{50.72-(-26.84)}\right](20-16) = 18.62\%$$

53. (*a*) Computation of NPV at 15% discount rate

Year	Cash flow (₹)	Discount Factor (15%)	Present value (₹)
0	(7,00,000)	1.000	(7,00,000)
1	(10,00,000)	0.870	(8,70,000)

Year	Cash flow (₹)	Discount Factor (15%)	Present value (₹)
2	2,50,000	0.756	1,89,000
3	3,00,000	0.658	1,97,400
4	3,50,000	0.572	2,00,200
5–10	4,00,000	2.163	8,65,200
Net Present Value			(1,18,200)

As the net present value is negative, the project is unacceptable.

(*b*) **Computation of NPV if discount rate would be 10% discount rate**

Year	Cash flow (₹)	Discount Factor (10%)	Present value (₹)
0	(7,00,000)	1.000	(7,00,000)
1	(10,00,000)	0.909	(9,09,000)
2	2,50,000	0.826	2,06,500
3	3,00,000	0.751	2,25,300
4	3,50,000	0.683	2,39,050
5-10	4,00,000	2.974	11,89,600
Net Present Value			2,51,450

Since NPV is positive, hence the project would be acceptable.

(*c*) **Calculation of IRR:**

$$IRR = LR + \frac{\text{NPV at LR}}{\text{NPV at LR} - \text{NPV at HR}} \times (HR - LR)$$

$$= 10\% + \frac{₹2,51,450}{₹2,51,450 - (-)1,18,200} \times (15\% - 10\%)$$

$$= 10\% + 3.4012 \text{ or } 13.40\%$$

(*d*) **Computation of Pay-back period of the project:**

Payback Period = 6 years:

$$-₹7,00,000 - ₹10,00,000 + ₹2,50,000 + ₹3,00,000 + ₹3,50,000 + ₹4,00,000 + ₹4,00,000 = 0$$

54. (*i*) **Calculation of Pay-back Period**

Cash Outlay of the Project	= ₹80,00,000
Total Cash Inflow for the first five years	= ₹70,00,000
Balance of cash outlay left to be paid back in the 6th year	= ₹10,00,000
Cash inflow for 6th year	= ₹16,00,000

So, the payback period is between 5th and 6th years, i.e.,

$$5 \text{ years} + \frac{₹10,00,000}{₹16,00,000} = 5.625 \text{ years or } 5 \text{ years } 7.5 \text{ months}$$

(*ii*) **Calculation of Net Present Value (NPV) @ 10% discount rate:**

Year	Net Cash Inflow (₹)	Present Value at Discount Rate of 10%	Present Value (₹)
	(a)	(b)	(c) = (a) × (b)
1	14,00,000	0.909	12,72,600
2	14,00,000	0.826	11,56,400
3	14,00,000	0.751	10,51,400
4	14,00,000	0.683	9,56,200
5	14,00,000	0.621	8,69,400
6	16,00,000	0.564	9,02,400
7	20,00,000	0.513	10,26,000
8	30,00,000	0.467	14,01,000
9	20,00,000	0.424	8,48,000
10	8,00,000	0.386	3,08,800
			97,92,200

Net Present Value (*NPV*)

= Cash Outflow – Present Value of Cash Inflows = ₹80,00,000 – ₹97,92,200 = 17,92,200

(*iii*) **Calculation of Profitability Index @ 10% discount rate:**

$$\text{Profitability Index} = \frac{\text{Present Value of Cash inflows}}{\text{Cost of the investment}} = \frac{₹97,92,200}{₹80,00,000} = 1.224$$

(*iv*) **Calculation of Internal Rate of Return:**

Net present value @ 10% interest rate factor has already been calculated in (ii) above, we will calculate Net present value @15% rate factor.

Year	Net Cash Inflow (₹)	Present Value at Discount Rate of 15%	Present Value (₹)
	(a)	(b)	(c) = (a) × (b)
1	14,00,000	0.870	12,18,000
2	14,00,000	0.756	10,58,400
3	14,00,000	0.658	9,21,200
4	14,00,000	0.572	8,00,800
5	14,00,000	0.497	6,95,800
6	16,00,000	0.432	6,91,200
7	20,00,000	0.376	7,52,000
8	30,00,000	0.327	9,81,000
9	20,00,000	0.284	5,68,000

Year	Net Cash Inflow (₹)	Present Value at Discount Rate of 15%	Present Value (₹)
10	8,00,000	0.247	1,97,600
			78,84,000

Net Present Value at 15% = ₹78,84,000 – ₹80,00,000 = ₹–1,16,000

As the net present value @ 15% discount rate is negative, hence internal rate of return falls in between 10% and 15%. The correct internal rate of return can be calculated as follows:

$$IRR = L + \frac{NPV_L}{NPV_L - NPV_H}(H - L)$$

$$= 10\% + \frac{₹17,92,200}{₹17,92,200 - (-₹1,16,000)}(15\% - 10\%) \quad = 10\% + \frac{₹17,92,200}{₹19,08,200} \times 5\% = 14.7\%$$

55. Calculation of Cash-outflow at year zero

Particulars	A (₹)	B (₹)
Cost of Machine	5,00,000	5,00,000
Cost of Utilities	1,00,000	2,00,000
Salvage value of Old Machine	(1,00,000)	(1,00,000)
Salvage of value Old Utilities	–	(20,000)
Total Expenditure (Net)	**5,00,000**	**5,80,000**

(*i*)(*a*) **Calculation of NPV**

Year	PV Factor @15%	Machine A		Machine B	
		Cash Inflows (₹)	Discounted value of inflows (₹)	Cash Inflows (₹)	Discounted value of inflows (₹)
0	1.000	(5,00,000)	(5,00,000)	(5,80,000)	(5,80,000)
1	0.870	1,00,000	87,000	2,00,000	1,74,000
2	0.756	1,50,000	1,13,400	2,10,000	1,58,760
3	0.658	1,80,000	1,18,440	1,80,000	1,18,440
4	0.572	2,00,000	1,14,400	1,70,000	97,240
5	0.497	1,70,000	84,490	40,000	19,880
Salvage	0.497	50,000	24,850	60,000	29,820
Net Present Value			42,580		18,140

Since the Net present Value of both the machines is positive both are acceptable.

(*b*) Discounted Pay-back Period

Year	Machine A		Machine B	
	Discounted cash inflows	Cumulative Discounted cash inflows	Discounted cash inflows	Cumulative Discounted cash inflows
1	87,000	87,000	1,74,000	1,74,000
2	1,13,400	2,00,400	1,58,760	3,32,760
3	1,18,440	3,18,840	1,18,440	4,51,200
4	1,14,400	4,33,240	97,240	5,48,440
5	1,09,340*	5,42,580	49,700*	5,98,140

*Includes salvage value.

Discounted Payback Period (For A and B):

$$\text{Machine A} = 4 \text{ years} + \left(\frac{5,00,000 - 4,33,240}{1,09,340}\right) = 4.61 \text{ years}$$

$$\text{Machine B} = 4 \text{ years} + \left(\frac{5,80,000 - 5,48,440}{49,700}\right) - 4.63 \text{ years}$$

(*c*) Desirability Factor or Profitability Index:

$$\text{Profitability Index (PI)} = \frac{\text{Sum of present value of net cash inflow}}{\text{Initial cash outflow}}$$

$$\text{Machine A} = \frac{₹5,42,580}{₹5,00,000} = 1.08; \text{ Machine} = \frac{₹5,98,140}{₹5,80,000} = 1.03$$

(*ii*) Since the absolute surplus in the case of A is more than B and also the desirability factor, it is better to choose A.

The discounted payback period in both the cases is almost same, also the net present value is positive in both the cases, but the desirability factor (profitability index) is higher in the case of Machine A, it is therefore better to choose Machine A.

56. **Statement of NPV**

Particulars	Time	PVF	Modernization		New Machine	
			Amount	PV	Amount	PV
Cash outflow	0	1	1,40,000	1,40,000	3,50,000	3,50,000
PVCO				**1,40,000**		**3,50,000**
Incremental cash flows	1-5	3.79	35,750	1,35,493	69,250	2,62,458
Salvage value	5	0.621	30,000	18,630	60,000	37,260
PVCI				**1,54,123**		**2,99,718**
NPV				**14,123**		**(50,282)**

NPV in case of Modernization is highest. Thus, it is recommended to modernize the existing machine.

Working Note-1:

Particulars	Existing	Modernization	New Machine
Wages & Salaries	45,000	35,500	15,000
Supervision	20,000	10,000	7,000
Maintenance	25,000	5,000	2,500
Power	30,000	20,000	15,000
Total Cost	1,20,000	70,500	39,500
Savings in cost	–	49,500	80,500
(–) Incremental Dep.	–	$\frac{1,40,000-30,000}{5} = 22,000$	$\frac{3,50,000-60,000}{5} = 58,000$
Savings before tax	–	27,500	22,500
(–) Tax @ 50%	–	13,750	11,250
Savings after tax	–	13,750	11,250
(+) Depreciation	–	22,000	58,000
Incremental cash flow	–	35,750	69,250

57. (*i*) Calculation of Net Initial Cash Outflow

Particulars	₹
Cost of New Machine	12,00,000
Less: Sale proceeds of existing machine	2,00,000
Net Purchase Price	10,00,000
Paid in year 0	8,00,000
Paid in year 1	2,00,000

(*ii*) Calculation of Additional Depreciation

Year	1	2	3	4
	₹	₹	₹	₹
Opening WDV of machine	10,00,000	8,00,000	6,40,000	5,12,000
Depreciation on new machine@ 20%	2,00,000	1,60,000	1,28,000	1,02,400
Closing WDV	8,00,000	6,40,000	5,12,000	4,09,600
Depreciation on old machine (4,80,000/8)	60,000	60,000	60,000	60,000
Incremental depreciation	**1,40,000**	**1,00,000**	**68,000**	**42,400**

(iii) Calculation of Annual Profit before Depreciation and Tax (PBDT)

Particulars	Incremental Values
Sales	12,25,000
Contribution @ 50%	6,12,500
Less: Indirect Cost	1,18,750
Profit before Depreciation and Tax (PBDT)	4,93,750

Calculation of Incremental NPV

Year	PVF @ 12%	PBTD (₹)	Incremental Depreciation (₹)	PBT (₹)	Tax @ 30% (₹)	Cash Inflows (₹)	PV of Cash Inflows (₹)
	(1)	(2)	(3)	(4)	(5) = (4) × 0.30	(6) = (4) – (5) + (3)	(7) = (6) × (1)
1	0.893	4,93,750	1,40,000	3,53,750	106,125	3,87,625	3,46,149.125
2	0.797	4,93,750	1,00,000	3,93,750	1,18,125	3,75,625	2,99,373.125
3	0.712	4,93,750	68,000	4,25,750	1,27,725	3,66,025	2,60,609.800
4	0.636	4,93,750	42,400	4,51,350	1,35,405	3,58,345	2,27,907.420
			*			*	**11,34,039.470**
Add: PV of Salvage (1,00,000 × 0.636)							63,600
Less: **Initial Cash Outflow** – Year 0							**8,00,000**
Year 1 (2,00,000 × 0.893)							**1,78,600**
Less: **Working Capital** – Year 0							2,50,000
Year 2 (3,00,000 × 0.797)							2,39,100
Add: Working Capital released – Year 4 (5,50,000 × 0.636)							3,49,800
Incremental Net Present Value							**79,739.470**

Since the incremental *NPV* is positive, existing machine should be replaced.

58. Option I: Purchase Machinery and Service Part at the end of Year 1.

Net Present value of cash flow @ 10% per annum discount rate.

$$NPV\,(\text{in } ₹) = -1,00,000 + \frac{36,000}{(1.1)} + \frac{36,000}{(1.1)^2} + \frac{36,000}{(1.1)^3} - \frac{20,000}{(1.1)} + \frac{25,000}{(1.1)^3}$$

$$= -1,00,000 + 36,000\,(0.9091 + 0.8264 + 0.7513) - (20,000 \times 0.9091) + (25,000 \times 0.7513)$$

$$= -1,00,000 + (36,000 \times 2.4868) - 18,182 + 18,782.5$$

$NPV = -9,874.7$

Since, Net Present Value is negative; therefore, this option is not to be considered.

If Supplier gives a discount of ₹10,000, then:

NPV (in ₹) = + 10,000 – 9,874.7 = + 125.3

In this case, Net Present Value is positive but very small; therefore, this option may not be advisable.

Option II: Purchase Machinery and Replace Part at the end of Year 2.

$$NPV\ (\text{in } ₹) = -1,00,000 + \frac{36,000}{(1.1)} + \frac{36,000}{(1.1)^2} + \frac{36,000}{(1.1)^3} - \frac{30,800}{(1.1)^2} + \frac{54,000}{(1.1)^4}$$

$$= -1,00,000 + 36,000\ (0.9091 + 0.8264 + 0.7513) - (30,800 \times 0.8264) + (54,000 \times 0.6830)$$

$$= -1,00,000 + 36,000(2.4868) - 25,453.12 + 36,882$$

$$= -1,00,000 + 89,524.8 - 25,453.12 + 36,882$$

NPV = + 953.68

Net Present Value is positive, but very low as compared to the investment.

If the Supplier gives a discount of ₹10,000, then:

NPV (in ₹) = 10,000 + 953.68 = 10,953.68

Decision: Option II is worth investing as the net present value is positive and higher as compared to Option I.

59. Statement of NPV

Particulars	Time	PVF	Amount	Present Value
Cost of new machine	0	1	10,00,000	10,00,000
(+) Add. working cap. (2,00,000 – 1,00,000)	0	1	1,00,000	1,00,000
(–) Cash flow from sale of old assets	0	1	(3,00,000)	(3,00,000)
			PVCO	**8,00,000**
Incremental Cash flows (w.n. –1)	1	0.909	2,59,000	2,35,431
	2	0.826	2,50,600	2,06,996
	3	0.751	2,43,880	1,83,154
	4	0.683	2,38,504	1,62,898
Incremental working capital realization	4	0.683	1,00,000	68,300
			PVCI	**8,56,779**
NPV (PVCI – PVCO)				**56,779**

Since the incremental NPV is positive, thus existing machine should be replaced.

Working Note-1: Calculation of profit before depreciation (PBD)

Particulars	Existing Machine	New Machine
Annual output	300 × 6 × 20 = 36,000	300 × 6 × 40 = 72,000
Sales @ ₹10 per unit	3,60,000	7,20,000
Less: Cost of operation		

Particulars	Existing Machine	New Machine
Material @₹2 per unit	72,000	1,44,000
Labour	1800 × 20 = 36,000	1800 × 30 = 54,000
Fixed OHs	1,00,000	60,000
Profit before Depreciation	1,52,000	4,62,000

Thus, Annual Incremental Profit Before Depreciation = 4,62,000 – 1,52,000 = ₹3,10,000

Working Note-2: Calculation of basis of depreciation

Particulars	Existing	After Replacement
Purchase price of existing	6,00,000	6,00,000
Less: Depreciation of Yr. 1	1,20,000	1,20,000
Less: Depreciation of Yr. 2	96,000	96,000
WDV of existing machine	3,84,000	3,84,000
Add: Purchase of new	–	10,00,000
Less: Sale of existing	–	3,00,000
Basis for Depreciation	3,84,000	10,84,000

Working Note-3: Incremental cash flow from sale of assets

Particulars	Year 1	Year 2	Year 3	Year 4
Incremental PBD (A)	3,10,000	3,10,000	3,10,000	3,10,000
New Depreciation	2,16,800	1,73,440	1,38,752	1,11,002
Less: Existing Depreciation	76,800	61,440	49,152	39,322
Incremental Depreciation (B)	1,40,000	1,12,000	89,600	71,680
Incremental PBT (A – B)	1,70,000	1,98,000	2,20,400	2,38,320
Tax @ 30% (C)	51,000	59,400	66,120	71,496
Incremental CFs (A – C)	2,59,000	2,50,600	2,43,880	2,38,504

60. **SK Ltd.**

Equivalent cost of (EAC) of new machine

		(₹)
(i)	Cost of new machine now	90,000
	Add: PV of annual repairs @ ₹10,000 per annum for 8 years (₹10,000 × 4.4873)	44,873
		1,34,873
	Less : PV of salvage value at the end of 8 years (₹20,000 × 0.3269)	6,538
		1,28,335
	Equivalent annual cost (EAC) (1,28,335/4.4873)	28,600

PV of cost of replacing the old machine in each of 4 years with new machine

Scenario	Year	Cash Flow (₹)	PV @ 15%	PV (₹)
Replace Immediately	0	(28,600)	1.00	(28,600)
		40,000	1.00	40,000
				11,400
Replace in one year	1	(28,600)	0.870	(24,882)
	1	(10,000)	0.870	(8,700)
	1	25,000	0.870	21,750
				(11,832)
Replace in two years	1	(10,000)	0.870	(8,700)
	2	(28,600)	0.756	(21,622)
	2	(20,000)	0.756	(15,120)
	2	15,000	0.756	11,340
				(34,102)
Replace in three years	1	(10,000)	0.870	(8,700)
	2	(20,000)	0.756	(15,120)
	3	(28,600)	0.658	(18,819)
	3	(30,000)	0.658	(19,740)
	3	10,000	0.658	6,580
				(55,799)
Replace in four years	1	(10,000)	0.870	(8,700)
	2	(20,000)	0.756	(15,120)
	3	(30,000)	0.658	(19,740)
	4	(28,600)	0.572	(16,359)
	4	(40,000)	0.572	(22,880)
				(82,799)

Advice: The company should replace the old machine immediately because the PV of cost of replacing the old machine with new machine is least.

CHAPTER 8

Dividend Decisions

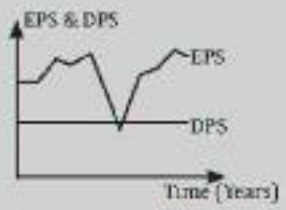
THEORY	
Meaning of Dividend	Dividend is the amount which is distributed by the company among shareholders out the profits generated from the business after paying taxes on such profits.
Meaning of Dividend Decisions	It involves the dilemma to choose between how much amount to distributed as dividend and how much should be retained for future growth.
Factors for Determining Dividend Policy	An optimum dividend policy should be developed which divides the net earnings into dividend and retained earnings so as to achieve the objective of wealth maximization for shareholders. The various factors to be considered for dividend policy are: ▫ **Financing Decision:** The equity portion of finance required for making various investments can be raised either from external equity i.e. issue of equity shares or can be generated internally through retained earnings. This decision is based on following two parameters: ○ Availability of Projects ○ Return on Investment ▫ **Wealth Maximization Decision:** The firm has to make a choice of paying dividend or retaining it as it will decide the market price of the share which in turn affects the wealth of the shareholders. Following points are to be considered for this option: ○ Balance between dividend and retention ○ Retained earnings affect current and future dividends
Determinants of Dividend Decisions	▫ Availability of investment opportunities ▫ Capital structure ▫ Cost of capital ▫ Internal rate of return ▫ Stock price ▫ Expectation of shareholders ▫ Trend of industry ▫ Liquidity ▫ Earning stability

Forms of Dividend	▫ **Cash Dividend:** ○ It is the amount paid to shareholders out of current earnings or accumulated profits. ○ It can be paid in the form of cheque, warrant, demand draft, pay order or directly through Electronic Clearing Services (*ECS*) but not in kind. ▫ **Shares Repurchase:** ○ It means buy-back of own shares of the company. ○ It can be either as treasury shares which are kept for re-issuance or as cancelled shares. ○ In case of cancellation it will decrease the existing number of shares. ○ Buyback can be done either through open market or through tender offer. ▫ **Bonus Shares (Stock Dividend):** These are the shares issued either in lieu or in addition of cash dividend to the existing shareholders proportionately as per their ownership. Through this bonus issue, reserve & surplus gets converted to equity capital. Thus, there is no change on the net worth of the company.
Advantages of Bonus Shares (Stock Dividend)	▫ It signifies a bright future of the company ▫ It utilizes profits of the company and conserve cash for meeting profitable investment projects ▫ There is no liability of dividend distribution tax on bonus shares ▫ It leads to increase in future cash dividend of the shareholders
Limitations of Bonus Shares (Stock Dividend)	▫ Bonus shares has no impact on the wealth of shareholders. It is merely a capitalization of past earnings of the shareholders. ▫ It is costlier to administer bonus issue than paying cash dividends. ▫ It may lead to over capitalization if ROI is not maintained
Practical Considerations in Dividend Policy	▫ **Financial needs of the company:** If the rate of return from the investment is less than the return that would be generated by shareholders if they invest themselves than maximum amount of profits should be distributed as dividend and vice versa. Further, raising of funds through debt and fresh equity will lead to incurrence of flotation cost and may increase the overall cost of capital of the company as well. ▫ **Constraints on paying dividend:** These are as follows: ○ **Legal Constraints:** As per this section 123 of the Companies Act 2013, dividend shall be declared or paid by a company for any financial year only: ➢ Out of the profits of the company for that year arrived at after providing for depreciation in accordance with the provisions of section 123(2), or

- Out of the profits of the company for any previous financial year or years arrived at after providing for depreciation in accordance with the provisions of that sub-section and remaining undistributed, or
- Out of both, or
- Out of money provided by the Central Government or a State Government for the payment of dividend by the company in pursuance of a guarantee given by that Government.

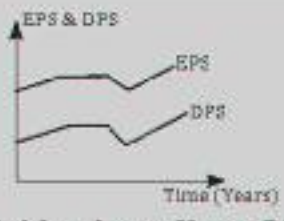
- **Liquidity:** The payment of dividend results in outflow of cash. It is possible that income of the company is adequate but it does not have necessary cash to pay dividend. Better the cash position of company, better will be its ability to pay dividend.
- **Access to Capital Market:** If a company's ability to make a new issue of shares or to issue debt is restricted, the company will retain a higher proportion of its profits than a company which has ready access to funds from the capital market.
- **Investment opportunities:** If the company doesn't have profitable investments, then earnings can be paid out in dividends and vice versa.

- **Desire of Shareholders:** Generally, small shareholder and senior citizen or old age shareholders desire receipt of regular dividend income while other shareholders desire to get maximum through capital appreciation instead of dividend.
- **Stability of Dividends:** Under this policy, Management tries to give dividend regularly at a stable rate. In other words, it means payment of at least some dividend regularly. Shareholders also rank it as a better policy as compared to variable dividend policy. The various types of dividend policy are:
  - **Constant Dividend per Share:** Under this policy, the company pays the same amount of dividend every year, irrespective of the fluctuation in earnings. In the years of higher earnings, the surplus is transferred to Dividend Equalization Reserve, so that constant dividends per share can be paid when the company is earning lower profits.

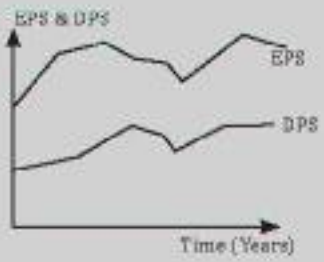


  - **Constant Dividend Payout Ratio:** Under this policy, the company plans to pay a fixed rate of its earnings as dividends. If there are losses in any year the dividend is not paid. The ratio of dividends to earnings is known as dividend payout ratio.

$$\text{Dividend payout ratio} = \frac{DPS}{EPS}$$



- **Small Constant Dividend per Share Plus Extra Dividend:** Under this policy, the company decides to pay constant dividends per share every year. The constant dividends per share are fixed at a conservative figure so that dividends can be maintained even in periods of loss. Apart from that the company will pay extra dividends if the earnings increase beyond the stated level. The extra amount of dividend depends upon the extra amount of earnings beyond the stated level.



Modigliani and Miller (MM) Hypothesis of Dividend Theory

Assumptions of MM Hypothesis:

- The capital markets operate in perfect market conditions
- Freely information is available to all investors
- Securities are infinitely divisible
- There are no flotation costs
- There are not taxes i.e. neither on dividend nor on capital gain
- Investors are rational and well informed about the risk and return of all the securities
- The company has a fixed investment policy
- Cost of equity remains constant

Explanation of MM Hypothesis:

- According to MM theory, earnings are the sole criteria on which market value of the firm is determined. Market value is not influenced by the split of earnings between dividends and retained earnings.
- The underlying intuition for this theory is simple – Company that pay more dividends offer less price appreciation but provide the same total return to shareholders, given the risk characteristics of the company. The investors should be indifferent of receiving their returns in the form of current dividends or in the form of price increase in the market.
- This can be computed with the help of following formula:

$$P0 = \frac{P1 + D1}{1 + Ke}$$

Where, $P0$ = Market price of share today

	$P1$ = Market price of share at the end of year 1 $D1$ = Dividend per share at the end of year 1 Ke = Cost of equity share capital or discount rate or rate of capitalization Additional number of shares to be issued at the end of year 1 $= \frac{I1-(E-D)}{P1}$ Where, $I1$ = Amount required for investment E = Total earnings of the company D = Total dividend to be distributed $P1$ = Market price of share at the end of year 1 Market capitalization of equity shares = No. of equity shares × MPS **Advantages of MM Hypothesis:** ▫ This model is logically consistent ▫ It provides a satisfactory framework on dividend policy with the concept of arbitrage process. **Limitations of MM Hypothesis:** ▫ This model may not be valid under uncertainty ▫ Validity of various assumptions is questionable ▫ The arbitrage process is affected by the transaction cost
Walter Model of Dividend Theory	**Assumptions of Walter Model:** ▫ The firm has infinite life ▫ All investments proposals of the firm are to be financed through retained earnings only ▫ The business risk complexion of the firm remains same. In other words, the rate of return on investment i.e. 'r' and the cost of capital of the firm i.e. 'Ke' are constant ▫ The firm operates in perfect capital market i.e. all investors are rational and information is freely available. ▫ There are no taxes ▫ There is no flotation or transaction costs **Explanation of Walter Model:** As per this model, a company should or should not pay dividends depends upon whether it has got the suitable investment opportunities to invest the retained earnings or not. The relationship between dividend and share price based on Walter's formula is shown below: $\text{Market Price (P0)} = \frac{D+(E-D)(r/Ke)}{Ke}$ Where, P0 = Market price of equity share E = Earnings per share D = Dividend per share

Ke = Cost of equity or rate of capitalization or discount rate
r = Rate of return on investment or internal rate or return

Position of r and Ke	Company	Optimum Dividend Payout Ratio
$r > Ke$	Growth	Zero
$r < Ke$	Decline	100%
$r = Ke$	Constant	Every payout ratio is optimum

Advantages of Walter Model:

- The formula is simple to understand and easy to compute
- It can envisage different possible market prices in different situations and considers internal rate of return, market capitalization rate and dividend payout ratio in the determination of market value of shares.

Limitations of Walter Model:

- The formula does not consider all the factors affecting dividend policy and share prices. Moreover, determination of market capitalization rate is difficult.
- Further, the formula ignores such factors as taxation, various legal and contractual obligations, management policy and attitude towards dividend policy and so on.
- This model is based on the assumption that 'r' is constant.
- This model assumes that 'Ke' remains same, which abstracts from the effect of risk on the value of the company.
- The model doesn't consider the external options i.e. debt and equity for financing the investment opportunities in the company.

Dividend Discount Model of Dividend Theory

Dividend discount model calculates the theoretical market value of the share by discounting the all future expected cash flows using an appropriate risk-adjusted rate. The security with a greater risk must potentially pay a greater rate of return to induce investors to buy the security. The dividend discount model is the intrinsic value of the stock. Future cash flows include dividends and the sale price of the stock when it is sold.

There are three models used in the dividend discount model:

(*a*) Zero-growth model
(*b*) Constant-growth model
(*c*) Variable-growth model

Zero Growth Model

This model assumes that all dividends paid by a stock remain the same. The stock price will be equal to the annual dividends divided by the required rate of return.

$$\text{Stock's Intrinsic Value (P0)} = \frac{\text{Annual Dividend}}{\text{Require Rate of Return}} = \frac{D}{Ke}$$

Constant-Growth Model or Gordon Model) or Bird in Hand Theory	**Assumptions of Gordon Model:** ▫ The firm is an all equity firm i.e. it has no debt ▫ All investment proposals of the firm are to be financed through retained earnings only and no external finance is available to the company. ▫ The business risk complexion of the firm remains same. In other words, rate of return on investment i.e. '*r*' and cost of capital of the company i.e. '*Ke*' are constant. ▫ The firm has an infinite life ▫ The cost of capital besides being constant is more than the growth rate i.e. $Ke > g$ ▫ The growth rate of the company '*g*' is the product of its retention ratio '*b*' and its rate of return '*r*' i.e. $g = br$ **Explanation of model:** This model suggests that, investors prefer what is available at present compared to what may be available in future. Investors are certain of receiving incomes from dividends than from future capital gains. Investors will prefer to pay a higher price for shares on which current dividends are paid as compared to those shares on which future capital gains are expected. **Under this model, market price of share can be calculated as follows:** Market Price (P0) = $\frac{D1}{Ke-g} = \frac{D0(1+Ke)}{Ke-g}$ Where, $D1$ = Next expected dividends or dividends payable at the end of the year $D0$ = current year Dividend Ke = cost of Equity capital or expected rate of return G = growth rate of dividends = br **Advantages of Gordon Model:** ▫ The dividend discount model is a useful heuristic model that relates the present stock price to the present value of its future cash flows. ▫ There is no ambiguity regarding the definitions of dividends. ▫ Dividends tend to stay consistent over long period of time ▫ This model is easy to understand **Limitations of Gordon Model:** ▫ The dividend discount model, depends on projections about company growth rate and future capitalization rates of the remaining cash flows, which may be difficult to calculate accurately. ▫ The true intrinsic value of a stock is unknowable ▫ The model is only applicable to mature, stable companies ▫ The dividend discount model assumes that the dividends paid out are correlated to earnings. But, in practice companies strive to maintain stable dividend payouts, even if they are facing extreme variations in their earnings. ▫ This model is not applicable to large shareholders.

Variable-Growth Model or Multi Stage Growth Model	▫ This model can take many forms, even assuming the growth rate is different for every year. ▫ However, the most common form is one that assumes 3 different rates of growth; an initial high rate of growth, a transition to slower growth, and lastly, a sustainable, steady rate of growth. ▫ The present values of each stage are added together to derive the intrinsic value of the stock. ▫ Sometimes, even the capitalization rate, or the required rate of return, may be varied if changes in the rate are projected. Stock Intrinsic Vale ($P0$) = PV of dividends + PV of market price at the end of the period
Traditional Model or Graham & Dodd Model of Dividend Theory	According to the traditional model, the stock market places considerably more weight on dividends than on retained earnings. For them, the stock market is overwhelmingly in favor of liberal dividends as against niggardly dividends. Their view is expressed quantitatively in the following valuation model: Market Price (P) = m (D + $E/3$) Where, P = Market Price per share D = Dividend per share E = Earnings per share M = Multiplier
Linter's Model of Dividend Theory	**Assumptions of Linter's Model** ▫ Firm have a long-term dividend payout ratio. They maintain a fixed dividend payout over a long term. Mature companies with stable earnings may have high payouts and growth companies usually have low payouts. ▫ Managers are more concerned with changes in dividends than the absolute amounts of dividends. A manager may easily decide to pay a dividend of ₹2 per share if last year too it was ₹2 but paying ₹3 dividend, if last year dividend was ₹2 is an important financial management decision. ▫ Dividend changes follow changes in long run sustainable earnings. ▫ Managers are reluctant to affect dividend changes that may have to be reversed. **Explanation of Linter's Model** This model states that, the current year's dividend is dependent on current year's earnings and last year's dividends. Similarly, last year dividends' is based on last year's earnings and the second previous year's dividends. If the circumstances appeared to warrant a large increase in their company's dividend's then the firm would move only steadily towards their target payment. Conservative firms move slowly towards its target and hence would have a low adjustment rate.

	$D1 = D0 + [(EPS \times \text{Target payout}] - D0] \times Af$ Where, $D1$ = Dividend in year 1 or next expected dividend $D0$ = Last dear dividend EPS = Earnings per share Af = Adjustment factor **Criticism of Linter's Model:** ▫ This model does not offer a market price for the shares ▫ The adjustment factor is an arbitrary number and not based on any scientific criterion or methods.
Stock Split	▫ Stock split is a corporate action in which a company divides its existing shares into multiple shares, means splitting one shares into many shares. ▫ For example, ₹300 share in to 3 shares of ₹100 each. ▫ Stock split is a tool used by companies to regulate the price of shares i.e. if a share price increases beyond a limit, it may become less tradable. ▫ For example, suppose a company's share price increase from ₹25 to ₹900 over the years, it is possible that it might goes out of range of many investors. **Advantages of Stock Split:** ▫ Affordability of each share is improved ▫ More shares are available so have a wider ownership base ▫ Certain investors prefer stocks that keep splitting **Disadvantages of Stock Split:** ▫ Additional expenditure needs to be incurred on the process of stock split. ▫ Low share price may attract speculators or short-term investors, which are generally not preferred by any company ▫ If a company splits its stock and then the value of the company itself falls, the shares may fall below this requirement and be delisted from the exchange.

PRACTICAL QUESTIONS

1. SK Ltd. earns ₹10 per share. Capitalization rate and return on investment are 10% and 12% respectively. Determine the optimum dividend payout ratio and the price of the share at the payout. **[SM]**

[**Sol.** 0%; ₹120]

2. Following are the details regarding three companies S Ltd., K Ltd. and M Ltd.:

S Ltd.	K Ltd.	M Ltd.
$r = 15\%$	$r = 5\%$	$r = 10\%$
$Ke = 10\%$	$Ke = 10\%$	$Ke = 10\%$
$E = ₹8$	$E = ₹8$	$E = ₹8$

Calculate the value of an equity share of each of these companies applying Walter's formula when dividend payment ratio (D/P ratio) is: (a) 25%, (b) 50%, (c) 75%. What conclusion do you draw?

[**Sol.** (*a*) ₹110; ₹50; ₹80; (*b*) ₹100; ₹60; ₹80; (*c*) ₹90; ₹70; ₹80]

3. The following figures are collected from the annual report of SK Ltd.:

Net Profit	₹30 lakhs
Outstanding 12% Preference Shares	₹100 lakhs
No. of equity shares	3 lakhs
Return on Investment	20%
Cost of Capital (Ke)	16%

Compute the approximate dividend pay-out ratio so as to keep the share price at ₹42 using Walter's model? **[SM, Similar Nov 2020]**

[**Sol.** 52%]

4. The following information pertains to M/s SK Ltd.:

Earnings of the company	₹5,00,000
Dividend pay-out ratio	60%
No. of shares outstanding	1,00,000
Equity capitalization rate	12%
Rate of return on investment	15%

Calculate

(*a*) What would be the market value per share as per Walter's Model?

(*b*) What is the optimum dividend payout ratio according to Walter's model and the market value of Company's share at that payout ratio? **[SM, Similar July 2021]**

[**Sol.** (*a*) ₹45.83; (*b*) ₹52.08]

5. The following information is available to you: **[SM, RTP May 2021]**

Total earnings	₹2,00,000
No. of equity shares (of ₹100 each)	20,000
Dividend paid	₹1,50,000
Price/Earnings ratio	12.5

Applying Walter's Model:

(*a*) Analyse whether the company is following an optimal dividend policy.

(*b*) Compute P/E Ratio at which the dividend policy will have no effect on the value of the share.

(*c*) Will your decision change, if the P/E ratio is 8 instead of 12.5? Analyze.

[**Sol.** (*a*) No;(*b*) 10 times; (*c*) Price at optimal level = ₹80]

6. The following figures are collected from the annual report of SK Ltd.: **[SM]**

Net Profit	₹30 lakhs
Outstanding 12% Preference Shares	₹100 lakhs
No. of equity shares	3 lakhs
Return on Investment	20%
Cost of Capital (Ke)	16%

Calculate price per share using Gordon's Model when dividend payout ratio is (*i*) 25%; (*ii*) 50% and (*iii*) 100%.

[**Sol.** (*i*) ₹150; (*ii*) ₹50; (*iii*) ₹37.50]

7. SK Ltd. is a no growth company, pays a dividend of ₹5 per share. If the cost of capital is 10%, compute the current market price of the share? **[SM]**

[**Sol.** ₹50]

8. SK Ltd. is s company having share capital of ₹10 lakhs of ₹10 each. It distributed current dividend of 20% per annum. Annual growth rate in dividend expected is 2%. The expected rate of return on its equity capital is 15%. Calculate price of share applying Gordon's growth model. **[SM]**

[**Sol.** ₹15.69]

9. A firm had paid dividend at ₹2 per share last year. The estimated growth rate of the dividends from the company is estimated to be at 5% p.a. Determine the estimated market price of the equity share if the estimated growth rate of dividends (*i*) rises to 8% and (*ii*) falls to 3%. Also find out the present market price of the share, given that the required rate of return of the equity investors is 15%. **[SM]**

[**Sol.** Present price = ₹21; (*i*) ₹30.86; (ii) ₹17.17]

10. A company has equity shares of ₹100 each. The company has paid dividend of ₹30 last year. The company is expected to grow at 12% p.a. for next two years, at 9% p.a. for next three years and by 5% p.a. for thereafter. The present price of share is ₹1,500 per share.

Find the intrinsic value of share if expected rate of return is 8% p.a. Also, state whether share is under-priced or over-priced.

[**Sol.** ₹1,323.54]

11. SK Ltd. expects with some degree of certainty to generate the following profits and to have the following capital investment during the next five years.

Year	1	2	3	4	5
Net Income	100,00,000	80,00,000	50,00,000	40,00,000	30,00,000
Investment	40,00,000	50,00,000	64,00,000	80,00,000	100,00,000

The company currently has 20,00,000 shares of equity and pays dividend of ₹10 per share. The company plans to finance their investment with debt and equity in the ratio of 1 : 1.

(*a*) Determine dividends per share if dividend policy is treated as a residual decision.

(*b*) Determine dividends per share under the fixed dividend payout ratio approach

(*c*) Determine dividends per share if a dividend payout ratio of 50% is maintained.

[**Sol.** (*a*) ₹4; ₹2.75; ₹0.90; -; -; (*b*) ₹2.2165; ₹1.77; ₹1.10825; ₹0.8866; ₹0.6645; (*c*) ₹2.50; ₹2.00; ₹1.25; ₹1.00; ₹0.75]

12. SK Ltd. has a capital of ₹10,00,000 in equity shares of ₹100 each. The shares are currently quoted at par. The company proposes to declare a dividend of ₹10 per share at the end of the current financial year. The capitalization rate for the risk class of which the company belongs is 12%. Compute market price of the share at the end of the year, if **[SM]**

(*a*) Dividend is not declared?

(*b*) Dividend is declared?

(*c*) Assuming that the company pays the dividend and has net profits of ₹5,00,000 and makes new investments of ₹10,00,000 during the period, how many new shares must be issued? Use the MM Model.

[**Sol.** (*a*) ₹112; (*b*) ₹102; (*c*) 5,883 shares]

13. Ordinary shares of a listed company are currently trading at ₹10 per share with two lakh shares outstanding. The company anticipates that its earnings for next year will be ₹5,00,000. Existing cost of capital for equity shares is 15%. The company has certain investment proposals under discussion which will cause an additional 26,809 ordinary shares to be issued if no dividend is paid or an additional 47,619 ordinary shares to be issued if dividend is paid.

Applying the MM hypothesis on dividend decisions, calculate the amount of investment and dividend that is under consideration by the company. **[RTP Nov 2022]**

[**Sol.** Investment = ₹8,00,024; Dividend per share = ₹1]

14. The earnings per share of a company is ₹30 and dividend payout ratio is 60%. Multiplier is 2. Determine the price per share as per Graham & Dodd Model.

[**Sol.** ₹56]

15. The following information regarding the equity shares of SK Ltd. is given below: **[SM]**

Market price	₹58.33
Dividend per shares	₹5
Multiplier	7

According to the Graham & Dodd approach to the dividend policy, compute the EPS.

[**Sol.** ₹10]

16. The dividend payout ratio of SK Ltd. is 40%. If the company follows traditional approach to dividend policy with a multiplier of 9, compute P/E Ratio.

[**Sol.** 6.60]

17. Given the last year's dividend is ₹9.80, speed of adjustment = 45%, target payout ratio 60% and EPS for current year ₹20. Compute current year's dividend using Linter's model.

[**Sol.** ₹10.79]

18. Mr. S is currently holding 1,00,000 shares of SK Ltd. and currently the shares of SK Ltd is trading on NSE at ₹50 per share. Mr. S have a policy to re-invest the amount of any dividend received into the shares back again of SK Ltd. If SK Ltd. has declared a dividend of ₹10 per share, please determine the number of shares that Mr. S would hold after he re-invests dividend in shares of SK Ltd. **[SM]**

[Sol. 1,25,000 shares]

19. Following information is given pertaining to SK Ltd. **[SM]**

Number of shares outstanding	1 lakh shares
Earnings per share	₹25 per share
PE Ratio	20
Book value per share	₹400 per share

If company decides to repurchase 5,000 shares, at the prevailing market price, what is the resulting book value per share after repurchasing.

[Sol. ₹367]

20. SK Ltd which has 2 Crore Shares of ₹10 each outstanding, has earned ₹200 per Share for the year ending 31st March. All the Shares are held by small shareholders, and no single person holds more than 5 Lakh Shares. Its Dividend Policy stipulates a payout of 30% (including Dividend Distribution Tax) when EPS is above ₹100. Company is in the 34% Tax Bracket. Assume a Dividend Distribution Tax of 16% of dividends distributed. The Average Personal Tax Rate applicable for individuals is 25%.

The Company wants to know if it is beneficial to Investors to distribute the dividend now or postpone it by 3 years, if risk free Bank Deposits carry an interest rate of 9% p.a. for 3 year deposits. For Bulk Deposits of ₹ 5 Crore and more, Bank Deposits carry an interest rate of 11% p.a.

[Sol. Net amount to investor – now = ₹12,584.24 lakhs; after 3 years = ₹12,765.47 lakhs]

PRACTICE QUESTIONS

21. The annual report of SK Ltd. provides the following information for the Financial Year 2020-21:

Particulars	Amount (₹)
Net Profit	50 lakhs
Outstanding 15% Preference Shares	100 lakhs
No. of equity shares	5 lakhs
Return on Investment	20%
Cost of Capital i.e. (Ke)	16%

Calculate price per share using Gordon Model when dividend pay-out ratio is: **[SM]**

(*a*) 25% (*b*) 50% (*c*) 100%

[Sol. (*a*) ₹175; (*b*) ₹58.33; (*c*) ₹43.75]

22. In May, 2020 shares of SK Ltd. was sold for ₹1,460 per share. A Long term earnings growth rate of 7.5% is anticipated. SK Ltd. is expected to pay dividend of ₹20 per share. **[SM]**

(*a*) Calculate rate of return an investor can expect to earn assuming that dividends are expected to grow along with earnings at 7.5% per year in perpetuity?

(*b*) It is expected that SK Ltd. will earn about 10% on retained earnings and shall retain 60% of earnings. In this case, State whether, there would be any change in growth rate and cost of equity?

[Sol. (*a*) 8.97%; (*b*) Ke = 8.19%]

23. Following information relating to Jee Ltd. are given:

Particulars	
Profit after tax	₹10,00,000
Dividend payout ratio	50%
Number of equity shares	50,000
Cost of equity	10%
Rate of return on investment	12%

(*a*) What would be the market value per share as per Walter's Model?

(*b*) What is the optimum dividend payout ratio according to Walter's Model and Market value of equity share at that payout ratio? **[Nov 2018, RTP May 2020]**

[**Sol.** (*a*) ₹220; (*b*) ₹240]

24. The following information is given below in case of SK Ltd: **[SM]**

Earning per share	₹60
Capitalisation rate	15%
Return on investment	25%
Dividend payout ratio	30%

(*a*) Compute price per share using Walter's Model.

(*b*) What would be the optimum dividend payout ratio per share under Gordon's Model.

[**Sol.** (*a*) ₹586.67; (*b*) zero]

25. Following information are given for a company

Earnings per share	₹10
PE Ratio	12.5
Rate of return on investment	12%
Market price per share as per Walter's Model	₹130

You are required to calculate:

(*a*) Dividend payout ratio

(*b*) Market price of share at optimum dividend payout ratio

(*c*) PE Ratio at which the dividend policy will have no effect on the price of share

(*d*) Market price of share at this PE ratio

(*e*) Market price of share using Dividend growth model **[May 2023]**

[**Sol.** (*a*) 92%; (*b*) ₹187.50; (*c*) 8.33; (*d*) ₹83.33; (*e*) 131.936]

26. Following figures and information were extracted from the company A Ltd. **[Nov 2019]**

Earnings of the company	₹10,00,000
Dividend paid	₹6,00,000
No. of shares outstanding	2,00,000
Price Earnings Ratio	10
Rate of return on investment	20%

You are required to calculate:

(*a*) Current market price of the share

(*b*) Capitalization rate of its risk class

(*c*) What should be the optimum pay-out ratio

(*d*) What should be the market price per share at optimal pay-out ratio? (Use Walter's Model)

[Sol. (*a*) ₹70; (*b*) 10%; (*c*) zero; (*d*) ₹100]

27. With the help of following figures calculate the market price of a share of a company by using: **[SM, Similar May 2019]**

(*a*) Walter's model

(*b*) Dividend growth model (Gordon's formula)

Earning per share (EPS)	₹10
Dividend per share (DPS)	₹6
Cost of capital (Ke)	20%
Internal rate of return on investment	25%
Retention ratio	40%

[Sol. (*a*) ₹55; (*b*) ₹60]

28. The following information is taken from ABC Ltd. **[Jan 2021]**

Net profit for the year	₹30,00,000
12% Preference share capital	₹1,00,00,000
Equity share capital (Share of ₹10 each)	₹60,00,000
Internal rate of return on investment	22%
Cost of equity capital	18%
Retention ratio	75%

Calculate the market price of the share using:

(*a*) Gordon's Model (*b*) Walter's Model

[Sol. (*a*) ₹50; (*b*) ₹19.44]

29. HM Ltd. is listed on Bombay Stock Exchange which is currently been evaluated by Mr. A on certain parameters. Mr. A collated following information: **[RTP Nov 2023]**

(*a*) The company generally gives a quarterly interim dividend ₹2.5 per share in the last dividend declared.

(*b*) The company's sales are growing by 20% on a 5-year Compounded Annual Growth Rate (CAGR) basis, however the company expects following retention amounts against probabilities mentioned as contention is dependent upon cash requirements for the company. Rate of return is 10% generated by the company.

Situation	Prob.	Retention Ratio
A	30%	50%
B	40%	60%
C	30%	50%

(*c*) The current risk-free rate is 3.75% and with a beta of 1.2 company is having a risk premium of 4.25%.

You are required to help Mr. A in calculating the current market price using Gordon's formula.

[**Sol.** ₹305.51]

30. SK Ltd. is a large-cap multinational company listed in BSE in India with a face value of ₹100 per share. The company is expected to grow @ 15% p.a. for next four years then 5% for an infinite period. The shareholders expect 20% return on their share investments. Company paid ₹120 as dividend per share for the FY 2020-21. The shares of the company traded at an average price of ₹3,122 on last day. Find out the intrinsic value per share and state whether shares are overpriced or under-priced. **[SM]**

[**Sol.** ₹1,140.14]

31. *X* Ltd. is a multinational company. Current market price per share is ₹2,185. During the FY 2020-21, the company paid ₹140 as dividend per share. The company is expected to grow @12% p.a. for next four years, then 5% p.a. for an indefinite period. Expected rate of return of shareholders is 18% p.a. **[Dec 2021]**

(*i*) Find out intrinsic value per share.

(*ii*) State whether shares are overpriced or underpriced.

Year	1	2	3	4	5
Discounting factor @18%	0.847	0.718	0.608	0.515	0.436

[**Sol.** (i) ₹1,779.27; (ii) overpriced]

32. SK Ltd. belongs to a risk class for which the capitalization rate is 10%. It currently has outstanding 10,000 shares selling at ₹100 each. The firm is contemplating the declaration of a dividend of ₹5 per share at the end of the current financial year. It expects to have a net income of ₹1,00,000 and has a proposal for making new investments of ₹2,00,000. Calculate the value of the firms when dividends (*i*) are not paid; (*ii*) are paid. **[SM]**

[**Sol.** (*i*) ₹10,00,000; (*ii*) ₹10,00,000]

33. SK Ltd. belongs to a risk class for which the capitalization rate is 10%. It has 25,000 outstanding shares and the current market price is ₹100. It expects a net profit of ₹2,50,000 for the year and the Board is considering dividend of ₹5 per share.

SK Ltd. requires to raise ₹5,00,000 for an approved investment expenditure. Illustrate, how the MM approach affects the value of SK Ltd. if dividends are paid or not paid. **[SM]**

34. SK Ltd. has 10 lakh equity shares outstanding at the start of the accounting year. The existing market price per share is ₹150. Expected dividend is ₹8 per share. The rate of capitalization appropriate to the risk class to which the company belongs is 10%. **[SM, RTP Dec 2021]**

(*a*) Calculate the market price per share when expected dividends are: (*i*) declared, and (*ii*) not declared, based on the Miller-Modigliani approach.

(*b*) Calculate the number of shares to be issued by the company at the end of the accounting year on the assumption that the net income for the year is ₹3 crore, investment budget is ₹6 crores when (*i*) dividends are declared, and (*ii*) dividends are not declared.

(*c*) Proof that the market value of the shares at the end of the accounting year will remain unchanged irrespective of whether (*i*) dividends are declared, or (*ii*) dividends are not declared.

[**Sol.** (*a*) (*i*) ₹105; (*ii*) ₹110; (*b*); (*i*) 3,571.4285; (*ii*) 2,272.73]

SOLUTIONS

21. Price per share according to Gordon's Model is calculated as follows

Particulars	Amount in ₹
Net Profit	50 lakhs
Less: Preference dividend	15 lakhs
Earnings for equity shareholders	35 lakhs
Earnings per share	35 lakhs/5 lakhs = ₹7.00

Price per share according to Gordon's Model is calculated as follows:

$$P_0 = \frac{E_1(1-b)}{K_e - br}$$

$E_1 = 7$, Ke = 16%

(i) When dividend pay-out is 25%

$$P_0 = \frac{7 \times 0.25}{0.16 - (0.75 \times 0.2)} = \frac{1.75}{0.16 - 0.15} = ` 175$$

(ii) When dividend pay-out is 50%

$$P_0 = \frac{7 \times 0.5}{0.16 - (0.5 \times 0.2)} = \frac{3.5}{0.16 - 0.10} = ` 58.33$$

(iii) When dividend pay-out is 100%

$$P_0 = \frac{7 \times 1}{0.16 - (0 \times 0.2)} = \frac{7}{0.16} = ₹43.75$$

22. (*i*) According to Dividend Discount Model approach, the firm's expected or required return on equity is computed as follows:

$$Ke = \frac{D_1}{P_0} + g = \frac{20(1+0.075)}{1,460} + 7.5\% = 0.0147 + 0.075 = 0.0897 \text{ or } 8.97\%$$

(*ii*) With rate of return on retained earnings (r) is 10% and retention ratio (b) is 60%, new growth rate will be as follows:

$g = br = 0.10 \times 0.60 = 0.06$

Accordingly, dividend will also get changed and to calculate this, first we shall calculate previous retention ratio (b_1) and then *EPS* assuming that rate of return on retained earnings (r) is same.

With previous Growth Rate of 7.5% and r = 10%, the retention ratio comes out to be:

$0.075 = b_1 \times 0.10$

$b_1 = 0.75$ and payout ratio = 0.25

With 0.25 payout ratio the *EPS* will be as follows:

$$\frac{₹20}{0.25} = ₹80$$

With new 0.040 (1 – 0.60) payout ratio, the new dividend will be

$D_1 = ₹80 \times 0.40 = ₹32$

Accordingly, new *Ke* will be

$$K_e = \frac{32}{1,460} + 6.0\% = 8.19\%$$

23. (*a*) As per Walter Model, $P = \dfrac{D + (E - D)(r \div Ke)}{Ke}$

Where,

P = Market price per share

E = Earnings per share = ₹10,00,000 ÷ 50,000 = ₹20

D = Dividend per share = 50% × 20 = ₹10

r = Return earned on investment = 12% = 0.12

Ke = Cost of equity capital = 10% = 0.10

$$P = \frac{10 + (20 - 10)(0.12 \div 0.10)}{0.10} = \frac{22}{0.10} = ₹220$$

(*b*) According to Walter's model when the return on investment is more than the cost of equity capital, the price per share increases as the dividend pay-out ratio decreases. Hence, the optimum dividend pay-out ratio in this case is Nil. So, at a payout ratio of zero, the market value of the company's share will be:

$$P = \frac{0 + (20 - 0)(0.12 \div 0.10)}{0.10} = \frac{24}{0.10} = ₹240$$

24. (*a*) As per Walter's Model, Price per share is computed by using the following formula:

$$P = \frac{D + \frac{r}{K_e}(E - D)}{K_e} = \frac{18 + \frac{0.25}{0.15}(60 - 18)}{0.15} = \frac{18 + 70}{0.15} = ₹586.67$$

(*b*) As per Gordon's model, when $r > Ke$, optimum dividend payout ratio is 'Zero'.

25. (*a*) Cost of equity = $Ke = \frac{1}{PE\ Ratio} = \frac{1}{12.5} = 0.08 = 8\%$

Rate of return on investment = $r = 12\%$

As per Walter model, $P0 = \frac{D+\left(\frac{r}{Ke}\right)(E-D)}{Ke}$

$130 = \frac{D+\left(\frac{0.12}{0.08}\right)(10-D)}{0.08}$ $10.40 = D + 15 - (1.5)\,(D]\ D = 9.20$

Thus, dividend payout ratio = $\frac{D}{EPS} \times 100 = \frac{9.20}{10} \times 100 = 92\%$

(*b*) Since, return (12%) is more than cost of equity (8%), thus optimal dividend payout ratio should be zero as per Walter model.

Price at optimum dividend ratio = $\frac{D+\left(\frac{r}{Ke}\right)(E-D)}{Ke} = \frac{0+\left(\frac{0.12}{0.08}\right)(10-0)}{0.08} = ₹187.50$

(*c*) When *Ke* is equal to rate of return then dividend will have no effect on value of share.

Thus, $r = Ke = 12\%$

PE ratio = $\frac{1}{Ke} = \frac{1}{0.12} = 8.33$ times

(*d*) Market price = $\frac{D+\left(\frac{r}{Ke}\right)(E-D)}{Ke} = \frac{9.20+\left(\frac{0.12}{0.12}\right)(10-9.20)}{0.12} = ₹83.33$

(*e*) $Ke = 8\%\ r = 12\%\ D0 = 9.20\ b = 0.08$

$g = (b)(r) = (0.08)(0.12) = 0.0096$

$P = \frac{D1}{Ke-g} = \frac{9.20(1+0.0096)}{(0.12-0.0096)} = ₹131.936$

26. (*a*) As per Walter Model, $P = \frac{D+(E-D)(r \div Ke)}{Ke}$

Where,

P = Market price per share

E = Earnings per share = ₹10,00,000 ÷ 2,00,000 = ₹5

D = Dividend per share = ₹6,00,000 ÷ 2,00,000 = ₹3

r = Return earned on investment = 20% = 0.20

Ke = Cost of equity capital = $\frac{1}{PE\ Ratio} = \frac{1}{10} = 0.10$

$P = \frac{3+(5-3)(0.20 \div 0.10)}{0.10} = \frac{7}{0.10} = ₹70$

(*b*) Capitalization rate of risk class = $Ke = 10\%$

(c) According to Walter's model when the return on investment (20%) is more than the cost of equity capital (10%), the price per share increases as the dividend pay-out ratio decreases. Hence, the optimum dividend pay-out ratio in this case is zero.

(d) At a zero payout ratio, market price per share = $\frac{0+(5-0)(0.20\times0.10)}{0.10} = \frac{10}{0.10} = ₹100$

27. Market price per share by

(a) Walter's model

$$P = \frac{D+\frac{r}{K_e}(E-D)}{K_e} = \frac{6+\frac{0.25}{0.20}(10-6)}{0.20} = ₹55$$

(b) Gordon's model

Present market price per share $(P_0) = \frac{E(1-b)}{k-br} = \frac{10(1-0.40)}{0.20-(0.4\times0.25)} = \frac{6}{0.1} = ₹60$

28. Earning available for equity = Net Profit – Preference Dividend
= 30,00,000 – (1,00,00,000 × 12%) = ₹18,00,000

Earnings per share = $\frac{\text{Earning available for Equity}}{\text{No. of Equity Shares}} = \frac{18,00,000}{(60,00,000\div10)} = ₹3$

Dividend payout ratio = 100 – 75% = 25%
Dividend per share = *EPS* × Dividend payout ratio = 3 × 25% = ₹0.75
Rate of return (r) = 22% = 0.22
Cost of equity (Ke) = 18% = 0.18

(1) As per Gordon's Formula, $P = \frac{E(1-b)}{Ke-(b\times r)} = \frac{3\times(1-0.75)}{0.18-(0.75\times0.22)} = \frac{0.75}{0.015} = ₹50$

(2) As per Walter Model, $P = \frac{D+(E-D)(r\div Ke)}{Ke} = \frac{0.75+(3-0.75)(0.22\div0.18)}{0.18} = ₹19.44$

29. $D0 = 2.5 \times 4 = ₹10$ (annually)
Expected retention ratio = b = (50 × 0.30) + (60 × 0.40) + (50 × 0.30] = 54%
g = (b)(r) = (0.54)(0.10) = 0.054 = 5.4%
$Ke = Rf$ + (Beta × Risk Premium) = 3.75 + (1.2 × 4.25) = 8.85%

$$P0 = \frac{D0(1+g)}{Ke-g} = \frac{10(1+0.054)}{0.085-0.054} = \frac{10.54}{0.0345} = ₹305.51$$

30. As per Dividend discount model, the price of share is calculated as follows:

$$P = \frac{D_1}{(1+K_e)^1} + \frac{D_2}{(1+K_e)^2} + \frac{D_3}{(1+K_e)^3} + \frac{D_4}{(1+K_e)^4} + \left[\frac{D_5}{(K_e-g)} \times \frac{1}{(1+K_e)^5}\right]$$

Where,
P = Price per share
K = Required rate of return on equity
g = Growth rate

$$P = \frac{₹120\times1.15}{(1+0.2)^1} + \frac{₹138\times1.15}{(1+0.2)^2} + \frac{₹158.7\times1.15}{(1+0.2)^3} + \frac{₹182.5\times1.15}{(1+0.2)^4} + \left[\frac{₹209.88\times1.05}{(0.2-0.05)^1} \times \frac{1}{(1+0.2)^4}\right]$$

$P = 115 + 110.2 + 102.6 + 101.2 + 708.14 = ₹1,140.14$

Intrinsic value of share is ₹1, 140.14 as compared to latest market price of ₹3,122. Market price of a share is overpriced by ₹1,981.86.

31.

Year	Particulars	Amount	PVF @ 16%	Present Value
1	Dividend	140 × (1+0.12) = 156.80	0.847	132.81
2	Dividend	156.8 × (1+0.12) = 175.62	0.718	126.10
3	Dividend	175.62 × (1+0.12) = 196.69	0.608	119.59
4	Dividend	196.69 · (1+0.12) = 220.29	0.515	113.45
			Total	**491.95**

Price at end of 4th year, $P4 = \frac{D5}{Ke-g} = \frac{220.29(1+.0.05)}{0.18-0.05} = ₹1,779.27$

Intrinsic value of equity share = ₹491.95 + (₹1,779.26 × 0.515) = ₹1,408.27

Intrinsic value (₹1,408.27) is higher as compared to market price (₹2,185), thus, the share is over-priced by ₹776.73.

32. CASE 1: Value of the firm when dividends are not paid.

Step 1: Calculate price at the end of the period

$K_e = 10\%, P_0 = 100, D_1 = 0$

$$P_0 = \frac{P_1 + D_1}{1+K_e} = 100 = \frac{P_1 + 0}{1+0.10} \gg P_1 = 110$$

Step 2: Calculation of funds required for investment

Earning	₹1,00,000
Dividend distributed	Nil
Fund available for investment	₹1,00,000
Total Investment	₹2,00,000
Balance Funds required	₹2,00,000 – ₹1,00,000 = ₹1,00,000

Step 3: Calculation of No. of shares required to be issued for balance funds

$$\text{No. of shares } \Delta n = \frac{\text{Funds required}}{\text{Price at end}(P_1)} = \frac{1,00,000}{110}$$

Step 4: Calculation of value of firm

$$nP = \frac{(n+\Delta n)P_1 - I + E}{1+K_e}$$

$$nP_0 = \frac{\left(10,000 + \frac{₹1,00,000}{₹110}\right) \times ₹110 - ₹2,00,000 + ₹1,00,000}{(1+0.10)} = ₹10,00,000$$

CASE 2: Value of the firm when dividends are paid.

Step 1: Calculate price at the end of the period

$$K_e = 10\%,\ P_0 = 100,\ D_1 = 5$$

$$P_0 = \frac{P_1 + D_1}{1 + K_e}$$

$$100 = \frac{P_1 + 5}{1 + 0.10} \Rightarrow P_1 = 105$$

Step 2: Calculation of funds required for investment

Earning	₹1,00,000
Dividend distributed	₹50,000
Fund available for investment	₹50,000
Total Investment	₹2,00,000
Balance Funds required	₹2,00,000 – ₹50,000 = ₹1,50,000

Step 3: Calculation of No. of shares required to be issued for balance fund

$$\text{No. of shares} = \Delta n = \frac{\text{Funds required}}{\text{Price at end}(P_1)} = \frac{₹1,50,000}{₹105}$$

Step 4: Calculation of value of firm

$$nP_0 = \frac{(n + \Delta n)P_1 - I + E}{1 + K_e}$$

$$nP_0 = \frac{\left(10,000 + \frac{₹1,50,000}{₹105}\right) \times ₹105 - ₹2,00,000 + ₹1,00,000}{(1 + 0.10)} = ₹10,00,000$$

Thus, it can be seen from the above illustration that the value of the firm remains the same in either case.

In real world, market imperfections create some problems for MM's dividend policy irrelevance proposition.

33. Given,

Cost of Equity (Ke)	10%
Number of shares in the beginning (n)	25,000
Current Market Price (P0)	₹100
Net Profit (E)	₹2,50,000
Expected Dividend (D1)	₹5 per share
Investment (I)	₹5,00,000

Case-1: When dividends are paid	Case-2: When dividends are not paid
Step 1 $P_0 = \frac{P_1 + D_1}{1 + K_e}$ $100 = \frac{P_1 + 5}{1 + 0.10}$ $P_1 = 110 - 5 = 105$	**Step 1** $P_0 = \frac{P_1 + D_1}{1 + K_e}$ $100 = \frac{P_1 + 0}{1 + 0.10}$ $P_1 = 110 - 0 = 110$
Step 2 Calculation of funds required = [Total Investment – (Net profit – Dividend)] = 5, 00, 000 – (2, 50, 000 – 1, 25, 000) = 3, 75, 000	**Step 2** Calculation of funds required = (Total Investment – (Net profit – Dividend)] = 5, 00, 000 – (2, 50, 000 – 0) = 2, 50, 000
Step 3 No. of shares required to be issued for balance fund $\text{No. of shares} = \frac{\text{Funds required}}{\text{Price at end}(P_1)}$ $\Delta n = \frac{3,75,000}{105} = 3,571.4285$	**Step 3** No. of shares required to be issued for balance fund $\text{No. of shares} = \frac{\text{Funds required}}{\text{Price at end}(P_1)}$ $\Delta n = \frac{2,50,000}{110} = 2,272.73$
Step 4 Calculation of value of firm $Vf = \frac{(n + \Delta n)P_1 - 1 + E}{(1 + k_e)}$ $Vf = \frac{\left(25,000 + \frac{3,75,000}{105}\right)105 - 5,00,000 + 2,50,000}{(1 + .10)}$ = ₹25,00,000	**Step 4** Calculation of value of firm $vf = \frac{(n + \Delta n)P_1 - 1 + E}{(1 + k_e)}$ $Vf = \frac{\left(25,000 + \frac{2,50,000}{110}\right)110 - 5,00,000 + 2,50,000}{(1 + 0.10)}$ = ₹25,00,000

34. (*i*) Calculation of market price per share

According to Miller - Modigliani (*MM*) Approach:

$P_0 = \frac{P_1 + D_1}{1 + K_e}$

Where,

Existing market price (P_0) = ₹150

Expected dividend per share (D_1) = ₹8

Capitalization rate (K_e) = 0.10

Market price at year end (P_1) = to be determined

(*a*) If expected dividends are declared, then

$$₹150 = \frac{P_1 + n8}{1 + 0.10}$$

$\therefore P_1 = ₹165$

(*b*) If expected dividends are not declared, then

$$₹150 = \frac{P_1 + 0}{1 + 0.10}$$

$\therefore P_1 = ₹165$

(*ii*) Calculation of number of shares to be issued

	(a) Dividends are declared (₹ lakh)	(b) Dividends are not Declared (₹ lakh)
Net income	300	300
Total dividends	(80)	–
Retained earnings	220	300
Investment budget	600	600
Amount to be raised by new issues	380	300
Relevant market price (₹ per share)	157	165
No. of new shares to be issued (in lakh)(₹380 ÷ 157; ₹300 ÷ 165)	2.42	1.82

(*iii*) Calculation of market value of the shares

	(a) Dividends are declared	(b) Dividends are not Declared
Existing shares (in lakhs)	10.00	10.00
New shares (in lakhs)	2.42	1.82
Total shares (in lakhs)	12.42	11.82
Market price per share (₹)	157	165
Total market value of shares at the end of the year (₹ in lakh)	12.42 × 157 = 1,950 (approx.)	11.82 × 165 = 1,950 (approx.)

Hence, it is proved that the total market value of shares remains unchanged irrespective of whether dividends are declared, or not declared.

9 CHAPTER

Working Capital Management

THEORY	
Meaning of Working Capital	▫ It refers to the amount of capital which is required for day to day operations of the business. ▫ It is a measure of both a company's efficiency and its short-term financial health. ▫ From Value point of view, working capital can be defined as: (*a*) **Gross Working Capital:** It means the firm's investment in total current assets. (*b*) **Net Working Capital:** It refers to the difference between the total current assets and current liabilities. In other words, it is portion of current assets which is financed through long term funds of the firm. ▫ From the point of view of time, working capital can be defined as: (*a*) **Permanent Working Capital:** It is that minimum level of investment in the current assets which is required at all times to carry out minimum level of business activities. (*b*) **Temporary Working Capital:** It refers to that part of total working capital which is required by a business over and above permanent working capital.
Factors to be Considered for Determining the Requirement of Working Capital	(*a*) **Nature of Business:** Generally the small trading concern or retails shops will have lower requirement of working capital because their operating cycle will be small and vice versa. (*b*) **Size of Business:** Larger the scale of operations, larger will be the firm's working capital requirements and vice versa. (*c*) **Manufacturing Cycle:** It is the time period between the purchase of raw material and converting them into finished product. Larger the manufacturing cycle, larger will be the firm's working capital requirements and vice versa. (*d*) **Business Fluctuation:** During the boom period the business grows rapidly and thus requires more working capital and vice versa.

	(e) **Credit Policy:** Liberal credit policy will lead to higher credit sales, higher book debts and higher working capital and vice versa. (f) **Growth and Expansion:** The large sized business require more permanent and variable working capital in comparison to small business. (g) **Operating Efficiency:** By better utilization of resources, operating costs will be reduced which will reduce the pressure on working capital. (h) **Price Level Changes:** Generally, rising price level requires a higher investment in working capital because increased investment is required to maintain the same level of current assets.
Repercussions of Paucity of Working Capital	(a) It puts at rest the development of the firm because due to inadequate working capital management is unable to implement the profitable projects. (b) In absence of adequate working capital, fixed assets cannot be utilized fully. As a result, return on investment decreases. (c) Management cannot take advantage of business opportunities. (d) The production process stops due to lack of raw material. Decrease in stock of finished goods causes loss of sales. (e) Due to inability to pay short term liabilities in time, goodwill of the firm is adversely affected.
Effects of Excess Working Capital	(a) Excessive working capital causes more inventory. As a result, chances of theft and misuse of stock increase. (b) It results in adaption of too liberal policy and chances of slackening of collection of receivables. As a result, the chances of bad debt increase and profits decreases. (c) It results in excessive cash holding. Thus, profitability decreases as a result of idle cash. (d) The tendency to accumulate excessive inventory is encouraged for making speculative profits so as to make dividend policy more liberal. In case the firm is unable to make speculative profits, liberal dividend policy can't be maintained.
Management of Working Capital	❑ Working capital plays a similar role as blood in a living body. ❑ It has to be effectively managed keeping in mind the 3Es i.e. Economy, Efficiency and Effectiveness. ❑ It can be further studied in two ways i.e. liquidity & profitability and Investment & Financing Decisions.
Investment of Working Capital	It is the amount to be invested in current assets which depends on various factors such as: ❑ Nature of industry ❑ Type of products ❑ Volume of sales ❑ Credit policy

Meaning of Working Capital Financing

It means what portion of working capital should be financed with long term sources of funds such as equity share capital, preference share capital, debentures etc. and what potion of working capital should be financed with short term sources such as trade credit, short term bank credit etc.

Approaches of Financing of Working Capital

Comparative study of Aggressive, Conservative & Matching Approach

Basis of comparison	Aggressive Approach	Conservative Approach	Matching Approach
1. Permanent Current Assets	Some portion financed with short term sources of funds Some portion financed with long term sources of funds	All permanent current assets are financed with long term sources of funds.	All permanent current assets are financed with long term sources of funds.
2. Temporary Current Assets	All temporary current assets are financed with short term sources of funds.	Some portion financed with long term sources of funds Some portion financed with short term sources of funds	All temporary current assets are financed with short term sources of funds.
3. Liquidity	Lower	Higher	Moderate
4. Profitability	Higher	Lower	Moderate

Current Assets to Fixed Assets Ratio

- A company requires both current assets and fixed assets to operate upto a level of output.
- If current assets to fixed assets ratio is high (assuming constant fixed assets) then it indicates conservative current assets policy.
- If current assets to fixed assets ratio is low (assuming constant fixed assets) then it indicates aggressive current assets policy.

Operating Cycle

It is the duration of time between acquisition of supplies and the collection of cash from receivables.

Operating Cycle of Trading Firm

It is the length of the time required:

(*a*) to convert cash into inventory of finished goods

(*b*) to convert inventory of finished goods into receivables

(*c*) to convert receivables into cash.

Operating Cycle = S + D: C

Where, S = Stock holding period

D = Debtors collection period

C = Creditors payment period

Operating Cycle of Manufacturing Firm	It is the length of the time required: (*a*) to convert cash into inventory of raw materials (*b*) to convert inventory of raw materials into work-in-progress (*c*) to convert inventory of work-in-progress into finished goods (*d*) to convert inventory of finished goods into receivables (*e*) to convert receivables into cash. Operating Cycle = R + W + F + D: C Where, R = Raw material storage period W = Work-in-progress holding period F = Finished goods storage period D = Debtors collection period C = Creditors payment period
Components of Operating Cycle	(*a*) Raw material storage period = $\frac{\text{Average stock of work-in-progress}}{\text{Average cost of production per day}}$ (*b*) Work-in-Progress storage period = $\frac{\text{Average stock of finished goods}}{\text{Average cost of goods sold per day}}$ (*c*) Finished goods storage period = $\frac{\text{Average stock of finished goods}}{\text{Average cost of goods sold per day}}$ (*d*) Debtors collection period = $\frac{\text{Average debtors}}{\text{Average credit sales per day}}$ (*e*) Creditors payment period = $\frac{\text{Average creditors}}{\text{Average credit purchases per day}}$
Number of Operating Cycles	Number of operating cycles = $\frac{365 \text{ or } 360}{\text{Net Operating Cycle Period}}$
Amount of Working Capital Based on Operating Cycle	Amount of working capital = $\frac{\text{Annual operating cost}}{\text{Number of operating cycles}}$ $\frac{\text{Annual operating cost}}{360} \times$ Net operating cycle period
Estimation of Current Assets	❑ Raw Material Inventory = $\frac{\text{Annual raw material cost}}{\text{365 days or 12 months or 52 weeks}} \times$ Average raw material storage period ❑ WIP Inventory = $\frac{\text{Annual factory cost}}{\text{365 days or 12 months or 52 weeks}} \times$ Average WIP storage period ❑ Finished goods Inventory = $\frac{\text{Annual Cost of Production}}{\text{365 days or 12 months or 52 weeks}} \times$ Average FG storage period ❑ Debtors = $\frac{\text{Annual Credit sales}}{\text{365 days or 12 months or 52 weeks}} \times$ Average debtors collection period

Estimation of Current Liabilities	▫ Trade payables = $\frac{\text{Annual Credit purchases}}{\text{365 days or12 months or 52 weeks}} \times$ Average creditors payment period ▫ Outstanding Expenses = $\frac{\text{Annual Expenses}}{\text{365 days or 12 months or 52 weeks}} \times$ Average lag in payment of expenses
Cash Cost of Working Capital	This approach is based on the fact that in the case of current assets, like sundry debtors and finished goods, etc., the exact amount of funds blocked is less than the amount of such current assets. While computing cash cost of working capital, all non-cash costs such as depreciation etc. should not be considered.
Effect of Double Shift on Working Capital	(*a*) **Raw Materials:** Stock requirements as regards units, may double since consumption per day will be twice as earlier. However, due to bulk purchasing, the firm may get quantity discounts. (*b*) **Work-in-progress:** There will be no change in the quantity of work-in-progress since work commenced in first shift will be completed in the second and vice-versa. At the end of the day, the average quantity of work-in-progress remains the same. (*c*) **Finished Goods:** Due to greater production, finished goods stocks may double in quantity but cost of production per unit may be reduced due to lower cost of raw materials, economies of fixed costs etc. (*d*) **Debtors:** Increase in demand and increased sales will lead to higher amount of debtors, for the same credit period but the increase may not be proportional or it may not double in case of reduction in credit period. Also discounted selling price may be offered in order to sell the increase production. (*e*) **Creditors:** Due to bulk purchasing and better bargaining power the firm may avail extended credit period for payment. Unless otherwise specified, the amount of creditors may double. (*f*) **Overheads:** Fixed overheads will remain same irrespective of double shift working while the variable overheads will increase in proportion to the increased production. Semi-variable overheads will increase according the variable element in them.
Working Capital Finance	It can be done from two sources: (*a*) **Spontaneous Sources:** These sources are natural in business operations e.g. trade credit, bills payable, accrued expenses etc. (*b*) **Negotiated sources:** These sources are specifically negotiated for business e.g. bank loan, commercial papers, inter-corporate loans, bill discounting, public deposits, factoring etc.

Maximum Permissible Bank Financing (MPBF) – Tandon Committee	The Reserve Bank of India setup in 1974 a study group under the chairmanship of Mr. P.L. Tandon, popularly referred to as The Tandon Committee. **Lending Norms:** (I) The borrower has to contribute a minimum of 25% of working capital gap from long term funds. **MPBF = 75% of (Current assets – Current liabilities) = 75% × Net Working Capital** (II) The borrower has to contribute a minimum of 25% of the total current assets from long term funds. **MPBF = (75% of Current assets) – Current liabilities** (III) The borrower has to contribute the entire hard core current assets and a minimum of 25% of the balance of the current assets from long term funds. **MPBF = (75% of Soft Core Current assets) – Current liabilities**
Core Current Assets or Hard Core Working Capital	The term "Core Current Assets" was framed by Tandon Committee and it is that part of the current assets which represents the very minimum level of raw materials, process stock, finished goods, receivables, cash etc. which are in circulation to ensure continuity of production. These represents a fixed element just like the fixed assets of the company. Such current assets are basically in the nature of circulating assets but are blocked for long term e.g. funds invested in core inventories etc. Determination of hard core working capital in different industries would require a careful analysis of the items of inventory, receivables, work-in-progress and cash.

PRACTICAL QUESTIONS

1. A firm has the following data for the year ending 31st March, 2022:

Sales (1,00,000 @ ₹20)	₹20,00,000
Earnings before interest and taxes	₹2,00,000
Fixed Assets	₹5,00,000

The three possible current assets holdings of the firm are ₹5,00,000; ₹4,00,000 and ₹3,00,000. It is assumed that fixed assets level is constant and profits do not vary with current assets level. Analyse the effect of the three alternative current assets policies.

[**Sol.** ROTA = 20%; 22.22%; 25%; CA to FA Ratio = 1; 0.80; 0.60]

2. A company is considering its working capital investment and financial policies for the next year. Estimated fixed assets and current liabilities for the next year are ₹2.60 crore and ₹2.34 crore respectively. Estimated sales and EBIT depend on current assets investment, particularly inventories and book-debts. The financial controller of the company is examining the following alternative working capital investment policies. **[RTP May 2019]**

(₹Crores)

Working Capital Policy	Investment in Current Assets	Estimated Sales	EBIT
Conservative	4.5	12.3	1.23
Moderate	3.9	11.5	1.15
Aggressive	2.6	10.0	1.00

After evaluating the working capital investment policy, the Financial Controller has advised the adoption of the moderate working capital policy. The company is now examining the use of long-term borrowings for financing its assets. The company will use ₹2.50 crores of the equity funds. The corporate tax rate is 35%. The company is considering the following debt alternatives:

(₹Crores)

Finance Policy	Short-term Debt	Long-term Debt
Conservative	0.54	1.12
Moderate	1	0.66
Aggressive	1.5	0.16
Interest rate average	12%	16%

You are required to calculate the following:

(1) Working capital investment for each policy;

(*a*) Net working capital positions;

(*b*) Rate of return before interest & tax on total assets;

(*c*) Current ratio

(2) Financing for each policy;

(*a*) Net working capital position; (*b*) Rate of return on shareholders' equity;

(*c*) current ratio

[**Sol.** (1)(*a*) ₹2.16 crores; ₹1.56 crores; ₹0.26 crores; (*b*) 17.32%; 17.69%; 19.23%; (*c*) 1.92; 1.67; 1.11; (2)(*a*) ₹1.02 crores; ₹0.56 crores; ₹0.06 crores; (*b*) 23.56%; 24.03%; 24.55%; (*c*) 1.35; 1.11; 1.02]

3. On 1st January, the Managing Director of SK Ltd. wishes to know the amount of working capital that will be required during the year. From the following information prepare the working capital requirements forecast.
   - Production during the previous year was 60,000 units. It is planned that this level of activity would be maintained during the present year.
   - The expected ratios of the cost to selling prices are raw material 60%, direct wages 10% and overheads 20%.
   - Raw materials are expected to remain in store for an average of 2 months before issued to production.
   - Each unit is expected to be in process for one month, the raw materials being fed into the pipeline immediately and the labour and overhead cost accruing evenly during the month.
   - Finished goods will stay in the warehouse awaiting dispatch to customers for approximately 3 months.
   - Credit allowed by creditors is 2 months from the date of delivery of raw materials.
   - Credit allowed to debtors is 3 months from the date of dispatch.
   - Selling price is ₹5 per unit.
   - There is a regular production and sales cycle.
   - Wages and overheads are paid on the 1st of each month for the previous month.
   - The company normally keeps cash in hand to the extent of ₹20,000.

[**Sol.** ₹1,66,250]

4. The following annual figures relate to SK Ltd.:

	(₹)
Sales (at two month's credit)	36,00,000
Material consumed (suppliers extend two months' credit)	9,00,000
Wages paid (1 month lag in payment)	7,20,000
Cash manufacturing expenses (expenses are paid one month in arrear)	9,60,000
Administrative expenses (1 month lag in payment)	2,40,000
Sales promotion expenses (paid quarterly in advance)	1,20,000

The company sells its products on gross profit of 25%. Depreciation is considered as a part of the cost of production. It keeps one months' stock of raw materials and finished goods and a cash balance of ₹1,00,000. Assuming a 20% safety margin, compute the working capital requirements of the company on cash cost basis. Ignore work-in-process.

[**Sol.** ₹7,20,000]

5. A Performa cost sheet of per unit cost of company provides the following particulars:

Raw material cost	100.00
Direct labour cost	37.50
Overhead cost	75.00
Total cost	212.50
Profit	37.50
Selling price	250.00

The company keeps raw material in stock on an average for one month; work in progress on an average for one week and finished goods in stock on an average for two weeks.

The credit allowed by suppliers is three weeks and company allows four weeks credit to its debtors. The lag in payment of wages is one week and lag in payment of overhead expenses is two weeks. The company sells one-fifth of the output against cash and maintains cash in hand and at bank put together at ₹37,500.

Required: Prepare a statement showing estimate of working capital needed to finance an activity level of 1,30,000 units of production. Assume that production is carried on evenly throughout the year and wages and overheads accrue similarly, work-in-progress is 80% complete in all respects.

[**Sol.** ₹30,06,250]

6. SK Ltd. has an installed capacity of producing 1.25 lakhs tons of cement per annum; its present capacity utilization is 80%. The major raw material to manufacture cement is limestone which is obtained on cash basis from a company located near the plant. The company produces cement in 200 kgs drum. From the information given below, determine the net working capital (NWC) requirement on cash cost basis of the company. For the current year cost structure per drum of cement (estimated) is as under:

	(₹)
Gypsum	25
Limestone	15
Coal	30
Packaging Material	10
Direct Labour	50
Factory overheads (including depreciation of ₹10)	30
Administrative overheads	20
Selling overheads	25
Total Cost	205
Profit Margin	45
Selling Price	250
Add: GST (10% of selling price)	25
Invoice price to customer	275

Additional information:

(*a*) Desired holding period of material:

Gypsum	: 3 months	Coal	: 2.5 months
Limestone	: 1 months	Packaging material	: 1.5 months

(*b*) Packaging material is used for packaging finished material at the time of sale.

(*c*) The product is in process for a period of ½ month (assume full units of materials, namely: gypsum, limestone and coal are required in the beginning: other conversion costs are to be taken at 50%).

(*d*) Finished goods are in stock for a period of 1 month before they are sold

(*e*) Debtors are extended credit for a period of 3 months

(*f*) Average time lag in payment of wages is approximately 1/2 month and of overheads: 1 month

(g) Average time lag in payment of sales tax is 1½ months

(h) The credit period extended by various suppliers are

Gypsum – 2 months coal – 1 month Packaging material – 1/2 month

(i) Minimum desired cash balance is ₹25 lakhs. You may state your assumptions, if any.

[**Sol.** ₹3,66,66,667]

7. The management of SK Ltd. is planning to expand its business and consults you to prepare an estimated working capital statement. The records of the company reveal the following annual information: **[SM, RTP Dec 2021]**

	(₹)
Sales – Domestic at one month's credit	18,00,000
Export at three month's credit (sale price 10% below domestic price)	8,10,000
Materials used (suppliers extend two months credit)	6,75,000
Lag in payment of wages – 1/2 month	5,40,000
Lag in payment of manufacturing expenses (cash) – 1 month	7,65,000
Lag in payment of administration expenses – 1 month	1,80,000
Selling expenses payable quarterly in advance	1,12,500
Income tax payable in four instalments of which one falls in the next financial year	1,68,000

Rate of gross profit is 20%. Ignore work-in-progress and depreciation. The company keeps one month's stock of raw materials and finished goods (each) and believes in keeping ₹2,50,000 available to it including the overdraft limit of ₹75,000 not yet utilized by the company.

The management is also of the opinion to make 10% margin for contingencies on computed figure. You are required to prepare the estimated working capital statement for the next year.

[**Sol.** ₹5,48,702]

8. SK Limited is commencing a new project for manufacture of a plastic component. The following cost information has been ascertained for annual production of 12,000 units which is the full capacity: **[SM, Similar RTP Nov 2019]**

	Cost per unit (₹)
Materials	40
Direct labour and variable expenses	20
Fixed manufacturing expenses	6
Depreciation	10
Fixed administration expenses	4
	80

The selling price per unit is expected to be ₹96 and the selling expenses ₹5 per unit, 80% of which is variable. In the first two years of operations, production and sales are expected to be as follows:

Year	Production (No. of Units)	Sales (No. of Units)
1	6,000	5,000
2	9,000	8,500

To assess the working capital requirements, the following additional information is available:

(*a*) Stock of materials	2.25 months average consumption
(*b*) Work-in-progress	Nil
(*c*) Debtors	1 months average sales
(*d*) Cash balance	₹10,000
(*e*) Creditors for supply of materials	1 months average purchase during the year
(*f*) Creditors for expenses	1 months average of all expenses during the year

Prepare, for the two years:

(*i*) A Projected statement of Profit/Loss (Ignoring taxation)

(*ii*) A Projected statement of working capital requirements

[**Sol.** (*i*) –₹52,000; ₹20,000; (*ii*) ₹1,52,916; ₹2,13,125]

9. SK Ltd a company newly commencing business in 2021 has the under mentioned projected Profit & Loss Statement:

	₹	₹
Sales		2,10,000
Cost of goods sold		(1,53,000)
Gross profit		57,000
Administrative Expenses	14,000	
Selling Expenses	13,000	27,000
Profit before tax		30,000
Provision for taxation		(10,000)
Profit after tax		20,000
The cost of goods sold has been arrived at as under:		
Material used	84,000	
Wages & Manufacturing expenses	62,500	
Depreciation	23,500	
	1,70,000	
Less: Stock of finished goods (10% of goods produced not yet sold)	(17000)	
	1,53,000	

The figures given above relate only to finished goods not to work-in-progress. Goods equal to 15% of the year's production (in terms of physical units) will be in process on the average requiring full materials but only 40% of the other expenses. The company believes in keeping materials equal to two months consumption in stock.

All expenses will be paid one month in advance. Suppliers of materials will be extending 1 – 1/2 months credit. Sale will be 20% for cash and the rest at two month's credit. 70% of the income tax will be paid in advance in quarterly instalments. The company wished to keep ₹8,000 in cash. Prepare an estimate of:

(*a*) Working Capital (*b*) Cash cost of working capital

[**Sol.** (*a*) ₹75,293; (*b*) ₹68,713]

10. SK Ltd. has been operating its manufacturing facilities till 31.3.2022 on a single shift working with the following cost structure:

	Per unit (₹)
Cost of materials	6.00
Wages (out of which 40% fixed)	5.00
Overheads (out of which 80% fixed)	5.00
Profit	2.00
Selling price	18.00
Sales during 2021-22 – ₹4,32,000	

As at 31.3.2022 the company held:

Stock of raw materials (at cost)	₹36,000
Work-in-progress (valued at prime cost)	₹22,000
Finished goods (valued at total cost)	₹72,000
Sundry debtors	₹1,08,000

In view of increased market demand, it is proposed to double production by working an extra shift. It is expected that a 10% discount will be available from suppliers of raw materials in view of increased volume of business. Selling price will remain the same. The credit period allowed to customers will remain unaltered. Credit availed from suppliers will continue to remain at the present level i.e. 2 months. Lag in payment of wages and expenses will continue to remain half a month.

You are required to prepare the additional working capital requirements, if the policy to increase output is implemented.

[**Sol.** Additional working capital required is ₹94,800]

11. From the following information of SK Ltd., you are required to calculate:

(*a*) Net operating cycle period (*b*) Number of operating cycles in a year

	(₹)
Raw material inventory consumed during the year	6,00,000
Average stock of raw material	50,000
Work-in-progress inventory	5,00,000
Average work-in-progress inventory	30,000
Cost of goods sold during the year	8,00,000
Average finished goods stock held	40,000
Average collection period from debtors	45 days
Average credit period availed	30 days
No. of days in a year	360 days

[**Sol.** (*a*) 84.60 days; (*b*) 4.26 cycles]

12. Following information is forecasted by SK limited for the year ending 31st March, 2022:

	Balance as at 31st March, 2022 (₹in lakhs)	Balance as at 31st March, 2021 (₹in lakhs)
Raw Material	65	45
Work-in-progress	51	35
Finished goods	70	60
Receivables	135	112
Payables	71	68
Annual purchases of raw material (all credit)	400	
Annual cost of production	450	
Annual cost of goods sold	525	
Annual operating cost	325	
Annual sales (all credit)	585	

You may take one year as equal to 365 days.

You are required to calculate:

(*a*) Net operating cycle period

(*b*) Number of operating cycles in the year

(*c*) Amount of working capital requirement

[**Sol.** (*a*) 147 days; (*b*) 2.48 cycles; (*c*) ₹130.89 lakhs]

13. Following is the balance sheet of SK Ltd. Calculate the amount of maximum permissible bank finance by all three methods for working capital as per Tandon Committee norms. You are required to assume the level of hard core current assets to be ₹30 lakhs. You are required to calculate the current ratios under each method. **[May 2022]**

Balance Sheet of SK Ltd. as on 31st March **(₹in lakhs)**

Liabilities		Assets		
Equity share of ₹10 each	200	Fixed assets		500
Retained Earnings	200	Current Assets:		
11% Debentures	300	Inventory:		
Public Deposits	100	Raw materials	100	
Trade Creditors	80	WIP	150	
Bills Payable	100	Finished goods	75	325
		Debtors		100
		Cash/Bank		55
	980			980

[**Sol.** ₹225 lakhs; ₹180 lakhs; ₹157.50 lakhs]

14. SK Ltd. has provided you the following information for the year 2021-22:

By working at 60% of its capacity the company was able to generate sales of ₹72,00,000. Direct labour cost per unit amounted to ₹20 per unit. Direct material cost per unit was 40% of the selling price per unit. Selling price was 3 times the direct labour cost per unit. Profit margin was 25% on the total cost.

For the year 2022-23, the company makes the following estimates:

Production and sales will increase to 90% of its capacity. Raw material per unit price will remain unchanged. Direct expenses per unit will increase by 50%. Direct labour per unit will increase by 10%. Despite the fluctuations in the cost structure, the company wants to maintain the same profit margin on sales.

Raw materials will be in stock for one month whereas finished goods will remain in stock for two months. Production cycle is for 2 months. Credit period allowed by suppliers is 2 months. Sales are made to three zones:

Zone	Percentage of saels	Mode of credit
A	50%	Credit period of 2 months
B	30%	Credit period of 3 months
C	20%	Cash sales

There are no cash purchases and cash balance will be ₹1,11,000.

The company plans to apply for a working capital financing from bank for the year 2022-23. Estimate net working capital of the company receivables to be taken on sales and also compute the maximum permissible bank finance for the company using 3 criteria of Tandon Committee Norms. (Assume stock of finished goods to be a core current assets) **[RTP May 2023]**

[**Sol.** Net working capital = ₹42,83,500; MPBF = ₹32,12,625; ₹30,27,625; ₹18,57,625]

PRACTICE QUESTIONS

15. The following data relating to an auto component manufacturing company is available for the year:

Raw material held in storage	20 days
Receivables' collection period	30 days
Conversion process period	10 days
(raw material – 100%, other costs – 50% complete)	
Finished goods storage period	45 days
Credit period from suppliers	60 days
Advance payment to suppliers	5 days
Total cash operating expenses per annum	₹800 lakhs

75% of the total cash operating expenses are for raw material. 360 days are assumed in a year. You are required to calculate:

(*i*) Each item of current assets and current liabilities

(*ii*) The working capital requirement, If the company wants to maintain a cash balance of ₹10 lakhs at all times.

[**Sol.** ₹133.78 lakhs]

16. PK Ltd., a manufacturing company, provides the following information: **[Nov 2020]**

	(₹)
Sales	1,08,00,000
Raw Material Consumed	27,00,000
Labour Paid	21,60,000
Manufacturing Overhead	32,40,000
(Including Depreciation for the year ₹3,60,000)	
Administrative & Selling Overhead	10,80,000

Additional Information:

(*a*) Receivables are allowed 3 months' credit.

(*b*) Raw Material Supplier extends 3 months' credit.

(*c*) Lag in payment of Labour is 1 month.

(*d*) Manufacturing Overhead are paid one month in arrear.

(*e*) Administrative & Selling Overhead is paid 1 month advance.

(*f*) Inventory holding period of Raw Material & Finished Goods are of 3 months.

(*g*) Work-in-progress is Nil.

(*h*) PK Ltd. sells goods at Cost plus 33–1/3%.

(*i*) Cash Balance ₹3,00,000.

(*j*) Safety Margin 10%.

You are required to compute the Working Capital Requirements of PK Ltd. on Cash Cost basis.

[**Sol.** ₹44,21,000]

17. Bita Limited manufactures used in the steel industry. The following information regarding the company is given for your consideration:

(*i*) Expected level of production 9,000 units per annum.

(*ii*) Raw materials are expected to remain in store for an average of two months before issue to production.

(*iii*) Work-in-progress (50% complete as to conversion cost) will approximate to ½ month's production.

(*iv*) Finished goods remain in warehouse on av average for one month.

(*v*) Credit allowed by suppliers is one month.

(*vi*) Two month's credit is normally allowed to debtors.

(*vii*) A minimum cash balance of ₹67,500 is expected to be maintained

(*viii*) Cash sales are 75% less than the credit sales.

(*ix*) Safety margin of 20% to cover unforeseen contingencies.

(*x*) The production pattern is assumed to be even during the year.

(*xi*) The cost structure for Bita Limited's product is as follows:

	(₹)
Raw materials	80 per unit
Direct Labour	20 per unit
Overheads (including depreciation ₹20)	80 per unit
Total cost	180 per unit
Profit	20 per unit
Selling price	200 per unit

You are required to estimate the working capital requirement of Bita Limited.

[**Sol.** ₹5,81,400]

18. While applying for financing of working capital requirements to a commercial bank, SK Ltd. projected the following information for the next year.

Cost Element	Per unit (₹)	Per unit (₹)
Raw Materials		
X	30	
Y	7	
Z	6	43
Direct Labour		25
Manufacturing and administration overheads (excluding depreciation)		20
Depreciation		10
Selling overheads		15
		113

Additional Information:

(*a*) Raw materials are purchased from different suppliers leading to different period allowed as follows:

X – 2 months; *Y* – 1 months; *Z* – 1/2 month

(*b*) Production cycle is of ½ month. Production process requires full unit of X and Y in the beginning of the production. Z is required only to the extent of half unit in the beginning and the remaining half unit is needed at a uniform rate during the production process.

(*c*) X is required to be stored for 2 months and other materials for 1 month.

(*d*) Finished goods are held for 1 month.

(*e*) 25% of the total sales is on cash basis and remaining on credit basis. The credit allowed by debtors is 2 months.

(*f*) Average time lag in payment of all overheads is 1 months and 1/2 months for direct labour.

(*g*) Minimum cash balance of ₹8,00,000 is to be maintained.

Calculate the estimated working capital required by the company on cash cost basis if the budgeted level of activity is 1,50,000 units for the next year. The company also intends to increase the estimated working capital requirement by 10% to meet the contingencies. (You may assume that production carried on evenly throughout the year and direct labour and other overheads accrue similarly.) **[RTP May 2021]**

[**Sol.** ₹40,42,500]

19. Calculate the amount of working capital required for XYZ Ltd. from the following information:

Elements of Cost	Per unit (₹)
Raw Material	80.00
Direct Labour	30.00
Overheads	60.00
Total Cost	170.00
Profit	30.00
Sales	200.00

Raw materials are held in stock on an average for one month. Work-in-progress (completion stage 50%), on an average half a month. Finished goods are in stock on an average for one month. Credit allowed by suppliers is one month and credit allowed to debtors is two months. Time lag in payment of wages is 1½ weeks. Time lag in payment of overheads is one month. One fourth of the sales are made on cash basis. Cash in hand and at bank is expected to be ₹50,000.

You are required to prepare statement showing the working capital needed to finance a level of activity of 52,000 units of production. Assume that production is carried on evenly throughout the year and wages and overhead accrue similarly. For the calculation purpose 4 weeks may be taken as equivalent to a month and 52 weeks in a year.

[**Sol.** ₹16,35,000]

20. Day Ltd. a newly formed company has applied to the Private Bank for the first time for financing its working capital requirements. The following information are available about the projects for the current year:

Estimated level of activity	Completed Units of Production 31,200 plus unit of work in progress 12,000
Raw Material Cost	₹40 per unit
Direct Wages Cost	₹15 per unit
Overheads	₹40 per unit (inclusive of depreciation ₹10 per unit)
Selling price	₹130 per unit
Raw material in stock	Average 30 days consumption
Work in Progress stock	Material 100% and Conversion cost 50%
Finished goods stock	24,000 units
Credit allowed by the supplier	30 days
Credit allowed to purchases	60 days
Direct wages (lag in payment)	15 days
Expected cash balance	₹2,00,000

Assume that production is carried on evenly throughout the year (360 days) and wages and overheads accrue similarly. All sales are on the credit basis. You are required to calculate the Net Working Capital Requirement on Cash Cost Basis. **[May 2018]**

[**Sol.**]

21. SK Ltd., a newly formed company, has applied to commercial bank for the first time for financing its working capital requirements. The following information is available about the projections for the current year:

Estimated level of activity: 1,04,000 completed units of production plus 4,000 units of work in progress. Based on the above activity, estimated cost per unit is:

Raw material	₹80 per unit
Direct wages	₹30 per unit
Overheads (exclusive of depreciation)	₹60 per unit
Total Cost	₹170 per unit
Selling price	₹200 per unit

Raw materials in stock: Average 4 weeks consumption, work—in-progress (assume 50% completion stage in respect of conversion cost) (materials issued at the start of the processing).

Finished goods in stock	8,000 units
Credit allowed by suppliers	Average 4 weeks
Credit allowed to debtors/receivables	Average 8 weeks
Lag in payment of wages	Average 1.5 weeks
Cash at banks (for smooth operation)	₹25,000

Assume that production is carried on evenly throughout the year (52 weeks) and wages and overheads accrue similarly. All sales are on credit basis only. You are required to calculate the net working capital required. **[SM, MTP Nov 2018]**

[**Sol.** ₹42,52,913]

22. MT Ltd. has been operating its manufacturing facilities till 31.3.2021 on a single shift working with the following cost structure:

	Per unit (₹)
Cost of Materials	24
Wages (out of which 60% is variable)	20
Overheads (out of which 20% variable)	20
	64
Profit	8
Selling price	72

As at 31.3.2021 with the sales of ₹17,28,000 the company held:

	(₹)
Stock of raw materials (at cost)	1,44,000
Work-in-progress (valued at prime cost)	88,000
Finished goods (valued at total cost)	2,88,000
Sundry debtors	4,32,000

In view of increased market demand, it is proposed to double production by working an extra shift. It is expected that a 10% discount will be available from suppliers of raw materials in view of increased volume of business. Selling price will remain the same. The credit period allowed to customers will remain unaltered. Credit availed from suppliers will continue to remain at the present level i.e. 2 months. Lag in payment of wages and overheads will continue to remain at one month.

You are required to calculate the additional working capital requirements, if the policy to increase output is implemented to assess the impact of double shift for long term as a matter of production policy.

[**Sol.** Additional working capital requirement = ₹3,63,200]]

23. The following information has been extracted from the books of ABS Limited:

Particulars	1st April, 2017 (₹)	31st March, 2018 (₹)
Raw material	1,00,000	70,000
Work-in-progress	1,40,000	2,00,000
Finished goods	2,30,000	2,70,000

Other information for the year:

Particulars	₹
Average receivables	2,10,000
Average payables	3,14,000
Purchases	15,70,000
Wages and overheads	17,50,000
Selling expenses	3,20,000
Sales	42,00,000

All purchases and sales on credit basis. Company is willing to know: **[RTP May 2018]**

(*a*) Net operating cycle period

(*b*) Amount of working capital requirement (assume 360 days in a year)

[**Sol.** (*a*) 12 days; (*b*) ₹1,19,000]

24. Following information is forecasted by the Puja Limited for the year ending 31st March, 2018:

	Balance as at 1st April, 2017 (₹)	Balance as at 31st March, 2018 (₹)
Raw materials	45,000	65,356
Work-in-progress	35,000	51,300
Finished goods	60,181	70,175

	Balance as at 1st April, 2017 (₹)	Balance as at 31st March, 2018 (₹)
Debtors	1,12,123	1,35,000
Creditors	50,079	70,469
Annual purchase of raw material (all credit)		4,00,000
Annual cost of production		7,50,000
Annual cost of goods sold		9,15,000
Annual operating cost		9,50,000
Annual sales (all credit)		11,00,000

You may take one year as equal to 365 days. You are required to calculate:

(*a*) Net operating cycle period

(*b*) Number of operating cycles in the year

(*c*) Amount of working capital requirement

[**Sol.** (*a*) 86 days; (*b*) 4.244; (*c*) ₹2,23,845.42]

25. Trading and Profit and Loss Account of Beat Ltd. for the year ended 31st March, 2022 is given below: **[RTP Nov 2022]**

Particulars		Amount (₹)	Particulars		Amount (₹)
To opening stock:			By Sales (credit)		1,60,00,000
- Raw material	14,40,000		By Closing Stock:		
- Work-in-progress	4,80,000		- Raw material	16,00,000	
- Finished goods	20,80,000	40,00,000	- Work-in-progress	8,00,000	
To Purchases (credit)		88,00,000	- Finished goods	24,00,000	48,00,000
To Wages		24,00,000			
To Production exp.		16,00,000			
To Gross Profit c/d		40,00,000			
		2,08,00,000			2,08,00,000
To Administration exp.		14,00,000	By Gross Profit b/d		40,00,000
To Selling exp.		6,00,000			
To Net Profit		20,00,000			
		40,00,000			40,00,000

The opening and closing payables for raw materials were ₹16,00,000 and ₹19,20,000 respectively whereas the opening and closing balances of receivables were ₹12,00,000 and ₹16,00,000 respectively.

You are required to ascertain the working capital requirement by operating cycle method.

[**Sol.** ₹42,28,329.81]

26. The following information is provided by MNP Ltd. for the year ending 31st March, 2020:

Raw Material Storage Period	45 days
Work-in-Progress conversion period	20 days
Finished Goods storage period	25 days
Debt Collection period	30 days
Creditors' payment period	60 days
Annual Operating Cost	₹25,00,000
(Including Depreciation of ₹2,50,000)	

Assume 360 days in a year.

You are required to calculate:

(*i*) Operating Cycle period

(*ii*) Number of Operating Cycle in a year

(*iii*) Amount of working capital required for the company on cash a cost basis.

(*iv*) The company is a market leader in its product and it has no competitor in the market. Based on a market survey it is planning to discontinue sales on credit and deliver products based on pre-payments in order to reduce its working capital requirement substantially You are required to compute the reduction in working capital requirement in such a scenario.

[Jan 2021]

[**Sol.** (*i*) 60 days; (*ii*) 6 cycles; (*iii*) ₹3,75,000; (*iv*) ₹1,87,500]

27. From the following data, calculate the maximum permissible bank finance under the three methods suggested by the Tandon Committee:

Liabilities	₹in Lakhs
Creditors	120
Other current liabilities	40
Bank borrowing	250
Total	**410**

Current Assets	₹in Lakhs
Raw material	180
Work-in-progress	60
Receivables	100
Other current assets	170
Total current assets	510
The total core current assets (CCA) are ₹200 lakhs	

[**Sol.** ₹262.50 lakhs; ₹222.50 lakhs; ₹72.50 lakhs]

SOLUTIONS

15. Since WIP is 100% complete in terms of material and 50% complete in terms of other cost, the same has been considered for number of days for WIP inventory i.e. 10 days for material and 5 days for other costs respectively.

Particulars	₹in lakhs
Raw material stock $\left[\left(800\times75\%\times\frac{20}{360}\right)\right]$	33.33
WIP stock $\left[\left(800\times75\%\times\frac{10}{360}\right)+\left(800\times25\%\times50\%\times\frac{10}{360}\right)\right]$	19.45
Finished goods stock holding $\left[800\times\frac{45}{360}\right]$	100.00
Receivables collection $\left[800\times\frac{30}{360}\right]$	66.67
Advance to supplier $\left[800\times75\%\times\frac{5}{360}\right]$	8.33
Credit period from supplier $\left[800\times75\%\times\frac{60}{360}\right]$	100.00

Computation of Working Capital

Particulars	₹in lakhs
Raw material stock	33.33
WIP stock	19.45
Finished goods stock	100.00
Receivables	66.67
Advance to suppliers	8.33
Cash	10.00
Total current assets	237.78
Less: Payables (Creditors)	100.00
Working capital	137.78

16. Statement showing Working Capital Requirements of

	Amount (₹)
Current Assets	
Stock of raw material (27,00,000 × 3/12)	6,75,000
Stock of finished goods (77,40,000 × 3/12)	19,35,000
Debtors (88,20,000 × 3/12)	22,05,000

Prepaid Administrative & Selling Overheads (10,80,000 × 1/12)	90,000
Cash balance	3,00,000
Total Current Assets (A)	**52,05,000**
Current Liabilities	
Creditors for raw material (27,00,000 × 3/12)	6,75,000
Outstanding Labour cost (21,60,000 × 1/12]	1,80,000
Outstanding Manufacturing Overheads (28,80,000 × 1/12)	2,40,000
Total Current Liabilities (B)	**10,95,000**
Net Current Assets (A – B)	41,10,000
Add: 10% safety margin	4,11,000
Working capital requirement	**45,21,000**

Working Note-1:

Statement of Cash Cost

Particulars	₹
Raw material consumed	27,00,000
Add: Labour	21,60,000
Add: Manufacturing Overheads [32,40,000 – 3,60,000]	28,80,000
GFC/NFC/COGS	77,40,000
Add: Administrative & Selling Overheads	10,80,000
Cash cost of sales	88,20,000

17. Statement showing Working Capital Requirements of

		Amount (₹)
Current Assets		
Stock of raw material (9,000 × 80 × 2/12)		1,20,000
Stock of WIP -Material (9,000 × 80 × 0.5/12)	30,000	
Wages (9,000 × 20 × 50% × 0.5/12)	3,750	
Overheads (9,000 × 60 × 50% × 0.5/12)	11,250	45,000
Stock of finished goods (9,000 × 160 × 1/12)		1,20,000
Debtors (9,000 × 160 × 80% × 2/12)		1,92,000
Cash balance expected		67,500
Total Current Assets (A)		**5,44,500**
Current Liabilities		
Creditors for raw material (9,000 × 80 × 1/12)		60,000
Total Current Liabilities (B)		**60,000**
Net Current Assets (A – B)		4,84,500
Add: 20% safety margin		96,900
Working capital requirement		**5,81,400**

Note: Debtors has been calculated on the basis of cash cost. Alternatively, they can be calculated on sales basis as well.

18. Statement showing Working Capital Requirements of

	Amount (₹)
Current Assets	
Stock of raw material X (45,00,000 × 2/12)	7,50,000
Stock of raw material Y (10,50,000 × 1/12)	87,500
Stock of raw material Z (9,00,000 × 1/12)	75,000
Stock of work-in-progress (working note – 2)	4,00,000
Stock of finished goods (1,32,00,000 × 1/12)	11,00,000
Debtors for credit sale (1,54,50,000 × 75% × 2/12)	19,31,250
Cash	8,00,000
Total Current Assets (A)	**51,43,750**
Current Liabilities	
Creditors for raw material X (45,00,000 × 2/12)	7,50,000
Creditors for raw material Y (10,50,000 × 1/12)	87,500
Creditors for raw material Z (9,00,000 × 0.5/12)	37,500
Outstanding direct labour (37,50,000 × 0.5/12)	1,56,250
Outstanding manufacturing & administration overheads (30,00,000 × 1/12)	2,50,000
Outstanding selling overheads (22,50,000 × 1/12)	1,87,500
Total Current Liabilities (B)	**14,68,750**
Net working capital (A – B)	**36,75,000**
Add: Provision for Contingencies @ 10%	3,67,500
Working capital requirement	**40,42,500**

Working Note-1:

Statement of Cost

Particulars		₹
	Raw material X (1,50,000 × 30)	45,00,000
	Raw material Y (1,50,000 × 7)	10,50,000
	Raw material Z (1,50,000 × 6)	9,00,000
	Raw material consumed	64,50,000
Add:	Direct labour (1,50,000 × 25)	37,50,000
Add:	Manufacturing & Administration overheads (1,50,000 × 20)	30,00,000
	Cash GFC/NFC/COP/COGS	1,32,00,000
Add:	Selling overheads (1,50,000 × 15)	22,50,000
	Cash cost of sales	1,54,50,000

Working Note-2:

Statement of calculation of WIP

	Particulars	₹
	Raw material X (45,00,000 × 0.5/12)	1,87,500
	Raw material Y (10,50,000 × 0.5/12)	43,750
	Raw material Z (9,00,000 × 50% × 0.5/12)	18,750
	Raw material usage	2,50,000
Add:	Raw material Z (9,00,000 × 50% × 50% × 0.5/12)	9,375
Add:	Direct labour (37,50,000 × 50% × 0.5/12)	78,125
Add:	Manufacturing & Administration overheads (30,00,000 × 50% × 0.5/12)	62,500
	Work in progress stock	4,00,000

19. Statement showing Working Capital Requirements of

Particulars			₹
Current Assets:			
Raw material stock (52,000 × 80 × 4/52)			3,20,000
WIP stock	- Material (52,000 × 80 × 50% × 2/52)	80,000	
	- Labour (52,000 × 30 × 50% × 2/52)	30,000	
	- Overheads (52,000 × 60 × 50% × 2/52)	60,000	1,70,000
Finished goods stock (52,000 × 170 × 4/52)			6,80,000
Receivables (52,000 × 170 × 3/4 × 8/52)			10,20,000
Cash in hand & bank			50,000
Total Current Assets (A)			**22,40,000**
Current Liabilities			
Payables for material (52,000 × 80 × 4/52)			3,20,000
Outstanding wages (52,000 × 30 ×1.5/52)			45,000
Outstanding overheads (52,000 × 60 × 4/52)			2,40,000
Total Current Liabilities (B)			**6,05,000**
Net Working Capital (A – B)			**16,35,000**

20. Statement showing Working Capital Requirements of

	Amount (₹)
Current Assets	
Stock of raw material (17,28,000 × 30/360)	1,44,000
Stock of work-in-progress [12,000 × (40 + 7.50 + 15)]	7,50,000
Stock of finished goods [24,000 × (40 + 15 + 30)]	20,40,000
Debtors for sale (6,12,000 × 60/360)	1,02,000

Cash	2,00,000
Total Current Assets (A)	**32,36,000**
Current Liabilities	
Creditors for purchase (18,72,000 × 30/360)	1,56,000
Creditors for wages (5,58,000 × 15/360)	23,250
Total Current Liabilities (B)	**1,79,250**
Net working capital (A – B)	**30,56,750**

Working Note-1:

Statement of Cost

Particulars		(₹)
	Opening stock of raw material	–
Add:	Purchases (Bal. fig.)	18,72,000
Less:	Closing stock of raw material (17,28,000 × 30/360)	(1,44,000)
	Raw material consumed [(31,200 × 40) + (12,000 × 40)]	17,28,000
Add:	Direct wages [(31,200 × 15) + (12,000 × 15 × 50%)]	5,58,000
Add:	Overheads [(31,200 × 30) + (12,000 × 30 × 50%)]	11,16,000
	Gross Factory Cost	34,02,000
Less:	Closing work in progress [12,000 × (40 + 7.50 + 15)]	(7,50,000)
	Cost of goods produced	26,52,000
Less:	Closing stock of finished goods (26,52,000 × 24,000/31,200)	(20,40,000)
	Cash cost of sales	6,12,000

21. Statement showing Working Capital Requirements of

	Amount (₹)
Current Assets	
Stock of raw material (86,40,000 × 4/52)	6,64,615
Stock of work-in-progress [4,000 × (80 + 15 + 30)]	5,00,000
Stock of finished goods [8,000 × (80 + 30 + 60)]	13,60,000
Debtors for sale (1,63,20,000 × 8/52)	25,10,769
Cash	25,000
Total Current Assets (A)	**50,60,384**
Current Liabilities	
Creditors for raw material (93,04,615 × 4/52)	7,15,740
Creditors for wages (31,80,000 × 1.5/52)	91,731
Total Current Liabilities (B)	**8,07,471**
Net working capital (A – B)	**42,52,913**

Working Note-1:

Statement of Cost

Particulars		₹
	Opening stock of raw material	–
Add:	Purchases (Bal. fig.)	93,04,615
Less:	Closing stock of raw material (86,40,000 × 4/52)	(6,64,615)
	Raw material consumed [(1,04,000 × 80) + (4,000 × 80)]	86,40,000
Add:	Direct wages [(1,04,000 × 30) + (4,000 × 30 × 50%)]	31,80,000
Add:	Overheads [(1,04,000 × 60) + (4,000 × 60 × 50%)]	63,60,000
	Gross Factory Cost	1,81,80,000
Less:	Closing work in progress [4,000 × (80 + 15 + 30)]	(5,00,000)
	Cost of goods produced	1,76,80,000
Less:	Closing stock of finished goods (1,76,80,000 × 8,000/1,04,000)	(13,60,000)
	Cash cost of sales	1,63,20,000

22. Present sales units = $\frac{17,28,000}{72}$ = 24,000 units

Sales units after double shift = 24,000 × 2 = 48,000 units

Statement of Cost

	24,000 units		48,000 units	
	Per unit	Total	Per unit	Total
Raw Material	24	5,76,000	21.60	10,36,000
Wages:				
Variable	12	2,88,000	12	5,76,000
Fixed	8	1,92,000	4	1,92,000
Overheads:				
Variable	4	96,000	4	1,92,000
Fixed	16	3,84,00	8	3,84,000
Total cost	64	15,36,000	49.6	23,80,800
Profit	8	1,92,000	22.4	10,75,200
Sales	72	17,28,000	72	34,56,000

Stock of raw material units on 31.3.2021 = $\frac{1,44,000}{24}$ = 6,000 units

Stock of WIP units on 31.3.2021 = $\frac{88,000}{24+20}$ = 2,000 units

Stock of finished goods units on 31.3.2021 = $\frac{2,88,000}{64}$ = 4,500 units

Statement of Working Capital Requirement

	Single shift (24,000 units)			Double shift (48,000 units)		
	Units	Rate	Amount	Units	Rate	Amount
Raw Material stock	6,000	24	1,44,000	12,000	21.60	2,59,200
WIP stock	2,000	44	88,000	2,000	37.60	75,200
Finished goods stock	4,500	64	2,88,000	9,000	49.60	4,46,400
Sundry Debtors	6,000	64	3,84,000	12,000	49.60	5,95,200
Total Current Assets (A)			**9,04,000**			**13,76,000**
Creditors for material	4,000	24	96,000	8,000	21.60	1,72,800
Creditors for wages	2,000	20	40,000	4,000	16	64,000
Creditors for Overheads	2,000	20	40,000	4,000	12	48,000
Total Current Liabilities (B)			1,76,000			2,84,800
Working Capital (A – B)			7,28,000			10,91,200

Additional working capital requirement = ₹10,91,200 - ₹7,28,000 = ₹3,63,200

23.

Particulars	₹
Opening stock of raw material	1,00,000
Add: Purchase of raw material	15,70,000
Less: Closing stock of raw material	(70,000)
Raw material consumed	16,00,000
Direct wages and overheads	17,50,000
Work cost	33,50,000
Add: Opening work-in-progress	1,40,000
Less: Closing work-in-progress	(2,00,000)
Cost of production	32,90,000
Add: opening stock of finished goods	2,30,000
Less: closing stock of finished goods	(2,70,000)
Cost of goods sold	32,50,000
Add: selling expenses	3,20,000
Cost of sales	35,70,000
Profit (Bal. fig.)	6,30,000
Sales	42,00,000

(*a*) Raw material storage period = $\frac{\text{Average stock of raw material}}{\text{Annual consumption of material}} \times 360$

$$= \frac{\left(\frac{1,00,000+70,000}{2}\right)}{16,00,000} \times 360 = 19.125 \text{ days or } 19 \text{ days}$$

(b) Work-in-Progress conversion period = $\frac{\text{Average stock of WIP}}{\text{Annual cost of production}} \times 360$

$= \frac{\left(\frac{1,40,000 + 2,00,000}{2}\right)}{32,90,000} \times 360 = 18.60 \text{ or } 19 \text{ days}$

(c) Finished stock storage period = $\frac{\text{Average stock of finished goods}}{\text{Annual cost of goods sold}} \times 360$

$= \frac{\left(\frac{2,30,000 + 2,70,000}{2}\right)}{32,50,000} \times 360 = 27.69 \text{ or } 28 \text{ days}$

(d) Receivables collection period = $\frac{\text{Average receivables}}{\text{Average credit sales}} \times 360 = \frac{2,10,000}{42,00,000} \times 360 = 18 \text{ days}$

(e) Payable payment period = $\frac{\text{Average payables for material}}{\text{Average credit purchase}} \times 360 = \frac{3,14,000}{15,70,000} \times 360 = 72 \text{ days}$

(i) Net Operating Cycle Period = A + B + C + D – E = 19 + 19 + 28 + 18 – 72 = 12 days

(ii) Number of operating cycles = $\frac{360}{\text{Operating cycle period}} = \frac{360}{12} = 30 \text{ times}$

Amount of working capital = $\frac{\text{Cost of sales}}{\text{Number of operating cycles}} = \frac{35,70,000}{30} = ₹1,19,000$

24. Working Notes:

(a) Raw Material Storage Period (R) = $\frac{\text{Average Stock of Raw Material}}{\text{Annual Consumption of Raw Material}} \times 365$

$= \frac{₹55,178}{₹3,79,644} \times 365 1 = 53 \text{ days}$

Average Stock of Raw Material = $\frac{45,000 + 65,356}{2} = ₹55,178$

Annual Consumption of Raw Material = Opening Stock + Purchases – Closing Stock

= 45,000 + 4,00,000 – 65,356 = ₹3,79,644

(b) WIP Conversion Period (W) = $\frac{\text{Average Stock of WIP}}{\text{Annual Cost of Production}} \times 365 = \frac{₹43,150}{₹7,50,000} \times 365 = 21 \text{ days}$

Average Stock of WIP = $\frac{35,000 + 51,300}{2} = ₹43,150$

(c) Finished Stock Storage Period (F) = $\frac{\text{Average Stock of Finished Goods}}{\text{Cost of Goods Sold}} \times 365$

$= \frac{₹65,178}{₹9,15,000} \times 365 = 26 \text{ days}$

Average Stock = $\frac{60,181+70,175}{2}$ = ₹65,178

(*d*) Debtors Collection Period (D) = $\frac{\text{Average Debtors}}{\text{Annual Credit Sales}} \times 365 = \frac{₹1,23,561.50}{₹11,00,000} \times 365$ = 41 days

Average debtors = $\frac{1,12,123+1,35,000}{2}$ = ₹1,23,561.50

(*e*) Creditors Payment Period (C) = $\frac{\text{Average Creditors}}{\text{Annual Net Credit Purchases}} \times 365 = \frac{₹60,274}{₹4,00,000} \times 365$ = 55 days

Average Creditors = $\frac{50,079+70,469}{2}$ = 60,274

(*ii*) Operating Cycle Period = R + W + F + D – C = 53 + 21 + 26 + 41 – 55 = 86 days

(*ii*) Number of Operating Cycles in the Year = $\frac{365}{\text{Operating Cycle Period}} = \frac{365}{86}$ = 4.244

Amount of Working Capital Required = $\frac{\text{Annual Operating Cost}}{\text{Number of Operating Cycles}}$

= $\frac{₹9,50,000}{₹4.244}$ = ₹2,23,845.42

25. (1) Raw material period (R) = $\frac{\text{Average stock of raw material}}{\text{Daily avg. consumption of material}} = \frac{(14,40,000+16,00,000)/2}{86,40,000/365}$

= 64.21 days

(2) Production cost = RM Consumed + Wages + Production exp. + Op. WIP – Cl. WIP

= 86,40,000 + 24,00,000 + 16,00,000 + 4,80,000 – 8,00,000 = ₹1,23,20,000

WIP Conversion period = $\frac{\text{Average stock of WIP}}{\text{Daily average production cost}} = \frac{(4,80,000+8,00,000)/2}{1,23,20,000/365}$

= 18.96 days

(3) Cost of goods sold = Cost of production + Op. FG – Cl. FG

= 1,23,20,000 + 20,80,000 – 24,00,000 = ₹1,20,00,000

Finished goods period = $\frac{\text{Average stock of FG}}{\text{Daily average cost of goods sold}} = \frac{(20,80,000+24,00,000)/2}{1,20,00,000/365}$

= 68.13 days

(4) Receivables collection period (D) = $\frac{\text{Average receivables}}{\text{Daily average credit sales}} = \frac{(12,00,000+16,00,000)/2}{1,60,00,000/365}$

= 31.94 days

(5) Payables payment period (C) = $\frac{\text{Average payables}}{\text{Daily average credit purchases}} = \frac{(16,00,000+19,20,000)/2}{88,00,000/365}$

= 73 days

(6) Operating cycle days = R + W + F + D – C = 64.21 + 18.96 + 68.13 + 31.94 – 73 = 110.24 days

(7) Number of operating cycles per year = $\frac{365}{\text{Duration of operating cycle}} = \frac{365}{110.24} = 3.311$

(8) Total operating expenses = COGS + Administration exp. + Selling exp.

= 1,20,00,000 + 14,00,000 + 6,00,000 = 1,40,00,000

(9) Working capital required = $\frac{\text{Total operating expenses}}{\text{Number of operating cycles per year}} = \frac{1,40,00,000}{3.311}$ = ₹42,28,329.81

26. (*i*) Statement showing Operating cycle

Raw Material storage Period	= 45 days
WIP Conversion Period	= 20 days
Finished goods storage period	= 25 days
Debt collection period	= 30 days
Less: Creditors' payment period	= (60 days)
Operating cycle period	= 60 days

(*ii*) Number of operating cycles in a year = $\frac{360}{\text{Operating cycle period}} = \frac{360}{60 \text{ days}}$ = 6 cycles

(*iii*) Amount of working capital required on cash cost basis = $\frac{(25,00,000 - 2,50,000)}{6}$ = ₹3,75,000

(*iv*) New operating cycle period = 60 days – Debt collection period = 60 – 30 = 30 days

Number of operating cycles in a year = $\frac{360}{30}$ = 12 cycles

New amount of working capital required on cash cost basis = $\frac{(25,00,000 - 2,50,000)}{12}$

= ₹1,87,500

Saving in cash cost of working capital = ₹3,75,000 - ₹1,87,500 = ₹1,87,500

27. The maximum permissible bank finance (MPBF) for the firm, under three methods may be ascertained as follows:

Method-I:

MPBF = 0.75(CA – CL) = 0.75(510 – 160) = ₹262.50 lakhs

Method-II:

MPBF = (0.75 × CA) – CL = (0.75 × 510) – 160 = ₹222.50 lakhs

Method-III:

MPBF = 0.75(CA – CCA) – CL = 0.75(510 – 200) – 160 = ₹72.50 lakhs

10 CHAPTER

Cash Management

THEORY	
Treasury Management	Treasury management is defined as the efficient management of liquidity and financial risk in business with an objective of having adequate liquidity with the business organization and thereby mitigating its operational, financial and reputational risk.
Functions of Treasury Management	(*a*) **Cash Management:** It is related to efficient collection and payment of cash. (*b*) **Currency Management:** It is managing the foreign currency risk exposure of the company. (*c*) **Fund Management:** It is responsibility for planning and sourcing the company's short, medium and long term cash needs. (*d*) **Banking:** It is involvement in arrangement of short term finance from bank loans etc. (*e*) **Corporate Finance:** It is involvement with both acquisition and disinvestment activities within the group.
Cash Management	It involves efficient cash collection process and managing payments of cash both inside and outside the organization.
Objective of Cash Management	The main objective of cash management for a business are: ▫ Provide adequate cash to each of its units. ▫ No funds are blocked in idle cash. ▫ The surplus cash (if any) should be invested in order to maximize returns for the business.
Principal Motive for Holding Cash	(*a*) **Transactive Motive:** It is needed to make routine payments while conducting business in the ordinary course. (*b*) **Speculative Motive:** It is needed to take advantage of profitable opportunities as and when they arise. (*c*) **Precautionary Motive:** It is needed to meet contingencies in the future.

Baumol's Model of Cash Management	**Assumptions:** (*a*) The cash requirements of the firm are known in advance with a certainty. (*b*) The cash is to be used evenly over a period of time. (*c*) The rate of carrying cost is known and it is constant. (*d*) The transaction cost also remains constant. **Model Explanation:** ▫ This model was suggested in the year 1952. ▫ **Carrying cost:** It is the cost of holding cash, namely, the interest foregone on marketable securities. It is also known as opportunity cost of keeping cash balance. ▫ **Transaction cost:** It is the cost involved in getting the marketable securities converted into cash, such as brokerage, registration and other costs. ▫ There is an inverse relationship between carrying and ordering cost. ▫ When one increases, the other decreases and vice versa. ▫ Optimum cash level will be at that point where carrying and transaction costs are equal. $OTS = \sqrt{\frac{2 \times A \times T}{C}}$ Where, OTS = Optimum transfer size A = Annual cash disbursements T = Fixed costs per transactions C = Opportunity costs of one rupee p.a. Total Transaction cost = Cost per transaction × Number of transactions Total Carrying cost = Average cash balance × Carrying cost per annum $\text{Number of transactions} = \frac{\text{Total Annual Requirement of Cash}}{\text{Transfer Size}}$ $\text{Average Cash Balance} = \frac{\text{Transfer Size}}{2}$
Limitations of Baumol's Model	(*a*) When the cash payment becomes lumpy, it may be appropriate to reduce the period for which calculations are made so that expenditures during the period are relatively steady. (*b*) Cash payments are seldom predictable. Hence, the model may not give 100% correct results.
Miller-Orr Model	▫ This model is used when the demand for cash is uncertain. ▫ In this model, control limits are set for cash balances which are as follows: ▫ **Upper Limit (*h*):** It is that level at which the marketable securities are purchased to bring down the cash balance back to the normal level. ▫ **Lower Limit (*o*):** It is that level at which the marketable securities are sold to bring up cash balance back to the normal level.

	▫ **Return Point (z):** It is that level which lies between the upper limit and lower limit. $\text{Spread} = \sqrt[3]{\frac{3T\sigma^2}{4I}}$ Where, R = Return pint T = Transaction cost σ^2 – Variance of daily cash balance I = Interest rate i.e. carrying cost per rupee of cash **Working of the model:** ▫ When the cash balances touches the upper limit, the marketable securities are purchased for cash equal to $(h - z)$ in order to bring the cash balance back to the normal level. ▫ When the cash balance touches the lower limit, the marketable securities are sold for cash equal to $(z - o)$ in order to bring the cash balance back to the normal level (return point). ▫ When the cash balance stays between (h, z) & (z, o) no transaction between cash & marketable security account is made.
Cash Budget	▫ It is the plan related to cash receipt and payments and thereby financing or investing of the cash flows. ▫ It can be prepared in three ways (*a*) Receipt and payment method (*b*) Adjusted income method (*c*) Adjusted balance sheet method
Meaning of Float	The term float is used to refer to the periods that affect cash as it moves through the different stages of the collection process.
Types of Float	(*a*) **Billing Float:** It is the time between the sale and mailing of the invoice. (*b*) **Mail Float:** It is the time when a cheque is being processed by post office or other means of delivery. (*c*) **Cheque Processing Float:** It is the time required by seller to sort, record and deposit the cheque after it had been received by the company. (*d*) **Bank Processing Float:** It is the time from the deposit of the cheque to the crediting of funds in the seller account.
Concentration Banking	▫ It is a system of operating through a number of collection centers in different regions instead of a single collection center centralized at the head office. ▫ It is used to minimize the gap between the mailing time from customers to the firm and the time when the funds become available for use. ▫ The collection centers perform the following functions: (*a*) They collect cheques from customers. (*b*) They deposit the collected cheques in their local bank accounts. (*c*) They transfer surplus funds to the concentration bank each day.

Lock Box System	▫ It is used to eliminate the time gap between the receipt of cheque and its deposit into the bank. ▫ The working of lock box system is as follows: (*a*) The firm establishes a number of collection centers considering customer's location and volume of remittances. (*b*) The firm hires a local post office box at each center. (*c*) The firm instructs its customers to mail their remittances to the lock boxes. (*d*) The firm authorizes its local bank at each center to pick up their remittance from local box. (*e*) The bank fixed up the mail several times a day and deposits the cheques in firm's bank account.
Recent Development in Cash Management	▫ **Electronic Fund Transfer:** The banking system has totally been computerized which provides efficient and effective banking services. ▫ **Zero Balance Account:** These accounts have an added feature that firm is not required to maintain any minimum balance in the account. ▫ **Money Market Operations:** In large companies, investment of surplus funds is one of the major tasks of treasury department and the investment is generally done in the money market. ▫ **Petty Cash Imprest System:** Company estimates its day-to-day petty expenses based on past experience and future needs. Cash requirement upto a week are kept separate for making petty expenses. ▫ **Management of Temporary Cash Surplus:** Temporary cash surpluses can be profitably invested in various options based on economic situation, volatility of returns etc. ▫ **Electronic Cash Management System:** It results in saving in time, reduces paper work and manhours, increase in interest earned and decrease in interest expenses etc. ▫ **Virtual Banking:** It denotes the provision of banking and related services through extensive use of information technology without direct recourse to the bank by the customer. It leads to lower cost, increased speed and many other benefits.
Principles Relating to Selection of Marketable Securities	(*a*) **Safety:** Return and risk go hand-in-hand. As the objective in this investment is ensuring liquidity, minimum risk is the criterion of selection. (*b*) **Maturity:** Matching of maturity and forecasted cash needs is essential. Prices of long-term securities fluctuate more with changes in interest rates and are, therefore, riskier. (*c*) **Marketability:** It refers to the convenience, speed and cost at which a security can be converted into cash. If the security can be sold quickly without loss of time and price, it is highly liquid or marketable.

PRACTICAL QUESTIONS

1. A firm maintains a separate account for cash disbursement. Total disbursement are ₹1,05,000 per month or ₹12,60,000 per year. Administrative and transaction cost of transferring cash to disbursement account is ₹20 per transfer. Marketable securities yield is 8% per annum. Determine the optimum cash balance according to William J. Baumol Model. **[SM]**

[**Sol.** ₹25,100]

2. The following information is available in respect of SK Ltd:

(i) On an average, debtors are collected after 45 days; inventories have an average holding period of 75 days and creditor's payment period on an average is 30 days.

(ii) The firm spends a total of ₹120 lakhs annually at a constant rate.

(iii) It can earn 20 percent on investments.

From the above information, you are required to calculate:

(*a*) The cash cycle and cash turnover,

(*b*) Minimum amounts of cash to be obtained to meet payments as they become due,

(*c*) Savings by reducing the average inventory holding period by 30 days. **[SM]**

[**Sol.** (*a*) 90 days; 4 cycles; (*b*) ₹30,00,000; (*c*) ₹2,00,000]

Following is the data related to SK Ltd:

Month	January	February	March	April	May	June
Sales	10,000	25,000	30,000	45,000	50,000	20,000

20% of the sales are on cash basis. Calculate the collection from debtors for 2nd quarter in the following cases:

(*a*) Goods are sold on 2 month credit.

(*b*) 50% of the credit customers pay in the next month of sales and the balance in the following month.

(*c*) 50% of the credit customers pay in the following month of sales. 50% of the balance customers will pay in 2 months and the balance in the next month.

(*d*) 2% of the customers are bad debts. 50% of the total account receivables are collected in the month of the sales and the rest in the following month.

(*e*) 1% of the credit sales are returned by the customers; 2% debts are uncollectible; 50% of the good account receivables are collected in the next month of sales and the rest in the following month.

(*f*) Cash sales are 75% less than the credit sales. 75% of credit sales are collected within one month and the balance in two months.

3. Prepare monthly cash budget of 6 months beginning from April 2021, on the basis of following information: **[SM]**

(*a*) Estimated monthly sales are as follows:

Jan	₹1,00,000	June	₹80,000
Feb	₹1,20,000	July	₹1,00,000
March	₹1,40,000	Aug	₹80,000
April	₹80,000	Sept	₹60,000
May	₹60,000	Oct	₹1,00,000

(*b*) Wages and salaries are estimated to be payable as follows:

April	₹9,000	July	₹10,000
May	₹8,000	Aug	₹9,000
June	₹10,000	Sept	₹9,000

(*c*) Cash sales are 75% less than the credit sales. 75% of credit sales are collected within one month and the balance in two months. There are no bad debt losses.

(*d*) Purchases amount to 80% of sales and are made and paid for in the month preceding the sale.

(*e*) The firm has 10% Debentures of ₹1,20,000. Interest on these has to be paid quarterly in Jan. April and so on.

(*f*) The firm is to be make an advance payment of tax of ₹5,000 in July 2021.

(*g*) The firm had a cash balance of ₹20,000 on April, 1 2021, which is the minimum desired level of cash balance. Any cash surplus/deficit above/below this level is made up by temporary investment/liquidation of temporary investments or Temporary borrowings at the end of each month (interest on these to be ignored).

[**Sol.** Closing balance = ₹20,000; ₹20,000; ₹20,000; ₹20,000; ₹20,000; ₹20,000]

4. A company was incorporated w.e.f. 1st April, 2021. Its authorized capital was ₹1,00,00,000 divided into 10 lakhs equity shares of ₹10 each. It intends to raise capital by issuing equity shares of ₹50,00,000 (fully paid) on 1st April. Besides, a loan of ₹6,50,000 @ 12% per annum will be obtained from a financial institution on 1st April and further borrowings will be made at same rate of interest on the first day of the month in which borrowing is required. All borrowings will be repaid along with interest on the expiry of one year. The company will make payment for the following assets in April. **[RTP Nov 2022]**

Particulars	(₹)
Plant and Machinery	10,00,000
Land & Building	20,00,000
Furniture	5,00,000
Motor Vehicles	5,00,000
Stock of Raw Materials	5,00,000

The following further details are available:

(1) Projected Sales (April – September):

	(₹)
April	15,00,000
May	17,50,000
June	17,50,000
July	20,00,000
August	20,00,000
September	22,50,000

(2) Gross profit margin will be 25% on sales.

(3) The company will make credit sales only and these will be collected in the second month following sales.

(4) Creditors will be paid in the first month following credit purchases. There will be credit purchases only.

(5) The company will keep minimum stock of raw materials of ₹5,00,000.

(6) Depreciation will be charged @ 10% per annum on cost on all fixed assets.

(7) Payment of preliminary expenses of ₹50,000 will be made in April.

(8) Wages and salaries will be ₹1,00,000 each month and will be paid on the first day of the next month.

(9) Administrative expenses of ₹50,000 per month will be paid in the month of their incurrence.

(10) No minimum cash balance is required.

You are required to prepare the monthly cash budget (April - September), the projected income statement for the 6 months period and the projected balance sheet as on 30th September, 2021.

[**Sol.** Closing balance = ₹10,50,000; Nil; ₹1,37,500; ₹5,25,000; ₹7,25,000; ₹11,75,000; Gross profit = ₹28,12,500; Net profit = ₹22,17,250; Total BS = 97,75,000]

5. From the following information relating to a departmental store, you are required to prepare for the three months ending 31st March, 2021: **[SM]**

(*a*) Month-wise cash budget on receipts and payments basis; and

(*b*) Statement of Sources and uses of funds for the three months period.

It is anticipated that the working capital & other account balances at 1st January, 2021 will be as follows: **₹in 000's**

Cash in hand and at bank	1,090
Short term investments	600
Debtors	5,140
Stock	2,600
Trade creditors	4,220
Other creditors	400
Dividend payable	970
Tax due	640
Plant	1,600

Budgeted Profit Statement **₹in 000's**

	January	February	March
Sales	4,200	3,600	3,400
Cost of sales	3,270	2,810	2,660
Gross profit	930	790	740
Administrative, selling and distribution expenses	630	540	510
Net Profit before tax	300	250	230

Budgeted balances at the end of each month **₹in 000's**

	January	February	March
Short term investments	1,400	–	400
Debtors	5,200	5,000	4,7000
Stock	2,400	2,200	2,000
Trade creditors	4,000	3,900	3,800
Other creditors	400	400	400
Dividend payable	970	–	–
Tax due	640	640	640
Plant (depreciation ignored)	1,600	3,200	3,100

Depreciation amount of ₹1,20,000 is included in the budgeted expenditure for each month.

[**Sol.** (*a*) ₹46,00,000; ₹57,00,000; ₹33,50,000; (*b*) Sources = Uses = ₹25,70,000]

6. You are given below the Profit & Loss Accounts for two years for a company:

Profit & Loss Account

Particulars	Year 1(₹)	Year 2(₹)	Particulars	Year 1(₹)	Year 2(₹)
To Opening Stock	40,00,000	50,00,000	By Sales	4,00,00,000	5,00,00,000
To Raw Materials	1,50,00,000	2,00,00,000	By Closing Stock	50,00,000	75,00,000
To Stores	50,00,000	60,00,000	By Misc. Income	5,00,000	5,00,000
To Manufacturing Exp.	50,00,000	80,00,000			
To Other Expenses	50,00,000	50,00,000			
To Depreciation	50,00,000	50,00,000			
To Net Profit	65,00,000	90,00,000			
	4,55,00,000	5,80,00,000		4,55,00,000	5,80,00,000

Sales are expected to be ₹6,00,00,000 in year 3. Other expenses will increase by ₹25,00,000 besides other charges. Only raw materials are in stock. Assume sales and purchases are in cash terms and the closing stock is expected to go up by the same amount as between year 1 and 2. You may assume that no dividend is being paid. The Company can use 75% of the cash generated to service a loan. Compute how much cash from operations will be available in year 3 for the purpose? Ignore income tax. **[SM]**

[**Sol.** ₹1,27,00,000]

7. SK Ltd is a manufacturing company producing and selling a range of cleaning products to wholesale customers. It has three suppliers and two customers. SK Ltd relies on its cleared funds forecast to manage its cash. You are an accounting technician for the company and have been asked to prepare a cleared funds forecast for the period Friday 9 July to Tuesday 13 July 2021 inclusive. You have been provided with the following information: **[SM]**

(1) Receipts from customers

	Credit Terms	Payment Method	9 July 2021 sales	9 June 2021 sales
P Ltd.	1 Calendar month	BACS	₹3,00,000	₹2,60,000
M Ltd.	None	Cheque	₹3,60,000	₹3,10,000

(*a*) Receipt of money by BACS (Bankers' Automated clearing Services) is instantaneous.

(*b*) M Ltd.'s cheque will be paid into SK ltd.'s bank account on the same day as the sale is made and will clear on the third day following this (excluding day of payment).

(2) Payment to Suppliers

Supplier Name	Credit terms	Payment Method	9 July 2021 Purchases	9 June 2021 Purchases	9 May 2021 Purchases
R Ltd.	1 calendar month	Standing order	₹1,30,000	₹1,10,000	₹90,000
J Ltd.	2 calendar month	Cheque	₹1,70,000	₹1,60,000	₹1,50,000
K Ltd.	None	Cheque	₹1,90,000	₹1,80,000	₹1,70,000

(*a*) SK Ltd has set up a standing order for ₹90,000 a month to pay for supplies from R Ltd. This will leave SK's bank account on 9 July. Every few months, an adjustment is made to reflect the actual cost of supplies purchased (you do not need to make this adjustment).

(*b*) SK Ltd will send out, by post, cheques to J Ltd and K Ltd on 9 July. The amounts will leave its bank account on the second day following this (excluding the day of posting).

(3) Wages and salaries

	June 2021	July 2021
Weekly wages	₹24,000	₹26,000
Monthly salaries	₹1,12,000	₹1,18,000

(*a*) Factory workers are paid cash wages (weekly). They will be paid one week's wages, on 11 July, for the last week's work done in June (i.e. they work a week in hand).

(*b*) All the office workers are paid salaries (monthly) by BACS. Salaries for June will be paid on 9 July.

(4) Other miscellaneous payments

(*a*) Every Friday morning, the petty cashier withdraws ₹400 from the company bank account for the petty cash. The money leaves SK's bank account straight away.

(*b*) The room cleaner is paid ₹60 from petty cash every Sunday morning.

(*c*) Office stationery will be ordered by telephone on Saturday 10 July to the value of ₹600. This is paid for by company debit card. Such payments are generally seen to leave the company account on the next working day.

(*d*) Five new software will be ordered over the Internet on 12 July at a total cost of ₹13,000. A cheque will be sent out on the same day. The amount will leave SK Ltd.'s bank account on the second day following this (excluding the day of posting).

(5) Other information

The balance on SK's bank account will be ₹4,00,000 on 9 July 2021. This represents both the book balance and the cleared funds.

Prepare a cleared funds forecast for the period Friday 9th July to Tuesday 13th July 2021 inclusive using the information provided. Show clearly the uncleared funds float each day.

[**Sol.** Cleared fund = ₹4,57,600; ₹4,57,600; ₹93,000; ₹4,53,000; ₹4,53,000; Uncleared funds = ₹4,77,600; ₹4,77,000; ₹4,53,000; ₹4,40,000; ₹4,40,000]

8. Based on the following information prepare a cash budget for SK Ltd:

	1st Qtr (₹)	2nd Qtr (₹)	3rd Qtr (₹)	4th Qtr (₹)
Opening cash balance	10,000	–	–	–
Collections from customers	1,25,000	1,50,000	1,60,000	2,21,000
Payments:				
Purchase of materials	20,000	35,000	35,000	54,200
Other expenses	25,000	20,000	20,000	17,000
Salary and wages	90,000	95,000	95,000	1,09,200
Income tax	5,000	–	–	–
Purchase of machinery	–	–	–	20,000

The company desired to maintain a cash balance of ₹15,000 at the end of each quarter. Cash can be borrowed or repaid in multiples of ₹500 at an interest of 10% per annum. Management does not want to borrow cash more than what is necessary and wants to repay as early as possible. In any event, loans cannot be extended beyond four quarters. Interest is computed and paid when the principal is repaid. Assume that borrowings take place at the beginning and repayments are made at the end of the quarters.

[**Sol.** Closing balance = ₹15,000; ₹15,000; ₹15,325; ₹23,825]

PRACTICE QUESTIONS

9. K Ltd. has a Quarterly cash outflow of ₹9,00,000 arising uniformly during the Quarter. The company has an Investment portfolio of Marketable Securities. It plans to meet the demands for cash by periodically selling marketable securities. The marketable securities are generating a return of 12% p.a. Transaction cost of converting investments to cash is ₹60. The company uses Baumol model to find out the optimal transaction size for converting marketable securities into cash.

Consider 360 days in a year. **[Nov 2022]**

You are required to calculate:

(*a*) Company's average cash balance

(*b*) Number of conversions each year and

(*c*) Time interval between two conversions

[**Sol.** (*a*) ₹30,000; (*b*) 60; (*c*) 6 days]

10. A garment trader is preparing cash forecast for first three months of calendar year 2021. His estimated sales for the forecasted periods are as below:

	January (₹'000)	February (₹'000)	March (₹'000)
Total Sales	600	600	800

(*i*) The trader sells directly to public against cash payments and to other entities on credit. Credit sales are expected to be four times the value of direct sales to public. He expects 15% customers to pay in the month in which credit sales are made, 25% to pay in the next month and 58% to pay in the next to next month. The outstanding balance is expected to be written off.

(*ii*) Purchase of goods are made in the month prior to sales and it amounts to 90% of sales and made on credit. Payments of these occur in the month after the purchase. No inventories of goods are held.

(*iii*) Cash balance as on 1st January, 2021 is ₹50,000

(*iv*) Actual sales for the last two months of calendar year 2020 are as below:

	November (₹'000)	December (₹'000)
Total Sales	640	880

You are required to prepare a monthly cash budget for the three months from January to March, 2021. **[Dec 2021]**

[**Sol.** Closing balance (₹in 000s) = ₹174.96; ₹355.78; ₹289.68]

11. Slide Ltd. is preparing a cash flow forecast for the three months period from January to the end of March. The following sales volumes have been forecasted: **[Nov 2019]**

Months	December	January	February	March	April
Sales (units)	1,800	1,875	1,950	2,100	2,250

Selling price per units ₹600. Sales are all on one month credit. Production of goods for sale takes place one month before sales. Each unit produced requires two units of raw material costing ₹150 per unit. No raw material inventory is held. Raw materials purchases are on one month credit. Variable overheads and wages equal to ₹100 per unit are incurred during production and paid in the month of production. The opening cash balance on 1st January is expected to be ₹35,000. A long term loan of ₹2,00,000 is expected to be received in the month of March. A machine costing ₹3,00,000 will be purchased in March.

(*a*) Prepare a cash budget for the months of January, February and March and calculate the cash balance at the end of each month in the three months period.

(*b*) Calculate the forecast current ratio at the end of the three months period.

[**Sol.** (*a*) Closing balance = ₹3,57,500; ₹6,87,500; ₹9,02,500; (*b*) 4.537]

12. The following information relates to SK ltd., a publishing company:

The selling price of a book is ₹15, and sales are made on credit through a book club and invoiced on the last day of the month. Variable costs of production per book are materials (₹5), labour (₹4) and overhead (₹2).

Month	No. of books
November	1,000
December	1,000
January	1,000
February	1,250
March	1,500

Month	No. of books
April	2,000
May	1,900
June	2,200
July	2,200
August	2,300

Customers are expected to pay as follows:

One month after the sale 40%

Two months after the sale 60%

The company produces the books two months before they are sold and the creditors for materials are paid two months after production.

Variable overheads are paid in the month following production and are expected to increase by 25% in April; 75% of wages are paid in the month of production and 25% in the following month. A wage increase of 12.5% will take place on 1st March.

The company is going through a restructuring and will sell one of its freehold properties in May for ₹25,000, but it is also planning to buy a new printing press in May for ₹10,000. Depreciation is currently ₹1,000 per month, and will rise to ₹1,500 after the purchase of the new machine.

The company's corporation tax (of ₹10,000) is due for payment in march. The company presently has a cash balance at bank on 31 December 2020, of ₹1,500.

You are required to prepare a cash budget for the six months from January to June 2021. **[SM]**

[**Sol.** Closing balance = ₹3,250; ₹1,500; (–)₹11,912; (–)₹15,024; ₹576; ₹3,239]

13. You are required to prepare a cash budget based on the given information. The cash balance in hand on 1st January 2021 is ₹72,500. Assume that 50 percent of total sales are cash sales. Assets are to be acquired in the months of February and April. Therefore, provisions should be made for the payment of ₹8,000 and ₹25,000 for the same. An application has been made to the bank for the grant of a loan of ₹30,000 and it is hoped that the loan amount will be received in the month of May.

Months	Sales (₹)	Materials Purchases (₹)	Salaries & Wages (₹)	Production Over Heads (₹)	Office and Selling Over Heads (₹)
January	72,000	25,000	10,000	6,000	5,500
February	97,000	31,000	12,100	6,300	6,700
March	86,000	25,500	10,600	6,000	7,500
April	88,600	30,600	25,000	6,500	8,900
May	1,02,500	37,000	22,000	8,000	11,000
June	1,08,700	38,800	23,000	8,200	11,500

It is anticipated that a dividend of ₹35,000 will be paid in June. Debtors are allowed one month's credit. Creditors for materials purchased and overheads grant one month's credit. Sales commission at 3 percent on sales is paid to the sales man each month. **[SM]**

[**Sol.** Closing balance = ₹96,340; ₹1,21,330; ₹1,55,650; ₹1,51,292; ₹2,05,767; ₹1,94,106]

14. Consider the balance sheet of SK ltd. as on 31st December, 2022. The company has received a large order and anticipates the need to go to its bank to increase its borrowings. As a result, it has to forecast its cash requirements for January, February and March, 2023. Typically the company collects 20 percent of this sales in the month of sale, 70 percent in the subsequent month, and 10 percent in the second month after the sale. All sales are credit sales. **[SM]**

Equity & liabilities	Amount (₹in '000)	Assets	Amount (₹in '000)
Equity share capital	100	Net fixed assets	1,836
Retained earnings	1,439	Inventories	545
Long-term borrowings	450	Accounts receivables	530
Accounts payables	360	Cash and bank	50
Loan from banks	400		
Other liabilities	212		
	2,961		2,961

Purchase of raw materials are made in the month prior to the sale and amounts to 60 percent of sales. Payments for these purchases occur in the month after the purchase. Labour costs, including overtime, are expected to be 1,50,000 in January, ₹2,00,000 in February and ₹1,60,000 in March. Selling, administrative, taxes and other cash expenses are expected to be ₹1,00,000 per month for January through March. Actual sales in November and December and projected sales for January through April are as follows (in thousands):

Month	₹	Month	₹	Month	₹
November	500	January	600	March	650
December	600	February	1,000	April	750

On the basis of this information:

(*a*) Prepare a cash budget and determine the amount of additional bank borrowings necessary to maintain a cash balance of ₹50,000 at all times for the months of January, February, and March.

(*b*) Prepare a pro forma balance sheet as on 31st March 2022.

[**Sol.** (*a*) Jan = ₹20,000; Feb = ₹2,20,000; March = (–)₹2,40,000; (*b*) Total = ₹31,41,000]

SOLUTIONS

9. (*a*) Annual cash outflows (U) = 9,00,000 × 4 = ₹36,00,000

Fixed cost per transaction (P) = ₹60

Opportunity cost of one rupee p.a. (*S*) = $\frac{12}{100} \times 1 = 0.12$

Optimum cash balance = $\sqrt{\frac{2 \times U \times P}{S}} = \sqrt{\frac{2 \times 36,00,000 \times 60}{0.12}} = ₹60,000$

Average cash balance = $\frac{60,000}{2} = ₹30,000$

(*b*) Number of conversions p.a. = $\frac{\text{Annual requirement}}{\text{Optimum cash balance}} = \frac{36,00,000}{60,000} = 60$

(*c*) Time interval between two conversion = $\frac{360}{\text{No. of conversions}} = \frac{360}{60} = 6$ days

10. Given, Cash sales = 25% of credit sales

Thus, let credit sales = y ∴ Cash sales = $0.25y$

∴ $y + 0.25y$ = Total sales

$1.25y$ = Total sales

$y = \frac{\text{Total Saels}}{1.25}$

y = 80% of total sales

Thus, Credit sales = 80% of total sales and Cash sales = 20% of total sales

Cash Budget

Particulars	Jan.	Feb.	March
Opening Balance (A)	**50**	**174.96**	**355.28**
Receipts			
20% of current month	120	120	160
12% of current month	72	72	96
20% of previous month	176	120	120
46.4% of previous to previous month	296.96	408.32	278.40
Total receipts (B)	**664.96**	**720.32**	**654.40**
Payments			
Creditors payment	540	540	720
Total payments (C)	**540**	**540**	**720**
Closing Balance (A + B – C)	**174.96**	**355.28**	**289.68**

11. Working Notes:

(1) Calculation of Collection from Trade Receivables:

Particulars	December	January	February	March
Sales (units)	1,800	1,875	1,950	2,100
Sales @ ₹600 per unit	10,80,000	11,25,000	11,70,000	12,60,000
Collection from debtors		10,80,000	11,25,000	11,70,000

(2) Calculation of payment to Trade Payables:

Particulars	December	January	February	March
Output (units)	1,875	1,950	2,100	2,250
Raw Material (2 units per output)	3,750	3,900	4,200	4,500
Raw Material @ ₹150 per unit	5,62,500	5,85,000	6,30,000	6,75,000
Payment to creditors		5,62,500	5,85,000	6,30,000

(3) Calculation of Variable Overheads and Wages:

Particulars	January	February	March
Output (units)	1,950	2,100	2,250
Payment in same month @ ₹100 per unit	1,95,000	2,10,000	2,25,000

(a) Preparation of Cash Budget

Particulars	January (₹)	February (₹)	March (₹)
Opening Balance (A)	35,000	3,57,500	6,87,500
Receipts:			
Collection from debtors	10,80,000	11,25,000	11,70,000
Receipt of long term loan	–	–	2,00,000
Total receipt (B)	10,80,000	11,25,000	13,70,000
Payments:			
Payment to creditors	5,62,500	5,85,000	6,30,000
Variable overheads and wages	1,95,000	2,10,000	2,25,000
Purchase of machinery	–	–	3,00,000
Total payments (C)	7,57,500	7,95,000	11,55,000
Closing Balance (A + B – C)	**3,57,500**	**6,87,500**	**9,02,500**

(b) Calculation of Current Ratios

Particulars	March (₹)
Inventory [(2,250 × 2 × ₹150) + (2,250 × 100)]	9,00,000
Trade receivables	12,60,000
Cash Balance	9,02,500
Current Assets (A)	**30,62,500**
Trade payables	6,75,000
Current Liabilities (B)	**6,75,000**
Current Ratio (A ÷ B)	**4.537**

12. Workings:

(1) Sales receipts

Month	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun
Forecast sales (S)	1,000	1,000	1,000	1,250	1,500	2,000	1,900	2,200
	₹	₹	₹	₹	₹	₹	₹	₹
S × 15	15,000	15,000	15,000	18,750	22,500	30,000	28,500	33,000
Debtors pay:								
1 month 40%	–	6,000	6,000	6,000	7,500	9,000	12,000	11,400
2 month 60%	–	–	9,000	9,000	9,000	11,250	13,500	18,000
Total	–	–	15,000	15,000	16,500	20,250	25,500	29,400

(2) Payment for materials

Month	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun
Qty produced (Q)	1,000	1,250	1,500	2,000	1,900	2,200	2,200	2,300
	₹	₹	₹	₹	₹	₹	₹	₹
Materials (Q × 5)	5,000	6,250	7,500	10,000	9,500	11,000	11,000	11,500
Paid (2 month after)	–	–	5,000	6,250	7,500	10,000	9,500	11,000

(3) Variable overheads

Month	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun
Qty produced (Q)	1,000	1,250	1,500	2,000	1,900	2,200	2,200	2,300
	₹	₹	₹	₹	₹	₹	₹	₹
Var. OHs (Q × 2)	2,000	2,500	3,000	4,000	3,800	–	–	–
Var. OHs (Q × 2.5)	–	–	–	–	–	5,500	5,500	5,750
Paid one month later	–	2,000	2,500	3,000	4,000	3,800	5,500	5,500

(4) Wages payment

Month	Dec	Jan	Feb	Mar	Apr	May	Jun
Qty produced (Q)	1,250	1,500	2,000	1,900	2,200	2,200	2,300
	₹	₹	₹	₹	₹	₹	₹
Wages (Q × 4)	5,000	6,000	8,000	–	–	–	–
Wages (Q × 4.50)	–	–	–	8,550	9,900	9,900	10,350
75% this month	3,750	4,500	6,000	6,412	7,425	7,425	7,762
25% of Pr. month	–	1,250	1,500	2,000	2,138	2,475	2,475
Total	–	5,750	7,500	8,412	9,563	9,900	10,237

Cash Budget

Particulars	Jan (₹)	Feb (₹)	March (₹)	April (₹)	May (₹)	June (₹)
Receipts:						
Sales receipts	15,000	15,000	16,500	20,250	25,500	29,400
Freehold property	–	–	–	–	25,000	–
	15,000	**15,000**	**16,500**	**20,250**	**50,500**	**29,400**
Payments:						
Materials	5,000	6,250	7,500	10,000	9,500	11,000
Var. OHs	2,500	3,000	4,000	3,800	5,500	5,500
Wages	5,750	7,500	8,412	9,563	9,900	10,237
Printing press	–	–	–	–	10,000	–
Corporation tax	–	–	10,000	–	–	–
	13,250	**16,750**	**29,921**	**23,363**	**34,900**	**26,737**
Net cash flow	1,750	(1,750)	(13,412)	(3,113)	15,600	2,663
Op. Bal.	1,500	3,250	1,500	(11,912)	(15,025)	575
Closing bal.	3,250	1,500	(11,912)	(15,025)	575	3,238

13. Cash Budget for January to June

	Jan (₹)	Feb (₹)	March (₹)	April (₹)	May (₹)	June (₹)
Receipts:						
Cash Sales	36,000	48,500	43,000	44,300	51,250	54,350
Collection from Debtors	–	36,000	48,500	43,000	44,300	51,250
Bank Loan	–	–	–	–	30,000	–
Total (A)	35,000	84,500	91,500	87,300	1,25,550	1,05,600
Payments:						
Materials	–	5,000	31,000	25,500	30,600	37,000
Salaries and Wages	10,000	12,100	10,600	25,000	22,000	23,000
Production Overheads	–	6,000	6,300	6,000	6,500	8,000
Office and Selling Overheads	–	5,500	6,700	7,500	8,900	11,000

	Jan (₹)	Feb (₹)	March (₹)	April (₹)	May (₹)	June (₹)
Sales Commission	2,160	2,190	2,580	2,658	3,075	3,261
Capital Expenditure	–	8,000	–	25,000	–	–
Dividend	–	–	–	–	–	35,000
Total (B)	**12,160**	**59,510**	**57,180**	**91,658**	**71,075**	**1,17,261**
Net Cash Flow (C = A – B)	23,840	24,990	34,320	4,358	54,475	11,661
Bal. in the Beginning of Month (D)	72,500	96,340	1,21,330	1,55,650	1,51,292	2,05,767
Balance at the End of Month (C + D)	96,340	1,21,330	1,55,650	1,51,292	2,05,767	1,94,106

14. (*a*) **Cash Budget** **(₹in thousands)**

	Jan (₹)	Feb (₹)	March (₹)
Opening balance (A)	**50**	**50**	**50**
Receipts:			
Collection – 10% of current month	120	200	130
Collection – 70% of previous month	420	420	700
Collection – 10% of 2nd previous month	50	60	60
Total (B)	**590**	**680**	**890**
Payments:			
Payment for purchases	360	600	390
Labour costs	150	200	160
Other expenses	100	100	100
Total (C)	**610**	**900**	**650**
Surplus/Deficit (A + B – C = D)	30	(170)	290
Minimum cash balance (E)	50	50	50
Additional borrowings (E – D)	20	220	(240)
Cumulative borrowing (op. bal. 400)	420	640	400

The amount of financing peaks in February owing to the need to pay for purchases made the previous month and higher labour costs. In March, substantial collections are made on the prior month's billings, causing large net cash inflow sufficient to pay off the additional borrowings.

(*b*) **Pro Forma Balance Sheet, 31st March, 2023**

Equity & liabilities	Amount (₹in '000)	Assets	Amount (₹in '000)
Equity share capital	100	Net fixed assets	1,836
Retained earnings	1,529	Inventories	635
Long-term borrowings	450	Accounts receivables	620
Accounts payables	450	Cash and bank	50
Loan from banks	400		
Other liabilities	212		
	3,141		3,141

Accounts receivables	= (Sales in march × 0.8) + (Sales in February × 0.1) = (650 × 0.8) + (1,000 · 0.1] = ₹620
Inventories	= Opening + Purchase – Consumed = 545 + [(1,000 + 650 + 750)(0.60)] – [(600 + 1,000 + 650) · 0.60] = ₹635
Accounts payable	= Purchases in march = ₹450
Retained earnings	= Opening + Profit of current year = 1,439 + Sales – Purchases – Labour cost – Other expenses = 1,439 + (600 + 1,000 + 650) – [(600 + 1,000 + 650)(0.60)] – (150 + 200 + 160) – (100 + 100 + 100) = ₹1,529

11 CHAPTER

Inventory Management

THEORY

Economic Order Quantity (EOQ)	❑ If purchases of material are made in bulk then inventory carrying cost will be high. ❑ If order size is small each time, then the ordering cost will be high. ❑ The size of the order for which both ordering and carrying cost are minimum is known as economic order quantity ❑ Economic Order Quantity = $\sqrt{\frac{2 \times A \times O}{C}}$ A = Annual demand / annual consumption in units O = Cost of placing and receiving an order C = Carrying cost per unit per annum
Ordering Cost	These are the costs which are associated with the purchasing or ordering of materials. It includes costs like tender invitation, transportation of goods, inspection costs etc.
Carrying Cost	These are the costs for holding or storing goods in the stores. It includes costs like storage, rent, insurance, spoilage, deterioration etc.
Assumptions of EOQ	❑ Annual consumption/usage/requirement of raw material is known in advance. ❑ Ordering cost per order is known and constant. ❑ Cost per unit of the material to be purchased is known and it is constant. ❑ Carrying cost is computed on average inventory ordered. ❑ The rate of carrying cost remains constant. ❑ The consumption/usage of material is expected to be even throughout the year.
ABC Analysis	❑ It stands for Always Better control Analysis. ❑ It exercises discriminating Control over various items of inventory by classifying them into different categories on the basis of value, quantity, frequency of replacement etc.

	<table><tr><th>Category</th><th>% in total value</th><th>% in total quantity</th><th>Extent of control</th></tr><tr><td>A</td><td>70%</td><td>10%</td><td>Strict control through stock levels, EOQ etc.</td></tr><tr><td>B</td><td>20%</td><td>20%</td><td>Need based selective control</td></tr><tr><td>C</td><td>10%</td><td>70%</td><td>Little control – Focus on saving associated costs</td></tr></table>
Advantages of ABC Analysis	❑ **Smooth Flow:** It ensures that, there should be no danger of interruption of production. ❑ **Cost Saving:** The cost of placing orders, receiving goods and maintaining stocks is minimized. ❑ **Control by Exception:** Management time is saved since attention need to be paid only to some of the items rather than all the items. ❑ **Standardization of Work:** It makes much of the work systematized on a routine basis.
Limitations of ABC Analysis	❑ In order to be fully effective it should be carried out with standardization and codification. ❑ It is based on gradation of different items, which may include a lot of subjective elements. ❑ The result of ABC analysis should be reviewed periodically and updated.
Stock Out	❑ The demand for materials may fluctuate and delivery of inventory may also be delayed and in such a situation the firm can face a problem of stock-out. ❑ The sock-out can prove costly by affecting the smooth working of the concern. ❑ In order to protect against the stock out arising out of usage fluctuations firms usually maintain some margin of safety. ❑ Two costs are involved in the determination of this stock i.e. opportunity cost of stock-outs and the carrying costs.

PRACTICAL QUESTIONS

1. A company's requirements for ten days 6,300 units. The ordering cost per order is ₹10 and the carrying cost per unit is ₹0.26. You are required to calculate the economic order quantity.

[**Sol.** 696 units]

2. SK Ltd. uses a large quantity of salt in its production process. Annual consumption is 60,000 tonnes over a 50 week working year. It costs ₹100 to initiate and process an order and delivery follow two week later. Storage costs for the salt are estimated at ₹0.10 per tonne per annum. The current practice is to order twice a year when the stock falls to 10,000 tonnes. Identify an appropriate ordering policy for SK ltd. and contrast it with the cost of the current policy.

[**Sol.** Savings = ₹1,312.30]

3. SK company is a distributor of air filters to retail stores. It buys its filters from several manufacturers. Filters are ordered in lot sizes of 1,000 and each order costs ₹40 to place. Demand from retail stores is 20,000 filters per month, and carrying cost is ₹0.10 a filter per month.
   (*a*) Compute the optimal order quantity with respect to so many lot sizes?
   (*b*) Calculate the optimal order quantity if the carrying cost were ₹0.05 a filter per month?
   (*c*) Compute the optimal order quantity if ordering costs were ₹10?

[**Sol.** (*a*) 4; (*b*) 5.66; (*c*) 2]

4. A company requires 36,000 units of a product per year at a cost of ₹100 per unit. Ordering cost per order is ₹250 and the carrying cost is 4.5% per year of the inventory cost. Normal lead time is 25 days and safety stock is NIL.

   Assume 360 working days in a year.
   (i) Calculate the Reorder Inventory Level
   (ii) Calculate the Economic Order Quantity (EOQ)
   (iii) If the supplier offers 1% quantity discount for purchase in lots of 9,000 units or more, should the company accept the proposal?

[**Sol.** (i) 250 units; (ii) 2000 units; (iii) accept the offer]

12 CHAPTER

Receivables and Payables Management

THEORY

Meaning of Receivables	❑ When a firm sells its products or provide any service on credit, account receivables are created. ❑ Receivables, also termed as trade credit or sundry debtors are component of current assets.
Objective of Receivables Management	❑ The basic objective of receivables management is to optimize the return on investment on these assets known as receivables. ❑ If large amounts are tied up in receivables than there are chances of bad debts and there will be cost of collection of debts as well. ❑ On the other hand, if investment in sundry debtors is low, the sales may be restricted, since the competitors may offer more liberal terms. ❑ Therefore, proper management of receivables is an important issue and requires proper policies and their implementation.
Cost Associated with Management of Receivables	❑ Defaulting cost or Bad Debts ❑ Administrative cost ❑ Capital or Interest or opportunity cost ❑ Discount cost
Credit Analysis	❑ It determines the degree of risk associated with the capacity of the customer to borrow and his ability and willingness to pay. For this, firm has to ascertain the credit rating of prospective customers.
Credit Policies	❑ It is defined as the set of parameters and principles that govern the extension of credit to customers. ❑ It involves a trade-off between the profits on additional sales that arise due to credit being extended on the one hand and the cost of carrying those debtors and bad debts on the other hand.

Factors Determining Credit Policy	❑ Quantum of sales e.g. credit may be allowed only on bulk quantity ❑ Nature of product e.g. if demand is inelastic, credit period may be small ❑ Cash discount ❑ Firm's policy and practice of collection ❑ Funds available with the firm ❑ Possibility of bad debts
Costs Associated with Credit Policy	❑ **Collection Cost:** It is the administrative costs incurred in collecting the receivables from the customers to whom the credit sales have been made. ❑ **Capital Cost:** It is the finance cost which has to be incurred on the accounts receivables. ❑ **Delinquency Cost:** This cost arises out of the failure of the customers to meet their obligations when payment on credit sales becomes due after the expiry of the credit period. ❑ **Default Cost:** The firm may not be able to recover some of the overdues because of the inability of the customers.
Benefits Associated with Credit Policy	❑ Due to liberal credit policy there will be increase in sales and thus more profits. ❑ Due to strict credit policy there will be decreased cost of bad debts and carrying cost of investment in account receivables.
Credit Terms	❑ It refers to the set of conditions under which credit is given to customers. ❑ The credit terms include the length of the period for which the credit will be provided, the interest rate to be charged and the cost of default while collecting the payments. ❑ It can be used as a dynamic instrument to increase sales.
Components of Credit Terms	(*a*) **Credit Period:** The point of time at which the credit extended becomes due and the amount must be paid by the customer. (*b*) **Cash Discount:** By what amount the overdue amount gets reduced. (*c*) **Cash Discount Period:** It refers to the duration during which the cash discount can be availed off.
Lengthening of Credit Period	❑ It pushes sales up by inducing existing customers to purchase more and attracting customers. ❑ It is accompanied by a larger investment in debtors and a higher incidence of bad debts loss.
Shortening of Credit Period	It tends to lower sales, decrease investment in debtors and reduce the incidence of bad-debts loss.
Cash Discount Policy	In case of cash discount, the incremental benefits arising out of additional sales and the reduction in the cost of funds locked up in the form of receivables have to be compared with the amount to be paid in the form of discount and a decision to provide or liberalize cash discount has to be taken only when the incremental net benefit is positive.

Implicit Annual Rate of Cash Discount	$\left(\frac{\text{Discount on 100}}{\text{100 – Cash Discount}}\right)\times\left(\frac{\text{365}}{\text{Period of Prepayment}}\right)\times 100$
Ageing Schedule of Receivables	❑ The ageing schedule classifies the outstanding receivables at a given point of time into different age groups together with percentages of total receivables that fall in each group. ❑ The age group represents the number of days or weeks the receivable become outstanding. ❑ The older the receivable, the lower the quality and higher the chances of default.
Benefits of Ageing Schedule	❑ It provides a kind of an early warning proclaiming: ○ Deterioration of quality of receivables ○ Where to apply the corrective action ❑ It helps in analyzing the collection policy, procedures etc. by comparing the present period ageing schedule with past period ageing schedule. ❑ It directly points out those customers which require special attention. It helps to recognize increase & slumps in sale.
Pledging	❑ It refers to the use of firm's receivables to secure a short term loan. ❑ The lender scrutinizes the quality of the accounts receivables, selects acceptable accounts, creates a lien on the collateral and fixed the percentage of financing receivables which ranges around 50% to 90%. ❑ The major advantage of pledging accounts receivables is the ease and flexibility it provides to the borrower. ❑ This however, suffers on account of high cost of financing.
Factoring	❑ It involves provision of specialized services relating to credit investigation, collection of debts, credit protection etc. ❑ In factoring accounts receivables are generally sold to a Financial Institution who charges commission and bears the credit risks associated with the accounts receivables purchased by it. ❑ Factoring agreement can be either on a recourse basis or non-recourse basis.
Advantages of Factoring	❑ The firm can convert accounts receivables into cash without bothering about repayment ❑ Factoring ensures a definite pattern of cash inflows for the organization ❑ Continuous factoring virtually eliminates the need for the credit department ❑ Unlike an unsecured loan, compensating balances are not required in this case.
Forfaiting	❑ Forfaiting is a method through which an exporter sells their bills receivables or trade receivables from export of goods or services to obtain cash on non-recourse basis. ❑ It is a unique credit facility arrangement where an overseas buyer (importer) can open a "letter of credit" (or other negotiable instruments) in favour of the exporter and can import goods and services on deferred payment terms.

Features of Forfaiting	❑ Increase of export ❑ Credit for buyer ❑ Reduced cost ❑ Competition
Functions of Forfaiting	❑ Exporter sells goods or services to an overseas buyer. ❑ The overseas buyers i.e. the importer on the basis trade bills and import documents draws a letter of credit (or other negotiable instruments) through its bank (known as importer's bank). ❑ The exporter on receiving the letter of credit (or other negotiable instruments) approaches to its bank (known as exporter's bank). ❑ The exporter's bank buys the letter of credit (or other negotiable instruments) 'without recourse basis' and provides the exporter the payment for the bill.
Five Traditional Cs in Evaluation of Credit Worthiness of Potential Customer	**(a) Capital:** It refers to the financial position of the customer. Various financial ratios are calculated to ascertain the repayment capacity of the customer. **(b) Character:** It determines the willingness of the customer to discharge debt. Various financial institutions/agencies from where the customer has already borrowed funds or availed credit facilities may be contacted. **(c) Collateral:** It determines the security offered by the customer to avail credit facility. The ability to offer security by a firm can be assessed from the financial statement of the firm. **(d) Capacity:** It refers to the ability of the customer to manage business. It also reflects plant capacity i.e., whether the technology of the firm can adapt itself to the rapid changes occurring in the external environment. **(e) Condition:** It refers to the changes in economic conditions which may have an impact on the payment capacity of the customer.
Innovation in Receivables Management	❑ **Re-engineering Receivable Process** ○ Centralization ○ Alternate payment strategies such as direct debit, IVR, lock box system etc. ○ Customer orientation ❑ **Evaluation of risk** ❑ **Use of Latest Technology** ❑ **Receivable collection practices** ❑ **Use of financial tools and techniques** ○ Credit rating ○ Decision tree analysis ○ Control of receivables ○ Collection policy
Management of Payables	Trade credit is a credit availed by a business organization when it purchases goods without making payment in cash. The credit period begins on the receipt of goods and stretches till the payment is made thereof.

Costs of Trade Credit	**(a) Loss of Cash Discount:** There is often a discount on the price that the firm undergoes when it uses trade credit, since it can take advantage of the discount only if it pays immediately. This discount can translate into a high implicit cost. **(b) Loss of Goodwill:** If the credit is overstepped, suppliers may discriminate against delinquent customers if supplies become short. As with the effect of any loss of goodwill, it depends very much on the relative market strengths of the parties involved. **(c) Administrative and Accounting Costs:** Management of creditors involves administrative and accounting costs that would otherwise be incurred. **(d) Conditions Imposed by Suppliers:** Sometimes most of the suppliers insist that for availing the credit facility the order should be of some minimum size or on regular basis.
Benefits of Trade Credit	**(a) Impact of Inflation:** The debtors get a benefit that they have purchased goods on credit and gained on the value of inventory purchased by them due to high inflation rate. **(b) Interest:** Trade credit is a type of interest free loan, therefore failure to avail this facility has in interest cost. This cost is further increased if interest rates are higher.
Computation of Cost of Payables	Implicit Annual Rate of Cash discount (on an annual basis) $\left(\frac{\text{Discount on 100}}{\text{100 - Cash Discount}}\right) \times \left(\frac{365}{\text{Period of Prepayment}}\right) \times 100$ Implicit Annual Rate of Cash discount (if compounding effect is considered) $= \left(\frac{100}{100 - \text{Cash Discount}}\right)^{\left(\frac{365}{\text{Period of Prepayment}}\right)} - 1$

PRACTICAL QUESTIONS

1. SK Ltd. has a present annual sales level 10,000 units at ₹300 per unit. The variable cost is ₹200 per unit and the fixed costs amount to ₹3,00,000 per annum. The present credit period allowed by the company is 1 month. The company is considering a proposal to increase the credit period to 2 months or 3 months and has made the following estimates:

	Existing	Proposed	
Credit Policy	1 month	2 months	3 months
Increase in sales	–	15%	30%
% of Bad Debts	1%	3%	5%

There will be increase in fixed cost by ₹50,000 on account of increase in sales beyond 25% of present level. The company plans on a pre-tax return of 20% on investment in receivables. You are required to calculate the most paying credit policy for the company.

[**Sol.** Incremental benefit = ₹28,167; (–)₹24,167]

2. A trader whose current sales are in the region of ₹6 lakhs per annum and an average collection period of 30 days wants to pursue a more liberal policy to improve sales. A study made by a management consultant reveals the following information: **[SM]**

Credit Policy	Increase in Collection Period	Increase in Sales	Present Default Anticipated
A	10 days	₹30,000	1.5%
B	20 days	₹48,000	2%
C	30 days	₹75,000	3%
D	45 days	₹90,000	4%

The selling price per unit is ₹3. Average cost per unit is ₹2.25 and variable costs per unit are ₹2. The current bad debt loss is 1%. Required return on additional investment is 20%. Assume a 360 days year. Analyse which of the above policies would you recommend for adoption?

[Sol. Incremental benefit = ₹3,606; ₹3,151; ₹1,583; (–)₹5,350]

3. SK corporation is considering relaxing its present credit policy and is in the process of evaluating two proposed policies. Currently, the firm has annual credit sales of ₹50 lakhs and accounts receivable turnover ratio of 4 times a year. The current level of loss due to bad debts is ₹1,50,000. The firm is required to give a return of 25% on the investment in new accounts receivables. The company's variable costs are 70% of the selling price. Given the following information, which is the better option? **[SM]**

	Present Policy	Policy I	Policy II
Annual credit sales	50,00,000	60,00,000	67,50,000
Accounts Receivables turnover ratio	4 times	3 times	2.4 times
Bad debts losses	1,50,000	3,00,000	4,50,000

[Sol. Incremental benefit = ₹18,750; (–)₹48,438]

4. SK Limited specializes in the manufacture of a computer component. The component is currently sold for ₹1,000 and its variable cost is ₹800. For the year 31.12.20 the company sold on an average 400 components per month. At present the company grants one month credit to its customers. The company is thinking of extending the same to two months on account of which the following is expected:

Increase in sales 25%
Increase in stock ₹2,00,000
Increase in creditors ₹1,00,000

You are required to advise the company on whether or not to extend the credit terms if:

(*a*) All customers avail the extended credit period of two months

(*b*) Existing customers do not avail the extended credit terms but only the new customers avail the same. Assume this case the entire increase in sales is attributable to the new customers.

The company expects a minimum return of 40% on the investment.

[Sol. (*a*) Incremental benefit = ₹8,000; (*b*) Incremental benefit = ₹1,36,000]

5. A firm has a current sales of ₹2,56,48,750. The firm has unutilized capacity. In order to boost its sales, it is considering the relaxation in its credit policy. The proposed terms of credit will be 60 days credit against the present policy of 45 days. As a result, the bad debts will increase from 1.5% to 2% of sales. The firm's sales are expected to increase by 10%. The variable operating costs are 72% of the sales. The firm's corporate tax rate is 35%, and it requires an after tax return of 15% on its investment. Should the firm change its credit period to 60 days.

[Sol. Incremental benefit = ₹1,88,518]

6. Mr. S is regular customers of SK Ltd. and have approached the sellers for extension of a credit facility for enabling them to purchase goods from SK Ltd. On an analysis of past performance and on the basis of information supplied, the following pattern of payment schedule emerges in regard to Mr. S: **[SM]**

Schedule	Pattern
At the end of 30 days	15% of the bill
At the end of 60 days	34% of the bill
At the end of 90 days	30% of the bill
At the end of 100 days	20% of the bill
Non-recovery	1% of the bill

Mr. S want to enter into a firm commitment for purchase of goods of ₹15 lakhs in 2021, deliveries to be made in equal quantities on the first day of each quarter in the calendar year. The price per unit of commodity is ₹150 on which a profit of ₹5 per unit is expected to be made. It is anticipated by SK Ltd., that taking up of this contract would mean an extra recurring expenditure of ₹5,000 per annum. If the opportunity cost of funds in the hands of SK Ltd. is 24% per annum would you as the finance manager of the seller recommend the grant of credit to Mr. S? Workings should form part of your answer. Assume year of 360 days.

[**Sol.** Incremental benefit = (–)₹39,743]

7. As a part of the strategy to increase sales and profits, the sales manager of a company proposes to sell goods to a group of new customers with 10% risk of non-payment. This group would require one and a half months credit and is likely to increase sales by ₹1,00,000 p.a. Production and Selling expenses amount to 80% of sales and the income-tax rate is 50%. The company's minimum required rate of return (after tax) is 25%. Should the sales manager's proposal be accepted? Analyse.

Also compute the degree of risk of non-payment that the company should be willing to assume if the required rate of return (after tax) were (i) 30%, (ii) 40% and (iii) 60%. **[SM]**

[**Sol.** Incremental benefit = ₹1,200; (i) 14%; (ii) 12%; (iii) 8%]

8. A firm sells 40,000 units of its product per annum @ ₹35 per unit. The average cost per unit is ₹31 and the variable cost per unit is ₹28. The average collection period is 60 days. Bad debts losses are 3% of sales and the collection charges amount to ₹15,000.

The firm is considering a proposal to follow a stricter collection policy which would reduce bad debt losses to 1% of sales and the average collection period to 45 days. It would however, reduce sales volumes by 1,000 units and increase the collection expenses to ₹25,000. The firm's required rate of return is 20%. Would you recommend the adoption of the new collection policy? Assume 360 days in a year for the purpose of your calculation.

[**Sol.** Incremental benefit = ₹22,383]

9. A supplier offers credit to a company under terms of 2/20 net 60. Find the implicit cost of credit.

[**Sol.** 18.62%]

10. The present credit terms of S company are 1/10 net 30. Its annual sales are ₹80,00,000, its average collection period is 20 days. Its variable costs and average total costs to sales are 0.85 and 0.95 respectively and its cost of capital is 10%. The proportion of sales on which customers currently take discount is 0.5. S company is considering relaxing its discount terms to 2/10 net 30. Such relaxation is expected to increase sales by ₹5,00,000, reduce the average collection period to 14 days and increase the proportion of discount sales to 0.8. What will be the effect of relaxing the discount policy on company's profit? Take year as 360 days.

[**Sol.** Incremental benefit = (–)₹9,986]

11. A company currently has ₹10,00,000 per annum of sales, all on credit terms 60 days. The average credit taken is, however 80 days. It is considering offering a discount of 3% within 7 days, and it expects that 60% of existing customers will take the discount. The remainder will be equally split between those paying in 80 days and those paying in 100 days. The new credit terms of discount are also expected to generate an additional ₹50,000 of sales. Variable costs are 80% of sales price and the company's bank overdraft costs 14% (year may be taken consisting of 365 days). The company wishes to know whether offering the discount is worthwhile if:

(*a*) No new sales are obtained

(*b*) New sales are as described above

[**Sol.** Incremental benefit = (*a*) (–)₹5,788; (*b*) ₹2,696]

12. A bank is analysing the receivables of SK Company in order to identify acceptable collateral for a short-term loan. The company's credit policy is 2/10 net 30. The bank lends 80% on accounts where customers are not currently overdue and where the average payment period does not exceed 10 days past the net period. A schedule of SK's receivables has been prepared. How much will the bank lend on pledge of receivables, if the bank uses a 10% allowance for cash discount and returns?

Account	Amount (₹)	Days outstanding in days	Average payment period historically
74	25,000	15	20
91	9,000	45	60
107	11,500	22	24
108	2,300	9	10
114	18,000	50	45
116	29,000	16	10
123	14,000	27	48
	1,08,800		

[**Sol.** ₹48,816]

13. A factoring firm has credit sales of ₹360 lakhs and its average collection period is 30 days. The financial controller estimates, bad debt losses are around 2% of credit sales. The firm spends ₹1,40,000 annually on debtors administration. This cost comprises of telephonic and fax bills along with salaries of staff members. These are the avoidable costs. A factoring firm has offered to buy the firm's receivables. The factor will charge 1% commission and will pay an advance against receivables on an interest @15% p.a. after withholding 10% as reserve. Analyse what should the firm do? Assume 360 days in a year. **[SM]**

[**Sol.** Net Benefit = ₹99,500]

14. A company is considering to engage a factor. The following information is available:

- The current average collection period for the company's debtors is 90 days and ½% of debtors default. The factor has agreed to pay money due after 60 days and will take the responsibility of any loss on account of bad debts.
- The annual charge for factoring is 2% of turnover. Administration cost saving is likely to be ₹1,00,000 per annum.
- Annual credit sales are ₹1,20,00,000. Variable cost is 80% of sales price. The company's cost of borrowing is 15% per annum. Assume 360 days in a year.
- Should the company enter into a factoring agreement?

[**Sol.** Net benefit = ₹40,000]

15. The turnover of SK Ltd. is ₹120 lakhs of which 75% is on credit. The variable cost ratio is 80%. The credit terms are 2/10, net 30. On the current level of sales, the bad debts are 1%. The company spends ₹1,20,000 per annum on administering its credit sales. The cost includes salaries of staff who handle credit checking, collection etc. these are avoidable costs. The past experience indicates that 60% of the customers avail of the cash discount, the remaining customers pay on an average 60 days after the date of sale.

The book debts (receivables) of the company are presently being financed in the ratio of 1:1 by a mix of bank borrowings and owned funds which cost per annum 15 percent and 14 percent respectively.

A factoring firm has offered to buy the firm's receivables. The main elements of such deal structured by the factor are:

(*a*) Factor reserve, 12 percent
(*b*) Guaranteed payment – 25 days
(*c*) Interest charges, 15 percent, and
(*d*) Commission 4% of the value of receivables

What advice would you give to SK Ltd. – whether to continue with the in-house management of receivables or accept the factoring firm's offer? Assume 360 days in a year.

[**Sol.** Total cost of in-house = ₹4,26,750; Cost of factoring = ₹4,53,516]

16. The Alliance Ltd. a Petrochemical sector company had just invested huge amount in its new expansion project. Due to huge capital investment, the company is in need to an additional ₹1,50,000 in working capital immediately. The finance Manager has determined the following three feasible sources of working capital funds: **[RTP Dec 2021]**

(i) Bank Loan: The company's bank will lend ₹2,00,000 at 15%. A 10% compensating balance will be required, which otherwise would not be maintained by the company.

(ii) Trade Credit: The company has been offered credit terms from its major supplier of 3/30, net 90 for purchasing raw materials worth ₹1,00,000 per month.

(iii) Factoring: A factoring firm will buy the company's receivables of ₹2,00,000 per month, which have a collection period of 60 days. The factor will advance up to 75% of the face value of the receivables at 12% on an annual basis. The factor will also charge commission of 1% on all receivables purchased. It has been estimated that the factor's services will save the company a credit department expenses and bad debt expense of ₹1,250 and ₹1,750 per month respectively.

On the basis of annual percentage cost, advise which alternative should the company select? Assume 360 days year.

[**Sol.** Bank loan = 16.67%; Trade credit = 18.56%; Factoring = 20%]

17. Suppose SK Ltd. has been offered credit terms from its major supplier of 2/10, net 45. Hence the company has the choice of paying ₹98 per ₹100 or to invest the ₹98 for an additional 35 days and eventually pay the supplier ₹100 per ₹100. The decision as to whether the discount should be accepted depends on the opportunity cost of investing ₹98 for 35 days. What should the company do? **[SM]**

[**Sol.**]

18. The SK Company purchases raw materials on terms of 2/10, net 30. A review of the company's records by the owner, Mr. S, revealed that payments are usually made 15 days after purchases are made. When asked why the firm did not take advantage of its discounts, the accountant, Mr. M, replied that it cost only 2 percent of these funds, whereas a bank loan would cost the company 12 percent. **[SM]**

(*a*) Analyse what mistake is Mr. M making?

(*b*) If the firm could not borrow from the bank and was forced to resort to the use of trade credit funds, what suggestion might be made to Mr. M that would reduce the annual interest cost? Identify.

[Sol.]

PRACTICE QUESTIONS

19. SK Ltd. is examining the question of relaxing its credit policy. It sells at present 20,000 units at a price of ₹100 per unit, the variable cost per unit ₹88 and average cost per unit at the current sales volume is ₹92. All the sales are on credit, the average collection being 36 days. A relaxed credit policy is expected to increase sales by 10% and the average age of receivables to 60 days. Assuming 15% return, should the firm relax its credit policy?

[Sol. Incremental gain = ₹1,200]

20. A company currently has an annual turnover of ₹50 lakhs and an average collection period of 30 days. The company wants to experiment with a more liberal credit policy on the ground that increase in collection period will generate additional sales. From the following information, kindly indicate which policy the company should adopt:

Credit policy	Average collection period	Annual Sales (₹lakhs)
S	45 days	56
K	60 days	60
M	75 days	62
P	90 days	63

Costs: Variable cost – 80% of sales; Fixed cost: ₹6 lakhs per annum: Required (pre-tax) return on investment: 20%. A year may be taken to comprise of 360 days.

[Sol. Incremental benefit = ₹69,667; ₹96,667; ₹85,000; ₹54,667]

21. SK limited has current sales of ₹15 lakhs per year. Cost of sales is 75 percent of sales and bad debts are one percent of sales. Cost of sales comprises 80 percent variable costs and 20 percent fixed costs, while the company's required rate of return is 12 percent. SK Limited currently allows customers 30 days credit, but is considering increasing this to 60 days credit in order to increase sales.

It has been estimated that this change in policy will increase sales by 15 percent, while bad debts will increase from one percent to four percent. It is not expected that the policy change will result in an increase in fixed costs and creditors and stock will be unchanged. Should SK Limited introduce the proposed policy? Analyse by assuming 360 days a year. **[SM]**

[Sol. Incremental benefit = ₹22,050]

22. XYZ Ltd. is making a turnover of ₹70 lakhs out of which 60% is made on credit. The company allows credit for 30 days. The company is considering proposals to liberalize the credit policy. Information regarding options available are as under:

	Proposal-A	Proposal-B
Credit Period	45 days	60 days
Anticipated credit sales	₹65 lakhs	₹80 lakhs

The product yield an average contribution of 20% on sales. Fixed costs are ₹6 lakh per annum. The company expects a pre-tax return of 18% on capital employed. At present company makes a provision for bad debts @0.5% which is expected to go upto 1% for Proposal-A and 2% for Proposal-B. Assume 360 days in a year.

Evaluate the proposals and give your recommendations.

[**Sol.** Incremental benefit = ₹3,44,900; ₹4,70,400]

23. TM Limited, a manufacturer of colour TV sets is considering the liberalization of existing credit terms to three of their large customers A, B and C. The credit period and likely quantity of TV sets that will be sold to the customers in addition to other sales are as follows: **[RTP May 2020]**

Quantity sold (No. of TV Sets)

Credit Period (days)	A	B	C
0	10,000	10,000	–
30	10,000	15,000	–
60	10,000	20,000	10,000
90	10,000	25,000	15,000

The selling price per TV set is ₹15,000. The expected contribution is 50% of the selling price. The cost of carrying receivable averages 20% per annum.

You are required to compute the credit period to be allowed to each customer.

(Assume 360 days in a year for calculation purposes).

[**Sol.** Benefit = ₹750; 1,106.25; ₹1,406.25; ₹1,781.25; Nil; Nil; ₹725; ₹1,068.75]

24. SK Ltd. has sales of ₹960 lakhs. Selling price per unit is ₹80 and variable operating cost is 75% of selling price and average cost per unit is ₹70. The cost of funds is 12%. Average collection period is 75 days, bad debt losses are 4% of sales and collection expenses are ₹15.60 lakhs. Company is considering whether collection policies should be made strict. Due to rigorous collection procedures, sales are expected to decline to ₹920 lakhs. Average collection period will reduce to 60 days and bad debts will reduce to 2.5% of sales. Annual collection expenses will increase to ₹22.50 lakhs.

Required: Should the company carry out the proposal?

(Assume 360 days in a year and investment in debtors are calculated on total cost]

[**Sol.** Incremental benefit = ₹3,30,000]

25. Current annual sales of SKD Ltd. is ₹360 lakhs. Its directors are of the opinion that company's current expenditure on receivables management is too high and with a view to reduce the expenditure they are considering following two new alternative credit policies: **[July 2021]**

	Policy X	Policy Y
Average collection period	1.5 months	1 month
% of default	2%	1%
Annual collection expenditure	₹12 lakhs	₹20 lakhs

Selling price per unit of product is ₹150. Total cost per unit is ₹120.

Current credit terms are 2 months and percentage of default is 3%.

Current annual collection expenditure is ₹8 lakhs. Required rate of return on investment of SKD Ltd. is 20%. Determine which credit policy SKD Ltd. should follow.

[**Sol.** Incremental benefit = ₹2,00,000; Nil]

26. MN Ltd. has a current turnover of ₹30,00,000 p.a. Cost of sales is 80% of turnover and Bad Debts are 2% of turnover, cost of sales includes 70% variable cost and 30% fixed cost, while company's required rate of return is 15%. MN Ltd. currently allows 15 days credit to its customer, but it is considering increase this to 45 days credit in order to increase turnover. It has been estimated that this change in policy will increase turnover by 20%, while Bad Debts will increase by 1%. It is not expected that the policy change will result in an increase in fixed cost and creditors and stock will be unchanged. **[Nov 2018]**

Should MN Ltd. introduce the proposed policy? (Assume a 360 days year)

[**Sol.** Incremental benefit = ₹1,79,700]

27. SK Ltd. having an annual sales of ₹30 lakhs, is re-considering its present collection policy. At present, the average collection period is 50 days and the bad debt losses are 5% of sales. The company is incurring an expenditure of ₹30,000 on account of collection of receivables. Cost of funds is 10 percent. The alternative policies are as under: **[SM]**

	Alternative I	Alternative II
Average collection period	40 days	30 days
Bad Debt losses	4% of sales	3% of sales
Collection expenses	₹60,000	₹95,000

Determine the alternatives on the basis of incremental approach and state which alternative is more beneficial.

[**Sol.** Incremental benefit = ₹8,333; ₹11,667]

28. A company is presently having credit sales of ₹12 lakh. The existing credit terms are 1/10, net 45 days and average collection period is 30 days. The current bad debts loss is 1.5%. in order to accelerate the collection process further as also to increase sales, the company is contemplating liberalization of its existing credit terms to 2/10, net 45 days. It is expected that sales are likely to increase by 1/3 of existing sales, bad debts increase to 2% of sales and average collection period to decline to 20 days. The contribution to sales ratio of the company is 22% and opportunity cost of investment in receivables is 15 percent (pre-tax). 50 percent and 80 percent of customers in terms of sales revenue are expected to avail cash discount under existing and liberalization scheme respectively. The tax rate is 30%. Advise, should the company change its credit terms? (assume 360 days in a year). **[SM]**

[**Sol.** Incremental benefit = ₹38,990]

29. A company has current sale of ₹12 lakhs per year. The profit-volume ratio is 20% and post-tax cost of investment in receivables is 15%. The current credit terms are 1/10, net 50 days and average collection period is 40 days. 50% of customers in terms of sales revenue are availing cash discount and bad debt is 2% of sales. **[May 2023]**

In order to increase sales, the company want to liberalize its existing credit terms to 2/10, net 35 days. Due to which, expected sales will increase to ₹15 lakhs. Percentage of default in sales will remain same. Average collection period will decrease by 10 days. 80% of customers in terms of sales revenue are expected to avail cash discount under this proposed policy.

Tax rate is 30%. Advise, should the company change its credit terms (assume 360 days in a year).

[**Sol.** Incremental profit = ₹26,200]

30. A factoring firm has offered a company to buy its accounts receivables. The relevant information is given below: **[Dec 2021]**

(i) The current average collection period for the company's debt is 80 days and ½% of debtors default. The factor has agreed to pay over money due to the company after 60 days and it will suffer all the losses of bad debts also.

(ii) Factor will charge commission @2%.

(iii) The company spends ₹1,00,000 p.a. on administration of debtor. These are avoidable costs.

(iv) Annual credit sales are ₹90 lakhs. Total variable costs is 80% of sales. The variable costs is 80% of sales. The company's cost of borrowing is 15% per annum. Assume 365 days in a year.

Should the company enter into agreement with factoring firm?

[**Sol.** Net benefit = ₹24,178]

31. A Ltd. is in the manufacturing business and it acquires raw material from X Ltd. on a regular basis. As per the terms of agreement the payment must be made within 40 days of purchase. However, A Ltd. has a choice of paying ₹98.50 per ₹100 it owes to X Ltd. on or before 10th day of purchase.

Required:

EXAMINE whether A Ltd. should accept the offer of discount assuming average billing of A Ltd. with X Ltd. is ₹10,00,000 and an alternative investment yield a return of 15% and company pays the invoice. **[RTP May 2018]**

[**Sol.** Cheaper to accept the discount]

SOLUTIONS

19. Statement showing evaluation of proposal

Particulars	Amount
Incremental gains	
Contribution (2,000 × 12)	24,000
Total (A)	**24,000**
Incremental Costs	
Opportunity cost of Investment in Debtors	22,800
Total (B)	**22,800**
Incremental Gain (A) – (B)	1,200

Working Note 1: Computation of incremental opportunity cost of Invest in Debtors

Particulars	Existing	Proposal
Variable cost of sales (20,000 × 88) (22,000 × 88)	17,60,000	19,36,000
Fixed cost	80,000	80,000
Total cost of Sales	**18,40,000**	**20,16,000**

Particulars	Existing	Proposal
Average collection period	36 days	60 days
Average invest in Debtors	1,84,000	3,36,000
Incremental invest in debtors	-	1,52,000
Opportunity cost of incremental invest in debtors	-	22,800

20. Statement Showing Evaluation of Various Credit Policies under Consideration

Particulars	Policy A	Policy B	Policy C	Policy D
Incremental gains:				
Contribution (See Working Note 1)	1,20,000	2,00,000	2,40,000	2,60,000
Total (A)	**1,20,000**	**2,00,000**	**2,40,000**	**2,60,000**
Incremental costs:				
Opportunity cost of Investment in debtors (See Working Note-2)	50,333	1,03,333	1,55,000	2,05,333
Total (B)	50,333	1,03,333	1,55,000	2,05,333
Net incremental Gains (A) – (B)	**69,667**	**96,667**	**85,000**	**54,667**

Advise: Credit policy B where ACP is 60 days is the best and hence should be accepted

Working notes:

(i) Computation of Incremental Contribution

Particulars	Existing	Policy A	Policy B	Policy C	Policy D
Sales (₹in Lacs)	50	56	60	62	63
Less: Variable cost of sales (80%)	40	44.80	48	49.60	50.40
Contribution	10	11.20	12	12.40	12.60
Incremental Contribution		1.2	2	2.4	2.6

(ii) Computation of Incremental Opportunity cost of Investment in Debtors

Particulars	Existing	Policy A	Policy B	Policy C	Policy D
Total cost of Sales (VC + Total FC)	46,00,000	50,80,000	54,00,000	55,60,000	56,40,000
Average collection period (Days)	30	45	60	75	90
Average Investment in Debtors	3,83,333	6,35,000	9,00,000	11,58,333	14,10,000
Incremental investment in Debtors	-	2,51,667	5,16,667	7,75,000	10,26,667
Opportunity cost of Inc. invest in Drs	-	50,333	1,03,333	1,55,000	2,05,333

Advise: Credit policy III should be chosen.

21. Statement showing evaluation of proposal

Particulars	Amount
Incremental gains	
Contribution (15,00,000 × 15% × 40%)	90,000
Total (A)	**90,000**

Particulars	Amount
Incremental Costs	
Increase in bad debts [(17,25,000×4%) – (15,00,000×1%)]	54,000
Opportunity cost of Investment in Debtors	13,950
Total (B)	**67,950**
Incremental Gain (A) – (B)	22,050

Working Note-1: Cost of sales = Sales × 75%
Variable cost = 80% × COS = 80% × 75% × Sales = 60% × Sales
Fixed cost = 20% × COS = 20% × 75% × Sales = 15% × Sales = 15% × 15,00,000 = ₹2,25,000
PV Ratio = 100 – VC Ratio = 100 – 60% = 40% of sales
New sales = 15,00,000 + 15% = ₹17,25,000
Working Note-2: Computation of incremental opportunity cost of Invest in Debtors

Particulars	Existing	Proposal
Variable cost of sales (15,00,000 × 60%) (17,25,000 × 60%)	9,00,000	10,35,000
Fixed cost	2,25,000	2,25,000
Total cost of Sales	**11,25,000**	**12,60,000**
Average collection period	30 days	60 days
Average invest in Debtors	93,750	2,10,000
Incremental invest in debtors		1,16,250
Opportunity cost of incremental invest in debtors @ 12%		13,950

22. Statement of Credit Policy Evaluation

Particulars	Proposal-A	Proposal-B
Increase in contribution (Working Note-1)	4,60,000	7,60,000
Increase in bad debts	(44,000)	(1,39,000)
Increase in opportunity cost (Working Note-2)	(71,100)	(71,100)
Net Benefit	**3,44,900**	**4,70,400**

Net benefit is higher in case of Proposal-B, thus Proposal-B is better.
Working Note-1:

Statement of Contribution Calculation

Particulars	Existing	Policy-I	Policy-II
Credit Sales	42,00,000	65,00,000	80,00,000
Contribution @ 20%	8,40,000	13,00,000	16,00,000
Increase in contribution	–	4,60,000	7,60,000

Working Note-2:

Statement of Bad Debts Calculation

Particulars	Existing	Policy-I	Policy-II
Credit Sales	42,00,000	65,00,000	80,00,000
Bad Debts (in %)	0.50%	1%	2%
Bad Debts (in ₹)	21,000	65,000	1,60,000
Increase in bad debts	–	44,000	1,39,000

Working Note-3:

Statement of Opportunity Cost Calculation

Particulars	Existing	Policy I	Policy II
Variable cost (Credit sales × 70%)	33,60,000	52,00,000	64,00,000
Fixed cost	6,00,000	6,00,000	6,00,000
Total cost	39,60,000	58,00,000	70,00,000
Average Credit Period	30 days	45 days	60 days
Average invest. in debtors	3,30,000	7,25,000	11,66,667
Increase in invest. in debtors	–	3,95,000	8,36,667
Inc. in opportunity cost @ 20%	–	71,100	1,50,600

23. In case of Customer A, there is no increase in sales even if the credit is given. Hence comparative statement for B and C is given below:

Particulars	Customer B				Customer C			
Credit Period	0	30	60	90	0	30	60	90
Sales units	10,000	15,000	20,000	25,000	–	–	10,000	15,000
	₹in lakhs				₹in lakhs			
Sales value	1,500	2,250	3,000	3,750	–	–	1,500	2,250
Contribution @ 50% (A)	750	1,125	1,500	1,875	–	–	750	1,125
Debtors $\left(\frac{\text{Credit period} \times \text{Sales}}{360}\right)$	–	187.5	500	937.5	–	–	250	562.5
Debtors at cost	–	93.75	250	468.75	–	–	125	281.25
Cost of carrying debtors @ 20% (B)	–	18.75	50	93.75	–	–	25	56.25
Excess of contribution over carrying debtors (A – B)	750	1,106.25	1,406.25	1,781.25	–	–	725	1,068.75

The excess of contribution over cost of carrying debtors is highest in case of credit period of 90 days in respect of both the Customers B and C. Hence, credit period of 90 days should be allowed to B and C.

24. Statement of Credit Policy Evaluation

Particulars	Amount (₹)
Decrease in contribution (40,00,000 × 25%)	(10,00,000)
Increase in collection expenses (22,50,000 – 15,60,000)	(6,90,000)
Decrease in bad debts (Working Note-1)	15,40,000
Decrease in opportunity cost (Working Note-2)	4,80,000
Net Benefit	**3,30,000**

Since there is net benefit, thus it is recommended to implement the proposed policy.

Working Note-1:

Fixed cost = (960,00,000/80 × 70) – (960,00,000 × 75%) = ₹120,00,000

Statement of Bad Debts Calculation

Particulars	Existing	Proposed
Sales	960,00,000	920,00,000
Bad Debts (in %)	4%	2.5%
Bad Debts (in ₹)	38,40,000	23,00,000
Decrease in bad debts	–	15,40,000

Working Note-2:

Statement of Opportunity Cost Calculation

Particulars	Existing	Proposed
Variable cost (Sales × 75%)	720,00,000	690,00,000
Fixed cost	120,00,000	120,00,000
Total cost	**840,00,000**	**810,00,000**
Average credit period	75 days	60 days
Average invest. in debtors	175,00,000	135,00,000
Increase in invest. in debtors	–	40,00,000
Inc. in opportunity cost @ 12%	–	4,80,000

25. **Statement of Credit Policy Evaluation**

Particulars	Policy X	Policy Y
Decrease in bad debts (Working Note-1)	3,60,000	7,20,000
Increase in collection expenses	(4,00,000)	(12,00,000)
Increase in opportunity cost (Working Note-2)	2,40,000	4,80,000
Net Benefit	**2,00,000**	**0**

Net benefit is higher in case of Policy X, thus Policy X should be followed.

Working Note-1:

Statement of Bad Debts Calculation

Particulars	Existing	Policy X	Policy Y
Sales	360,00,000	360,00,000	360,00,000
Bad Debts (in %)	3%	2%	1%
Bad Debts (in ₹)	10,80,000	7,20,000	3,60,000
Decrease in bad debts	–	3,60,000	7,20,000

Working Note-2:

Statement of Opportunity Cost Calculation

Particulars	Existing	Policy X	Policy Y
Total Cost [360 × (120 ÷ 150)]	288,00,000	288,00,000	288,00,000
Average collection period	2 month	1.5 month	1 month
Average invest. in debtors	48,00,000	36,00,000	24,00,000
Decrease in invest. in debtors	–	12,00,000	24,00,000
Dec. in opportunity cost @ 20%	–	2,40,000	4,80,000

26. **Statement of Credit Policy Evaluation**

Particulars	Amount (₹)
Increase in contribution (30,00,000 × 20% × 44%)	2,64,000
Increase in bad debts (Working Note-1)	(48,000)
Increase in opportunity cost (Working Note-2)	(36,300)
Net Benefit	**1,79,700**

Since there is net benefit, thus it is recommended to implement the proposed policy.

Working Note-1:

Variable cost ratio = 80 × 70% = 56%; P/v Ratio = 100- 56% = 44%

Fixed cost = 30,00,000 × 80% × 30% = ₹7,20,000

Statement of Bad Debts Calculation

Particulars	Existing	Proposed
Sales	30,00,000	36,00,000
Bad Debts (in %)	2%	3%
Bad Debts (in ₹)	60,000	1,08,000
Increase in bad debts	–	48,000

Working Note-2:

Statement of Opportunity Cost Calculation

Particulars	Existing	Proposed
Variable cost (sales × 56%)	16,80,000	20,16,000
Fixed cost	7,20,000	7,20,000
Total cost	24,00,000	27,36,000
Average credit period	15 days	45 days
Average invest. in debtors	1,00,000	3,42,000
Increase in invest. in debtors	–	2,42,000
Inc. in opportunity cost @ 15%	–	36,300

27. **Statement of Credit Policy Evaluation**

Particulars	Policy-I	Policy-II
Decrease in bad debts (Working Note-1)	30,000	60,000
Increase in collection expenses	(30,000)	(65,000)
Increase in opportunity cost (Working Note-2)	8,333	16,6667
Net Benefit	**8,333**	**11,667**

Net benefit is higher in case of Policy-I, thus Policy-II is more viable.

Working Note-1:

Statement of Bad Debts Calculation

Particulars	Existing	Policy-I	Policy-II
Sales	30,00,000	30,00,000	30,00,000
Bad Debts (in %)	5%	4%	3%
Bad Debts (in ₹)	1,50,000	1,20,000	90,000
Decrease in bad debts	–	30,000	60,000

Working Note-3:

Statement of Opportunity Cost Calculation

Particulars	Existing	Policy-I	Policy-II
Total Sales	30,00,000	30,00,000	30,00,000
Average collection period	50 days	40 days	30 days
Average invest. in debtors	4,16,667	3,33,333	2,50,000
Decrease in invest. in debtors	–	83,333	1,66,667
Dec. in opportunity cost @ 10%	–	8,333	16,667

28. **Statement of Discount Policy Evaluation**

Particulars	Amount (₹)
Increase in contribution [12,00,000 × 1/3 × 22% × (1 – 0.30)]	61,600
Increase in discount [{16,00,000 × 0.8 × 2%) – {12,00,000 × 0.5 × 1%}](1 – 0.30)	(13,720)
Increase in bad debts [{16,00,000 × 2%) – {12,00,000 × 1.5%}](1 – 0.30)	(9,800)
Decrease in opportunity cost (Working Note-1)	910
Incremental Net Benefit/(loss)	**(38,990)**

It is not advisable to relax the present discount policy because it will reduce the profit by ₹9,986

Working Note:

Particulars	Existing	Proposed
Variable cost	12 lakhs × 0.78 = 9,36,000	16 lakhs × 0.78 = 12,48,000
Fixed cost	–	–
Total Cost	**9,36,000**	**12,48,000**
ACP	30 days	20 days

Particulars	Existing	Proposed
Avg. investment in debtors	78,000	69,333
Dec. in invest. in debtors	–	8,667
Dec. in opportunity cost @ 10.5%	–	910

Opportunity cost rate after tax = 15 × (1 – 0.30) = 10.5%

29. **Statement of Evaluation of Proposal**

Particulars	Amount
Increase in contribution (15,00,000 – 12,00,000)(20%)(1 – 0.30)	42,000
Incremental bad debts (15,00,000 – 12,00,000)(2%)(1 – 0.30)	(4,200)
Incremental cash discount [(15,00,000 × 0.80 × 2%) – (12,00,000 × 0.50 × 1%)](1 – 0.30)	(12,600)
Saving in opportunity cost [(15,00,000 × 0.8 × (30 ÷ 360) × 15%) – (12,00,000 × 0.8 × (40 ÷ 360) × 15%)]	1,000
Incremental Profit	**26,200**

Proposed policy should be adopted since the net benefit is increased by ₹26,200.

30. Presently, the debtors of the company pay after 80 days. However, the factor has agreed to pay after 60 days only. So, the investment in debtors will be reduced by 20 days. The annual charge in cash flows through entering into a factoring agreement is:

Particulars	₹
Factoring commission (90,00,000 × 2%)	(1,80,000)
Administration cost saved	1,00,000
Bad debts saved (90,00,000 × 0.50%)	45,000
Interest saving [{(90,00,000 × 80/360) – (90,00,000 × 60/360)} × 80% × 15%]	59,178
Net Benefit	**24,178**

Recommended to enter into factoring agreement as it will provide annual benefit of ₹24,178.

31. Annual benefit of accepting the discount $\frac{1.5}{100-1.5} \times \frac{365}{40-10} \times 100 = 18.53\%$

Annual cost = Opportunity cost of foregoing interest on investment = 15%

If average invoice amount is ₹10,00,000.

	If discount is	
	Accepted (₹)	Not accepted (₹)
Payment to supplier	9,85,000	10,00,000
Return on investment of 9,85,000 for 30 days [9,85,000 × (30/365) × 15%]	–	(12,144)
	9,85,000	9,87,856

Thus, from above table it can be seen that it is cheaper to accept the discount.

PART

B

Strategic Management

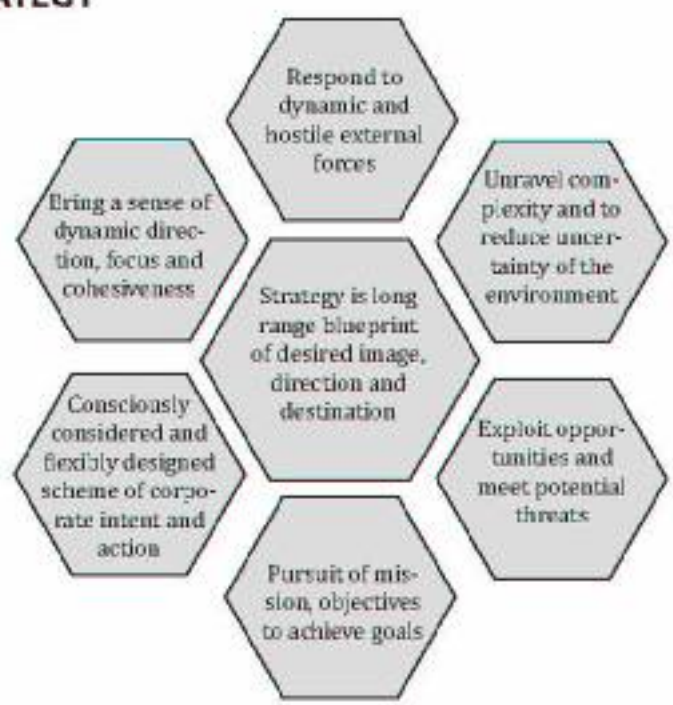
13 CHAPTER

Introduction to Strategic Management

MEANING AND NATURE OF STRATEGIC MANAGEMENT

Management as key group	In-charge of organisational affairs. Making organisation a purposeful and productive entity. Brings together/integrates the resources to whole functioning unit.
Management as set of functions	The functions include Planning, Organising, Directing, Staffing & Control which are closely interrelated. It starts from planning and ensure to achieve what is planned.
Management	Thus, Management is an influence process to make things happen, to gain command over phenomena, to induce and direct events and people in a particular manner. It is backed by power, competence, knowledge and resources.

CONCEPT OF STRATEGY



The common thread among the organization's activities and product-markets that defines the essential nature of business that the organization has or planned to be in future.

--Igor H. Ansoff.

A unified, comprehensive and integrated plan designed to assure that the basic objectives of the enterprise are achieved.

-- William F. Glueck.

Strategy is no substitute for sound, alert and responsible management. It must be recognised that strategy can never be perfect, flawless and optimal. It is in the very nature of strategy that it is flexible and pragmatic to take care of sudden emergencies, pressures, and avoid failures and frustrations. In a sound strategy, allowances are made for possible miscalculations and unanticipated events.

Large organisations, strategies are formulated

Corporate Level

Divisional Level

Functional Level

Strategy is Partly Proactive and Partly Reactive

A company's strategy is typically a blend of:

- Proactive actions on the part of managers to improve the company's market position and financial performance.

E.g:- Exercising may be difficult and a struggle, but it's a proactive strategy to make sure you're fit and healthy well into the future.

E.g:- Amazon notifies the customer in advance in case of any delay in delivery without the customer even making an enquiry.

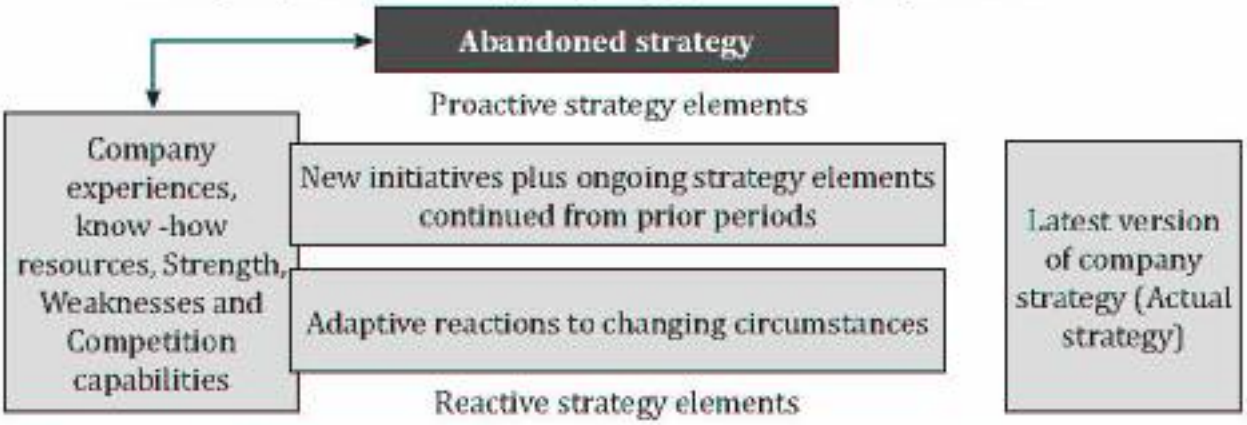
- Reactions to unanticipated developments and fresh market conditions in the dynamic business environment.

E.g:- Online classes of all levels at times of Covid-19.

E.g:- Shifting the factory of Tata Car from West Bengal to Gujarat when there were disturbances in West Bengal.

In other words, a company uses both proactive and reactive strategies to cope up the uncertain business environment. **Proactive strategy is planned strategy** whereas **reactive strategy is adaptive reaction** to changing circumstances.

A company's actual strategy is partly planned & partly reactive



- Strategy **partly is deliberate and proactive**, standing as the product of management's analysis and strategic thinking about the company's situation and its conclusions about how to position the company in the marketplace and tackle the task of competing for buyer's patronage.
- **Not every strategic move is the result of proactive planning and deliberate** management design. Things happen that cannot be fully anticipated or planned for. When market and competitive conditions take an unexpected turn or some aspect of a company's strategy hits a stone wall, some kind of strategic reaction or adjustment is required.
- Strategy **helps unravel complexity and reduce uncertainty** caused by changes in the environment. It also means to identify existing problems and solving them by executing revolutionary ideas. It would be pertinent to mention one such example in the recent times, that is UPI, Unified Payments Interface.

Is this a Strategy?

A ketchup brand making a healthier ketchup with less sugar and preservatives to attract more customers by letting parents feel safe about their kid's consuming ketchup. Can this be called a strategy?

Ans. Yes, it is a business strategy to fight competition and to adapt with changing external environment (people becoming health conscious is external environment factor).

STRATEGIC MANAGEMENT

- 'Strategic management' refers to the managerial process of
  - Developing a strategic vision,
  - Setting objectives,
  - Crafting a strategy,
  - Implementing and evaluating the strategy, and
  - Finally initiating corrective adjustments were deemed appropriate.

The process does not end, it keeps going on in a cyclic manner.

- Strategic management involves
  - Developing the company's vision,
  - Environmental scanning (both external and internal),
  - Strategy formulation,
  - Strategy implementation and
  - Evaluation and control.

- Originally called, business policy, strategic management emphasizes the monitoring and evaluation of external opportunities and threats in the light of a company's strengths and weaknesses and designing strategies for the survival and growth of the company.
- The two fold objectives of strategic management are:
  - To create competitive advantage (unique and valued by customer) so that company can outperform the competitors.
  - To guide the company successfully through all changes in the environment i.e. to react in the right manner.

IMPORTANCE/ADVANTAGES OF STRATEGIC MANAGEMENT

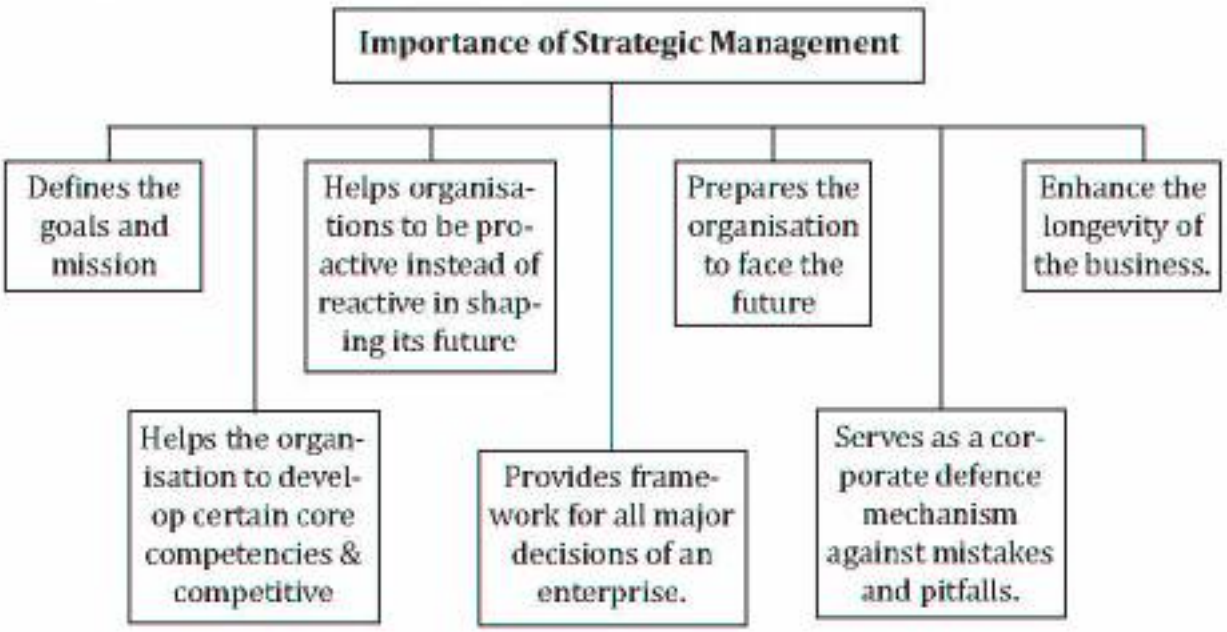
- **Charles Darwin:-** 'Survival of the fittest ', the only principle of survival for all organizations, where 'fittest' are not the 'largest' or 'strongest' organizations but those who can change and adapt successfully to the changes in business environment.

- Many business giants have followed the path of extinction failing to manage drastic changes in the business environment.

  For example, Bajaj Scooters, LML Scooters, Murphy Radio, BPL Television, Videocon, Nokia, kodak and so on.

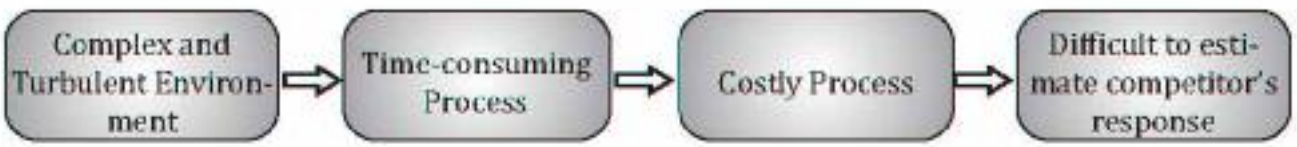
  Thus, *it becomes imperative to study Business Strategy.*
- Businesses follow the war principle of 'win or lose', and only in a small number of cases, win-win situation arises. Hence, each organization has to build its competitive advantage over the competitors in the business warfare in order to win.
- This can be done only by following the process of strategic management-

- The major benefits of strategic management are:



1. A direction to the company	Gives a direction to the company to move ahead. It helps define the goals and mission. It helps management to define realistic objectives and goals which are in line with the vision of the company.
2. Organisations to be proactive instead of reactive	Organisations are able to analyse and take actions instead of being mere spectators. It helps organisations to be proactive instead of reactive in shaping its future. It helps them in working within vagaries of environment and shaping it, instead of getting carried away by its turbulence or uncertainties.
3. Frameworks for all major decisions	Frameworks for all major decisions of an enterprise such as decisions on businesses, products, markets, manufacturing facilities, investments and organisational structure.
4. Prepares the organisation to face the future	Seeks to prepare the organisation to face the future and act as pathfinder to various business opportunities. Organisations are able to identify the available opportunities and identify ways and means to reach them.
5. A corporate defence mechanism against mistakes and pitfalls	Serves as a corporate defence mechanism against mistakes and pitfalls. It helps organisations to avoid costly mistakes in product market choices or investments.
6. Enhance the longevity of the business	It helps to enhance the longevity of the business. With the state of competition and dynamic environment it may be challenging for organisations to survive in the long run. Actions over expectations is what strategic management ensures.
7. Develop certain core competencies	It helps the organisation to develop certain core competencies and competitive advantages that would facilitate assist in its fight for survival and growth.

LIMITATIONS OF STRATEGIC MANAGEMENT



The presence of strategic management cannot counter all hindrances and always achieve success. Let us discuss them briefly:

Complex and Turbulent Environment	It is difficult to understand the complex environment and exactly pinpoint how it will shape-up in future. The organisational estimate about its future shape may awfully go wrong and jeopardise all strategic plans. **E.g:-** Two-Wheeler Electric Vehicles brands counted on strategic benefits they would have because of the huge push from the government for electric mobility. However, customers are getting reluctant to purchase EVs due to the safety concerns amid the frequent incidents of battery's catching fire. So, strategy cannot overcome a turbulent environment. 

Time-consuming Process	Organisations spend a lot of time in preparing, communicating the strategies that may impede daily operations and negatively impact the routine business. Planning and strategizing are important but putting them in action is where the actual success lies. 
Costly Process	Strategic management adds a lot of expenses to an organization. Expert strategic planners need to be engaged, efforts are made for analysis of external and internal environments devise strategies and properly implement. These can be really costly for organisations with limited resources particularly when small and medium organisation create strategies to compete. 
Difficult to estimate competitor's response	Competition is unpredictable. Since all Organizations are trying to move strategically, it is difficult to estimate competitive response to Firm's strategy.  **E.g:-** Apple changed the market dynamics of the speaker industry by choosing to remove 3.5mm audio jack from iPhones. Now, to be relevant in the market, all major speaker brands had to put concentrated efforts to develop their own true wireless speakers (TWS) and compete with new entrants.

Why do businesses opt for strategic management even with its limitation?

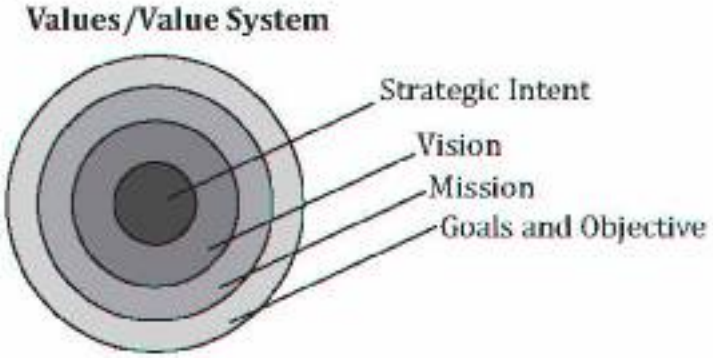
Strategic Management is a time consuming and costly process, yet all organization's want to do indulge into it? Why?

Ans. Because even though it has its limitations, its importance outweighs its shortcomings. A business cannot operate and succeed without proper strategic management.

■ STRATEGIC INTENT (VISION, MISSION, GOALS, OBJECTIVES & VALUES)

- Strategic Management is defined as a dynamic process of formulation, implementation, evaluation, and control of strategies to realise the organisation's strategic intent.
- Strategic intent refers to purposes of what the organisation strives for senior managers must define "what they want to do" and "why they want to do".
- Strategic intent provides the framework within which the firm would adopt a predetermined direction and would operate to achieve strategic objectives.
- Strategic intent could be in the form of vision and mission statements for the organisation at the corporate level. It could be expressed as the business definition and business model at the business level of the organisation.
- Strategic intent is generally stated in broad terms but when stated in precise terms it is an expression of aims to be achieved operationally, i.e., goals and objectives.

Component of Strategic Intent



Vision	Vision implies the blueprint of the company's future position. It describes where the organisation wants to land. It depicts the organisation's aspirations and provides a glimpse of what the organisation would like to become in future. 
Mission	Mission delineates the firm's business, its goals and ways to reach the goals. It is designed to help potential shareholders and investors understand the purpose of the firm. A mission statements helps to identify, 'what business the firm undertakes.' It defines the present capabilities, activities, customer focus and role in society. 
Goals & Objectives	Goals are the end results, that the organisation attempts to achieve. On the other hand, objectives are time-based measurable time-based measurable targets, which help in the accomplishment of goals. These are the end results which are to be attained with the help of an overall plan, over the particular period. However, in practice, no distinction is made between goals and objectives and both the terms are used interchangeably.  The vision, mission, business definition, and business model explains the philosophy of the organisation but the goals and objectives represent the results to be achieved in multiple areas of business. While **Strategic Intent** is the purpose that an organisation aims to achieve, Values form the omnipresent foundation of each and every decision that the management takes.
Values/Value System	Values are the deep-rooted principles which guide an organisation's decisions and actions. Collins and Porras succinctly define core values as being inherent and sacrosanct; they can never be compromised, either for convenience or short-term economic gain. Values often reflect the values of the company's founders-Hewlett-Packard's celebrated "HP Way" is an example. They are the source of a company's distinctiveness and must be maintained at all costs.

Vision

- Very early in the strategy making process;
- Top management's views about the company's direction and the product- customer-market-technology focus constitute the strategic vision for the company.;
- Strategic vision thus points out a particular direction, charts a strategic path to be followed in future, and moulding organisational identity.; A clearly articulated strategic vision communicates management's aspirations to stakeholders and helps steer the energies of company personnel in a common direction.;

E.g.:-

1. HDFC Bank Ltd., one of the largest banks in India has clearly defined its Vision of being a world class Indian bank. This vision helps them keep in mind, "where we want to go", as the central thought of their strategic decision making.
2. LIC Ltd., the largest insurance company of India has defined its visions as – A trans-nationally competitive financial conglomerate of significance to societies and Pride of India.
3. Apple Inc.'s CEO Tim Cook defined the vision of the company as - "We believe that we are on the face of the earth to make great products, and that's not changing."

Essentials of a Strategic Vision

- The entrepreneurial challenge in developing a strategic vision is to think creatively about how to prepare a company for the future.
- Forming a strategic vision is an exercise in intelligent entrepreneurship.
- A well-articulated strategic vision creates enthusiasm among the members of the organisation.
- The best-worded vision statement clearly illuminates the direction in which organisation is headed.

MISSION

A mission is an answer to the basic question 'what business are we in and what we do'. It has been observed that many firms fail to conceptualise and articulate the mission and business definition with the required clarity.

Firms working to manage their organisation strategically cannot be lax in the matter of mission and business definition, as the two ideas are absolutely central to strategic planning.

Why should an Organisation have a Mission?

- To ensure unanimity of purpose within the organisation.
- To develop a basis, or standard, for allocating organisational resources.
- To provide a basis for motivating the use of the organisation's resources.
- To establish a general tone or organisational climate, to suggest a business- like operation.
- To serve as a focal point for those who can identify with the organisation's purpose and direction.
- To facilitate the translation of objective and goals into a work structure involving the assignment of tasks to responsible elements within the organisation.
- To specify organisational purposes and the translation of these purposes into goals in such a way that cost, time, and performance parameters can be assessed and controlled.

E.g:-

1. **HDFC Bank** has two-fold mission: first, to be the preferred provider of banking services for target retail and wholesale customer segments. The second is to achieve healthy growth in profitability, consistent with the bank's risk appetite.
2. **LIC Ltd.'s** Mission is - Ensure and enhance the quality of life of people through financial security by providing products and services of aspired attributes with competitive returns, and by rendering resources for economic development.
3. **Apple's** mission has been defined as - "to bring the best user experience to its customers through innovative hardware, software, and services."

Following points are useful while writing a mission of a company:

- One of the roles of a mission statement is to give the organisation its own special identity, business emphasis and path for development – one that typically sets it apart from other similarly positioned companies.
- A company's business is defined by what needs it is trying to satisfy, which customer groups it is targeting and the technologies and competencies it uses and the activities it performs.
- Good mission statements are – unique to the organisation for which they are developed.

What is our mission? And what business are we in?

The well-known management experts, **Peter Drucker and Theodore Levitt** were among the first to agitate this issue through their writings.

GOALS AND OBJECTIVES

Business organisation translates their vision and mission into goals and objectives.

Goals are open-ended attributes that denote the future states or outcomes.

Objectives are close-ended attributes which are precise and expressed in specific terms. Thus, the Objectives are more specific and translate the goals to both long term and short-term perspective.

Accordingly, we will also use the term interchangeably. Objectives are organisation's performance targets – the results and outcomes it wants to achieve. They function as yardsticks for tracking an organisation's performance and progress.

Objectives with strategic focus relate to outcomes that strengthen an organisation's overall business position and competitive vitality.

Objectives, to be meaningful to serve the intended role, must possess the following characteristics:

- Objectives should define the organisation's relationship with its environment.
- They should be facilitative towards achievement of mission and purpose.
- They should provide the basis for strategic decision-making.
- They should provide standards for performance appraisal.
- They should be concrete and specific.
- They should be related to a time frame.
- They should be measurable and controllable.
- They should be challenging.
- Different objectives should correlate with each other.
- Objectives should be set within the constraints of organisational resources and external environment.

Long-term objectives: To achieve long-term prosperity, strategic planners commonly establish long-term objectives in seven areas.

- Profitability
- Productivity
- Competitive Position
- Employee Development
- Employee Relations
- Technological Leadership
- Public Responsibility

Long-term objectives represent the results expected from pursuing certain strategies. Strategies represent the actions to be taken to accomplish long-term objectives. The time frame for objectives and strategies should be consistent, usually from two to five years.

Short-range objectives can be identical to long-range objectives if an organisation is already performing at the targeted long-term level. For instance, if a company has an ongoing objective of 15 percent profit growth every year and is currently achieving this objective, then the company's long-range and short-range objectives for increasing profits coincide. The most important situation in which short-range objectives differ from long-range objectives occurs when managers are trying to elevate organisational performance and cannot reach the long-range target in just one year. Short-range objectives then serve as steps toward achieving long term objective.

VALUES

"Business, as I have seen it, places one great demand on you: it needs you to self- impose a framework of ethics, values, fairness and objectivity on yourself at all times." - Ratan N Tata, 2006 (Source: TATA Group Website).

A few common examples of values are - Integrity, Trust, Accountability, Humility, Innovation, and Diversity.

A company's value sets the tone for how the people of think and behave, especially in situations of dilemma. It creates a sense of shared purpose to build a strong foundation and focus on longevity of the company's success.

Values have both internal as well as external implications.

Intent vs Values - Which is a broader concept?

Sandeep, a human resource manager thinks that Intent is a bigger concept than Values. Is he right?

Ans. Sandeep is not right, as Values and Intent are two different concepts. Intent is the purpose of doing business while values are the principles that guide decision making of business. They both go hand in hand, while the intent is sometimes driven by values. So, values more or so is wider than Intent.

STRATEGIC LEVELS IN ORGANISATIONS

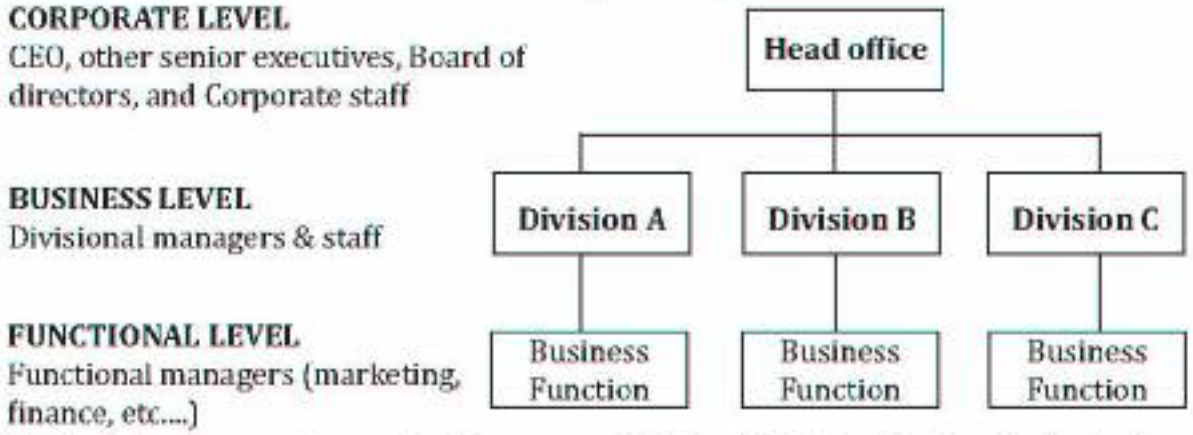
- A typical large organization is a multi-divisional organisation that competes in several different businesses. It has separate self-contained divisions to manage each of these businesses.

E.g:-Patanjali has healthcare, FMCG, Organic Foods, Medicinal Oils and Herbs, and various different businesses.

- In such large organizations, strategies are formulated at three levels - corporate, business, & functional level.

- General managers are found at the first two of these levels, but their strategic roles differ depending on their sphere of responsibility.

Levels of strategic management

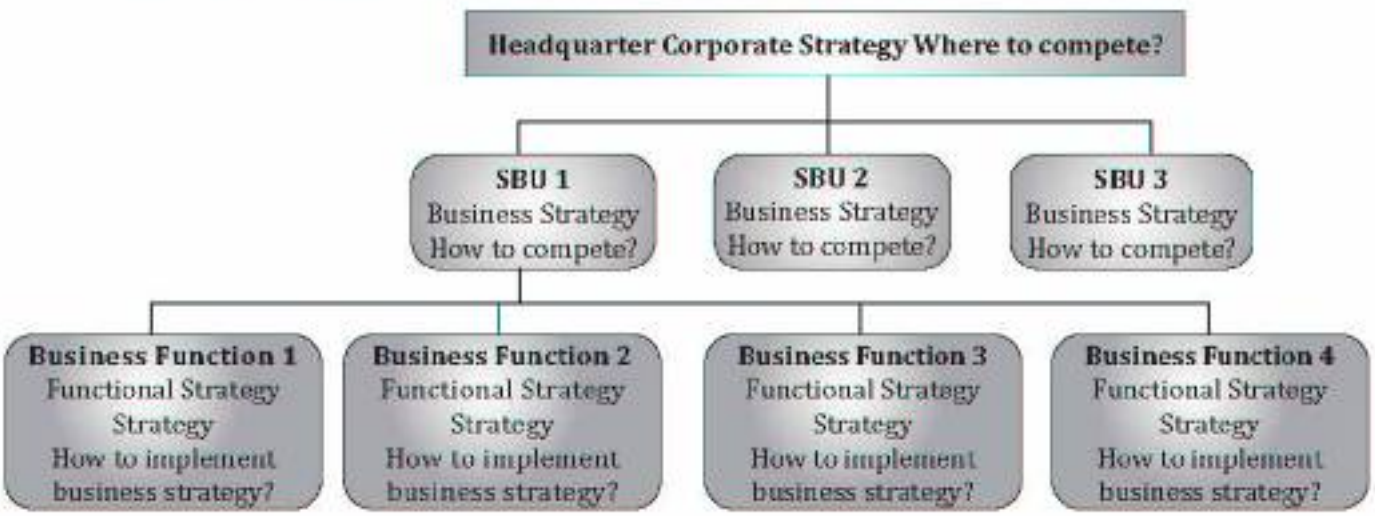


- A strategic business unit, popularly **known as SBU,** is a fully-functional unit of **a business that has its own vision and direction.** Typically, a strategic business unit operates as a separate unit, but it is also an important part of the company.

Corporate Level	Corporate Level managers consists of the Chief Executive Officer (CEO), other senior executives, the board of directors, and corporate staff. They oversee development of strategies for whole organization. For this his task includes: (*a*) Defining vision, mission and objectives of Organization (*b*) Determining what businesses, it should be in (*c*) Allocating resources among different divisions (*d*) Formulating and implementing strategies that span individual businesses (*e*) Providing leadership for Organization (*f*) Acts as a linkage between Management and Shareholders i.e., owner of business. Corporate level managers, especially CEO is viewed as guardian of shareholder welfare and must make strategies to maximize the wealth of shareholders.

Business level	Strategic Business Units (SBUs) is self-contained Division with its own business functions like Finance, Human Resource, Sale & Marketing, Research & Development etc. A Principle General Manager or Business level manager is head of a division. They are responsible for working of Division and overseeing all functions of the Division. They are responsible to translate general statements of direction of Corporate Level into concrete business plans. Thus, whereas corporate-level managers are concerned with strategies that span individual businesses, business- level managers are concerned with strategies that are specific to a particular business.
Functional level	Functional level managers **are responsible for specific business** functions in a division or company like marketing, Research & Development, Human Resource, Finance etc. Thus, a functional manager's sphere of responsibility is generally confined to one organizational activity. Functional managers **are also responsible for** (*a*) developing functional strategies in their area to fulfil strategic objectives set by corporate and business level managers; and (*b*) implementing/ executing strategies of corporate level and business level managers. They are closer to customers and provide most of information that enable corporate level and business level managers to formulate realistic and attainable strategies.

- An equally great responsibility for managers at the operational level is strategy implementation: the execution of corporate and business-level plans.



Which is better - Top-Down Approach or Bottom-Up Approach?
Do you know the concepts of Top-Down and Bottom-Up approach of decision making?

Ans. A top-down approach to decision making is when decisions are made solely by leadership at the top i.e. corporate level of management, while the bottom-up approach gives all teams across the levels a voice in decision making.

NETWORK OF RELATIONSHIP BETWEEN THE THREE LEVELS

- There are **3 major types of networks of relationship** between the levels and also amongst the same levels of a business;

Functional and Divisional Relationship	It is an independent relationship, where each function or a division is run independently headed by the function/division head, who is a business level manager, reporting directly to the business head, who is a corporate level manager. Functions maybe like Finance, Human Resources, Marketing, etc. while Divisions may depend on the products like for a toys manufacturer - kid's toys, teenager toys, etc. could be divisions.
Horizontal Relationship	All positions, from top management to staff-level employees, are in the same hierarchical position. It is a flat structure where everyone is considered at same level. This leads to openness and transparency in work culture and focused more on idea sharing and innovation. This type of relationship between levels is more suitable for startups where the need to share ideas with speed is more desirable.
Matrix Relationship	It features a grid-like structure of levels in an organisation, with teams formed with people from various departments that are built for temporary task-based projects. This relationship helps manage huge conglomerates with ease where it is nearly impossible to track and manage every single team independently. In Matrix relationship - there are more than one business level managers for each functional level teams. It is complex for smaller organisations, but extremely useful for large organisations.

TEST YOUR KNOWLEDGE - MCQS

1. Strategy is a game plan used for which of the following?

(*a*) To take market position
(*b*) To attract and satisfy customers
(*c*) To respond to dynamic and hostile environment
(*d*) All of the above

2. Which of the following is correct?

(*a*) Strategy is always pragmatic and not flexible
(*b*) Strategy is not always perfect, flawless and optimal
(*c*) Strategy is always perfect, flawless and optimal
(*d*) Strategy is always flexible but not pragmatic

3. Strategy is:

(a) Proactive in action
(b) Reactive in action
(c) A blend of proactive and reactive actions
(d) None of the above

4. Reactive strategy can also be termed as-

(a) Planned strategy
(b) Adaptive strategy
(c) Sound strategy
(d) Dynamic strategy

5. Formulation of strategies and their implementation in a strategic management process is undertaken by-

(a) Top level executives
(b) Middle level executives
(c) Lower level executives
(d) All of the above

6. Which of the following are responsible for formulating and developing realistic and attainable strategies?

(a) Corporate level and business level managers
(b) Corporate level and functional level managers
(c) Functional managers and business level managers
(d) Corporate level managers, business level managers and functional level managers

7. Which of the following managers' role is to translate the general statements/ strategies into concrete strategies of their individual businesses-

(a) Supervisor
(b) Functional manager
(c) CEO of the company
(d) All of the above

8. Which statement should be created first and foremost?

(a) Strategy (b) Vision (c) Objectives (d) Mission

9. Strategic management enables an organisation to _____, instead of companies just responding to threats in their business environment.

(a) Be proactive
(b) Determine when the threat will subside
(c) Avoid the threats
(d) Defeat their competitors

10. Read the following three statements:

(i) Strategies have short-range implications
(ii) Strategies are action oriented
(iii) Strategies are rigidly defined

From the combinations given below select an alternative that represents statements that are true:

(a) (i) and (ii)
(b) (i) and (iii)
(c) (ii) and (iii)
(d) (i), (ii) and (iii)

11. What involves formulating, implementing, and evaluating cross-functional decisions that enable an organization to achieve its objectives?

(a) Strategy formulation
(b) Strategy evaluation
(c) Strategy implementation
(d) Strategic management

12. Strategic management allows an organization to be more

(a) Authoritative
(b) Participative
(c) Commanding
(d) Proactive

ANSWER KEY

1.	(d)	**2.**	(b)	**3.**	(c)	**4.**	(b)	**5.**	(d)	**6.**	(d)
7.	(b)	**8.**	(b)	**9.**	(a)	**10.**	(a)	**11.**	(d)	**12.**	(d)

TEST YOUR KNOWLEDGE – CASE STUDIES

1. Mr. Raj has been hires as a CEO of XYZ Ltd. a FMCG company that has diversified into affordable cosmetics. The company intends to launch Feelgood brand of cosmetics. XYZ wishes to enrich the lives of people with its products that are good for skin and are produced in ecologically beneficial manner using herbal ingredients. Draft vision and mission statement that may be formulated by Raj. (SM)

Ans. Feelgood brand of cosmetics may have following vision and mission:

Vision – Vision implies the blueprint of the company's future position. It describes where the organisation wants to land. Mr. Raj should aim to position "Feelgood cosmetics" as India's beauty care company. It may have vision to be India's largest beauty care company that improves looks, give extraordinary feeling and bring happiness to people.

Mission – It delineates the firm's business, its goals and ways to reach the goals. It explains the reason for the existence of the firm in the society. It is designed to help potential shareholders and investors understand the purpose of the company.

Mr. Raj may identify mission in the following lines:

- To be in the business of cosmetics to enhance the lives of people, give them confidence to lead.
- To protect skin from harmful elements in environment and sun rays.
- To produce herbal cosmetics using natural ingredients.

2. Yummy Foods and Tasty Foods are successfully competing in the business of ready to eat snacks in Patna. Yummy has been pioneer in introducing innovative products. These products will give them goods sale. However, Tasty Foods will introduce similar products in reaction to the products introduced by the Yummy Foods taking away the advantage gained by the former.

Discuss the strategic approach of the two companies. Which is superior? (SM)

Ans. Yummy foods is proactive in its approach. On the other hand, Tasty Food is reactive. A proactive strategy is a planned strategy whereas reactive strategy is an adaptive reaction to changing circumstances. A company's strategy is typically a blend of proactive actions on the part of managers to improve the company's market position and financial performance and reactions to unanticipated developments and fresh market conditions.

If organisational resources permit, it is better to be proactive rather than reactive. Being proactive in aspects such as introducing new products will give you an advantage in the mind of customers. At the same time, crafting a strategy involves stitching together a proactive/intended strategy and then adapting first one piece and then another as circumstances surrounding the company's situation change or better options emerge-a reactive/adaptive strategy. This aspect can be accomplished by Yummy Foods.

3. Ramesh Sharma has fifteen stores selling consumer durables in Delhi region. Four of these stores were opened in last three years. He believes in managing strategically and enjoyed significant sales of refrigerator, televisions, washing machines, air conditioners and like till four years back. With shift to the purchases to online stores, the sales of his stores came down to about seventy per cent in last four years.

Analyse the position of Ramesh Sharma in light of limitations of strategic management. (SM)

Ans. Ramesh Sharma, is facing declining sales on account of large-scale shift of customers to online stores. While he is using the tools of strategic management, they cannot counter all hindrances and always achieve success. There are limitations attached to strategic management as follows:

- Environment under which strategies are made is highly complexand turbulent. Entry of online stores, a new kind of competitor brought a different dimension to selling consumer durables. Online stores with their size power could control the market and offer stiff competition to traditional stores.
- Another limitation of strategic management is that it is difficult to predict how things will shape-up in future. Ramesh Sharma, although managing strategically failed to see how online stores will impact the sales.
- Although, strategic management is a time-consuming process, he should continue to manage strategically. The challenging times require more efforts on his part.
- Strategic management is costly. Ramesh Sharma may consider engaging experts to find out preferences of the customers and attune his strategies to better serve them in a customized manner. Such customized offerings may be difficult to match by the online stores.
- The stores owned by Ramesh Sharma are much smaller than online stores. It is very difficult for him to visualize how online stores will be moving strategically.

4. Sharma Singh, the procurement department head of Cyclix, a mountain biking equipment company, was recently promoted to look after sales department along with procurement department. His seniors at the corporate level have always liked his way of leadership and are assured that he would ensure the implementation of policies and strategies to the best of his capacity buy have never involved him in decisions making of the company.

Do you thing this is the right approach? Validate your answer with logical reasoning around management levels and decision making. (SM)

Ans. Functional managers provide most of the information that makes it possible for business and corporate level managers to formulate realistic and attainable strategies.

This is so because functional managers like Dharam Singh are closer to the customers/suppliers/ operations than the typical general manager is. A functional manager may generate important ideas that subsequently may become major strategies for the company. Thus, it is important for general managers to listen closely to the ideas of their functional mangers and involve them in decision making.

An equally great responsibility for managers at the operational level is strategy implementation; the execution of corporate and business level plans, and if they are involved in formulation, the clarity of thoughts while implementation can benefit too.

Thus, the approach of Cylcix Corporate management is not right. They should involve Dharam Singh, as well as other functional managers too in strategic management.

5. ABC Limited is in a wide range of businesses which include apparels, lifestyle products, furniture, real estate and electrical products. The company is looking to hire a suitable Chief Executive Officer. Consider yourself a the HR consultant for ABC Limited, you have been assigned the task to enlist the activities involved with the role of the Chief Executive Officer. Name the strategic level that this role belongs to and enlist the activities associated with it. (SM, Jan 2021)

Ans. The role of Chief executive Officer pertains to corporate level.

The corporate level of management consist of the Chief executive Officer (CEO) and other top-level executives. These individuals occupy the apex of decision making withing the organisation.

The role of CEO (Top Management/corporate level managers) is too:

- Oversee the development of strategies for the whole organization;
- Defining the mission and goals of the organization;
- Determining what business it should be in;
- Allocating reources amoung the different businesses;
- Formulating and implementing strategies that span individual business;
- Providing leadership for the organization;
- Ensuring that the corporate and business level strategies which company pursues are consistent with maximizing shareholders wealth; and
- Managing the divestment and acquisition process

TEST YOUR KNOWLEDGE – DESCRIPTIVE QUESTIONS

1. Define strategic management. Also discuss the limitations of strategic management? (May 2018)

Ans. The term 'strategic management' refers to the managerial process of developing a strategic vision, setting objectives, crafting a strategy, implementing and evaluating the strategy, and initiating corrective adjustments where deemed appropriate. The presence of strategic management cannot counter all hindrances and always achieve success as there are limitations attached to strategic management.

These can be explained in the following lines:

- Environment is highly complex and turbulent. It is difficult to understand the complex environment and exactly pinpoint how it will shape-up in future. The organizational estimate about its future shape may awfully go wrong and jeopardize all strategic plans. The environment affects as the organization has to deal with suppliers, customers, governments and other external factors.
- Strategic management is a time-consuming process. Organizations spend a lot of time in preparing, communicating the strategies that may impede daily operations and negatively impact the routine business.
- Strategic management is a costly process. Strategic management adds a lot of expenses to an organization. Expert strategic planners need to be engaged, efforts are made for analysis of external and internal environments, devise strategies and properly implement. These can be really costly for organizations with limited resources particularly when small and medium organizations create strategies to compete.
- Competition is unpredictable. In a competitive scenario, where all organizations are trying to move strategically, it is difficult to clearly estimate the competitive responses to the strategies.

2. List the different strategic levels in an organization. (Nov 2018)

Ans. There are three main strategic levels in an organization:

- **Corporate level:** Consisting of CEO, Board of Directors and other senior executives.
- **Business level:** Divisional Managers and staff.
- **Functional level:** Functional Managers – Marketing, Finance, Production, Human Resource.

3. Why is strategy evaluation more difficult? Give reasons. **(Dec 2021)**

Ans. Strategic evaluation involves measuring and evaluating performance. The goals achieved are compared with the desired goals to identify deviations and make necessary adjustments in strategies or in the efforts being put to achieve those strategies. '

Reasons why strategy evaluation is more difficult today include the following trends:

- A dramatic increase in the environment's complexity.
- The increasing difficulty of predicting the future with accuracy.
- The increasing number of variables in the environment.
- The rapid rate of obsolescence of even the best plans.
- The increase in the number of both domestic and world events affecting organizations.
- The decreasing time span for which planning can be done with any degree of certainty.

4. "The strategic management cannot counter all hindrances and always achieve success for an organization." Do you agree with this statement? Give arguments in support of your answer. **(Nov 2022)**

Ans. Yes, it is true that the presence of strategic management cannot counter all hindrances and always achieve success for an organization. This is on account of complex multiple forces acting on business organization and limiting its success.

These limitations are on account of following factors:

- **Environment is highly complex and turbulent.** It is difficult to understand the complex environment and exactly pinpoint how it will shape-up in future. The organisational estimate about its future shape may awfully go wrong and jeopardise all strategic plans.
- **Strategic management is a time-consuming process.** Organisations spend a lot of time in preparing, communicating the strategies that may impede daily operations and negatively impact the routine business.
- **Strategic management is a costly process.** Strategic management adds a lot of expenses to an organization particularly to small and medium organisations. - Expert strategic planners need to be engaged, efforts are made for analysis of external and internal environments devise strategies and properly implement.
- **Competition is unpredictable.** In a competitive scenario, where all organisations are trying to move strategically, it is difficult to clearly estimate the competitive responses to the strategies.

5. "Strategic intent provides the framework within which the firm would adopt a predetermined direction and would operate to achieve strategic objectives." In the light of this statement, discuss the elements of strategic intent. **(Nov 2022)**

Ans. Strategic intent can be understood as the philosophical base of strategic management. It implies the purposes, which an organization endeavours to achieve. It is a statement that provides a perspective. Strategic intent gives an idea of what the organization desires to attain in future. Strategic intent provides the framework within which the firm would adopt a predetermined direction and would operate to achieve strategic objectives.

Elements of strategic management are as follows:

(i) **Vision:** Vision implies the blueprint of the company's future position. It describes where the organisation wants to land. It depicts the organisation's aspirations and provides a glimpse of what the organization would like to become in future. Every sub system of the organization is required to follow its vision.

(ii) **Mission:** Mission delineates the firm's business, its goals and ways to reach the goals. It explains the reason for the existence of the firm in the society. A mission statement helps

to identify, 'what business the company undertakes.' It defines the present capabilities, activities, customer focus and role in society.

(iii) **Business Definition:** It seeks to explain the business undertaken by the firm, with respect to the customer needs, target markets, and alternative technologies. With the help of business definition, one can ascertain the strategic business choices.

(iv) **Business Model:** Business model, as the name implies is a strategy for the effective operation of the business, ascertaining sources of income, desired customer base, and financial details. Rival firms, operating in the same industry rely on the different business model due to their strategic choice.

(v) **Goals and Objectives:** These are the base of measurement. Goals are the end results, that the organization attempts to achieve. On the other hand, objectives are time-based measurable targets, which help in the accomplishment of goals. These are the end results which are to be attained with the help of an overall plan. However, in practice, no distinction is made between goals and objectives and both the terms are used interchangeably.

6. "Strategy is partly proactive and partly reactive". Discuss. (SM, Nov 2018)

Ans. Strategy is partly proactive and partly reactive. In proactive strategy, organisations will analyse possible environmental scenarios and create strategic framework after proper planning and set procedures and work on these strategies in a predetermined manner. However, in reality no company can forecast both internal and external environment exactly. Everything cannot be planned in advance. It is not possible to anticipate moves of rival firms, consumer behaviour, evolving technologies and so on.

There can be significant deviations between what was visualized and what actually happens. Strategies need to be attuned or modified in the light of possible environmental changes. There can be significant or major strategic changes when the environment demands. Reactive strategy is triggered by the changes in the environment and provides ways and means to cope with the negative factors or take advantage of emerging opportunities.

7. "Management at all levels develop strategies". Explain the different strategies formulated at different levels of management. (May 2023)

Ans. At different levels of management, various strategies are formulated to align with organizational goals and objectives which are as follows:

Corporate-Level Strategies: At the highest level of management, corporate-level strategies are developed. These strategies focus on the overall direction and scope of the entire organization. Major corporate-level strategies include Stability strategies, Growth strategies, Retrenchment strategies and Combination strategies.

Business-Level Strategies: Business-level strategies are developed by middle-level management and focus on individual business units or divisions within the organization. These strategies aim to achieve competitive advantage within specific markets. Common business-level strategies include Cost Leadership, Differentiation and Focus strategies.

Functional-Level Strategies: Functional-level strategies are formulated by lower-level management or department heads responsible for specific functional areas, such as marketing, finance, operations, or human resources. These strategies align with business-level strategies and focus on achieving functional objectives. These strategies include Marketing strategies, financial strategies, Operations strategies, Research & Development strategy and Human Resource strategies.

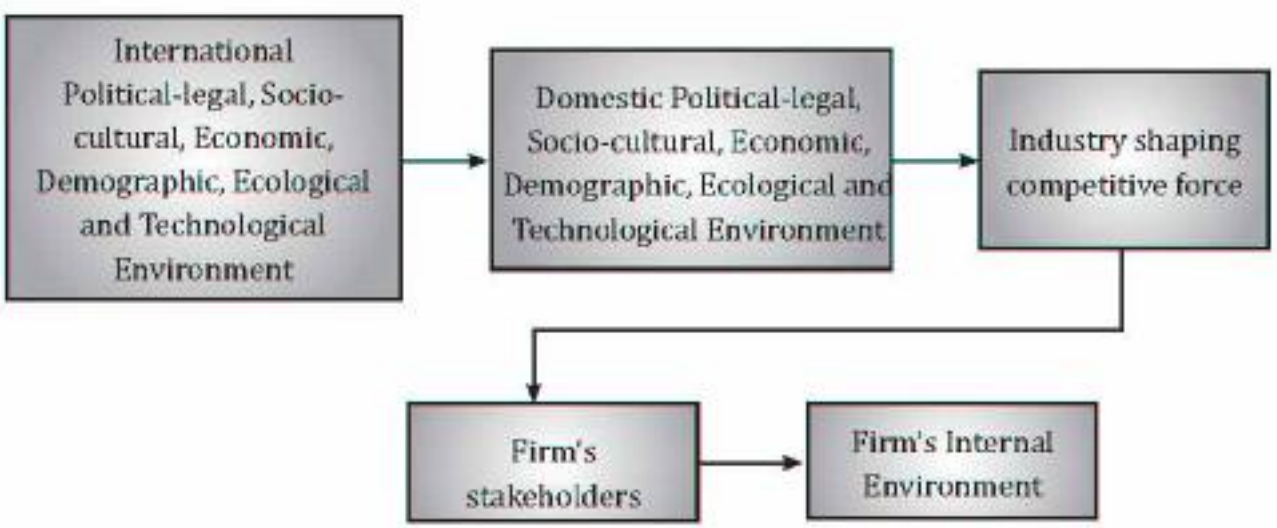
In conclusion, management at all levels develops strategies that align with the organization's goals. Corporate-level strategies determine the overall direction, business-level strategies focus on competitive advantage within specific markets, and functional-level strategies aim to achieve functional objectives in support of the broader strategies.

14 CHAPTER

Strategic Analysis: External Environment

INTRODUCTION

- **Organisations are distinguished based** on their size, type of products, markets, geographical coverage, legal status, and like because of vast organisational diversity.
- Organisations do not operate in vacuum and in fact continuously act and react to what happens outside their periphery. The factors that are outside the business operations are typically referred to as organisational/business environment which are shown below:



- The process of strategic formulation begins with a strategic analysis. Its objective is to compile information about internal and external environments in order to assess possibilities while formulating strategic objectives and contemplating strategic activities.

STRATEGIC ANALYSIS

- **Strategy formulation is not a task** in which managers can get by with intuition, opinions, instincts, and creative thinking. Judgements about what strategies to pursue need to **flow directly from analysis of a firm's external environment** and its internal resources and capabilities.
- A **systematic approach** to environmental assessment is essential for managing risk and uncertainty.

- The **strategic analysis is a component** of business planning that has a methodical approach, makes the right resource investments, and may assist business in achieving its objective. It forces to think about the rivals and aids in the evaluation of business plans to stay ahead of the competition.

The two important situational considerations are:

(1) Industry and competitive conditions, and

(2) An organisation's own capabilities, resources, internal strengths, weaknesses, and market position.

STRATEGIC ANALYSIS

- Accurate diagnosis of the business situation is necessary for managerial preparation to decide on a sound long-term direction, setting appropriate objectives, and crafting a winning strategy.
- The strategic analysis is a continuous process which is not without limitations. There are two major limitations of strategic analysis that we need to be aware of.
  - First, it gives a lot of innovative options but doesn't tell which one to pick. The options can be overlapping, confusing or difficult to implement.
  - Second, it can he time consuming at times, hurting overall organisational functioning and also strain other efficient innovations such as developing a new product or a service.

Issues to consider for Strategic Analysis:

(a) Strategy Evolves Over a Period of Time	A current strategy is the result of several little choices taken over a period of time. A management radically changes strategy when they try to speed up the organisational growth. Strategy is influenced by experience, but it has to be updated when the results become clear. It therefore, evolves with time. 

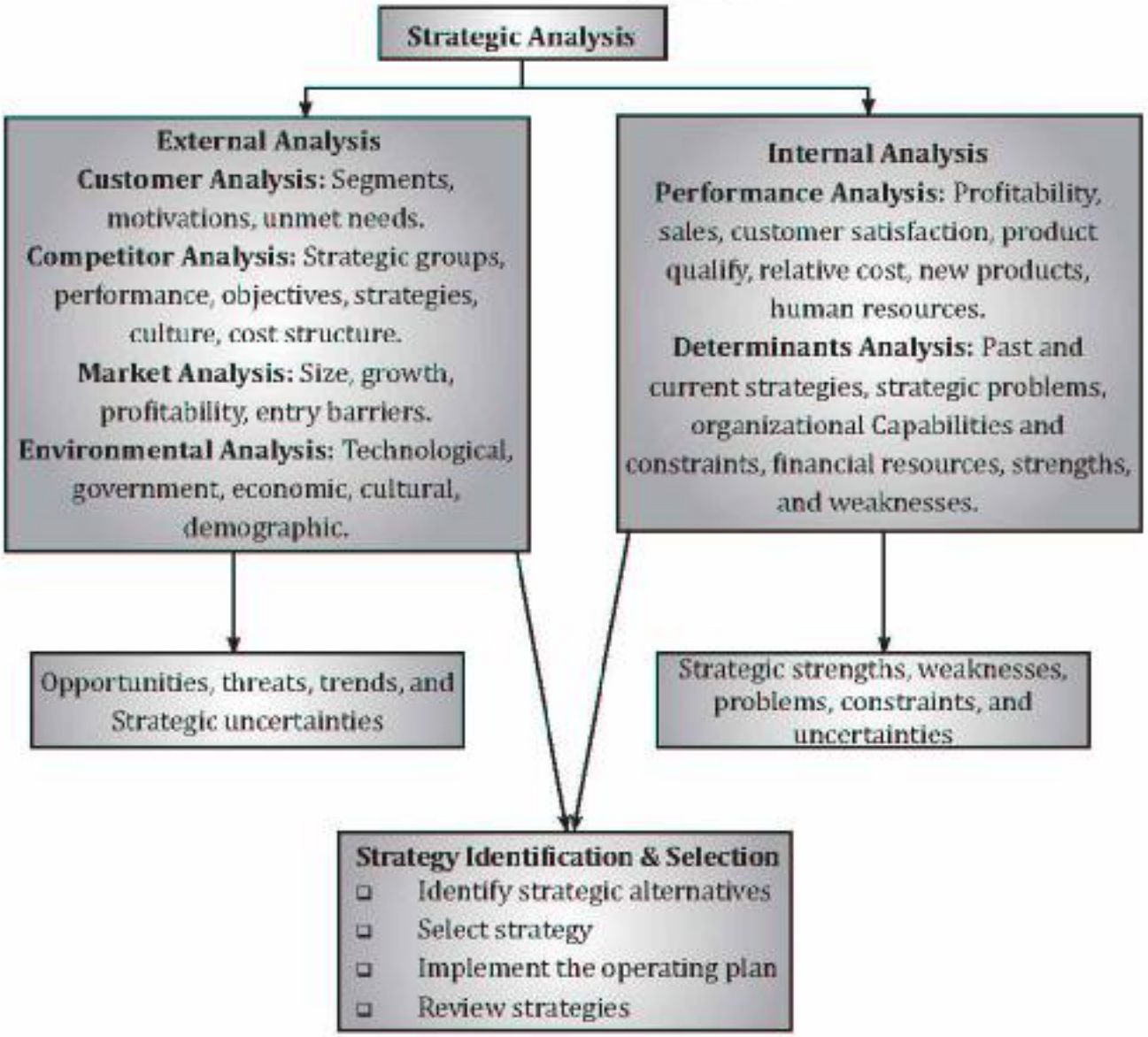
(b) Balance of External and Internal Factors	Strategy formulation involves matching internal strengths and weaknesses with external opportunities and threats. **E.g:-** There may be pressures to enter a new market due to high growth potential while there may be constraints like lack of funds.  In reality, perfect match between them is not possible. Hence, strategic analysis uses workable balance.
(c) Risk	The complexity and intermingling of variables in the environment reduce the strategic balance in the organisation. An important aspect of strategic analysis is to identify potential imbalances or risks and assess their consequences. A broad classification of the strategic risk that requires consideration in *strategic analysis is given below:* 

Time

Strategic Risks	Short time	Long time
External	Errors in interpreting the environment cause strategic failure.	Changes in the environment lead to obsolescence of strategy.
Internal	Organizational capacity is unable to cope up with strategic demands.	Inconsistencies with the strategy are developed on account of changes in internal capacities and preferences.

External risk is on account of inconsistencies between strategies and the forces in the environment. Internal risk occurs on account of forces that are either within the organization or are directly interacting with the organization on a routine basis.

Framework of Strategic Analysis



STRATEGY AND BUSINESS ENVIRONMENT

- Business strategist creates strategies and formulate policies considering both internal and external factors.
- **Strategy and Environment**

- The business environment is **highly dynamic and continuously evolving.** Strategists provide an interface between the organizational abilities and the opportunities and challenges it **must deal within the larger environment.**

- The term **"business environment"** refers to all external factors, influences, or situations that in some way affect business decisions, plans, and operations. Organisational success is determined by its business environment, and even more from its relationship with it.
- Strategic management is **involved** with choosing a long-term direction in relation to these resources and opportunities. There is a close and continuous interaction between a business and its environment. This interaction helps in strengthening the business firm and using its resources more effectively.
- It helps the business in the following ways:

Determine Opportunities & Threats	Find new needs and wants of the consumers, changes in laws, changes in social behaviours, and tells what new products the competitors are bringing in the market to attract consumers.
Give Direction for Growth	The business is aware and understands the changes happening around, it can plan and strategies to have successful business.
Continuous Learning	The managers are motivated to continuously update their knowledge, understanding and skills to meet the predicted changes in the realm of business.
Image Building	Environmental understanding helps the business organizations to improve their image by showing their sensitivity to the environment in which they operate. Understanding the needs of the environment help to showcase that the business is aware and responsive to the needs. It creates a positive image and helps it to prosper and win over the competitors.
Meeting Competition	It helps the businesses to analyse the competitors' strategies and formulate their own strategies accordingly. The idea is to flourish and beat competition for its products and services.

- The changes happening in the external environment challenge organisations to find novel and unique strategies to remain in business and succeed.
- Strategic analysis covering internal and external environment is highly relevant and important for the strategists in organisations in order to achieve competitive advantage, as well as ensure high performance for survival and growth.
- Strategic decisions are significant aspects of business management and are essential for the success and continued existence.
- Two crucial aspects for the success include are the function of top management and the method of formulating strategic decisions. Improvement of strategic decisions is constant endeavour for strategist.

MICRO AND MACRO ENVIRONMENT

- The environment in which an organization exists can be described in terms of the opportunities and threats operating in the external environment apart from the strengths and weaknesses existing in the internal environment.
- For making any strategic decision, they should be able to comprehend the facts available and challenge the underlying assumptions.
- The **external environment can be categorised in two major types** as follows:
  - Micro environment
  - Macro environment

Micro-environment

- Micro-environment is related to **small area or immediate periphery** of an organization. It influences an organization regularly and directly.
- Micro environment consists of suppliers, consumers, marketing intermediaries, competitors, etc. These are specific to the said business or firm and affect its working on a direct and regular basis.
- Within the micro or the immediate environment in which a firm operates we need to address **the following issues:**
  - The employees of the firm, their characteristics and how they are organised.
  - The existing customer base on which the firm relies for business.
  - The ways in which the firm can raise its finance.
  - Who are the firm suppliers and how are the links between the two being developed?
  - The local community within which the firm operates.
  - The direct competition and their comparative performance.
- The factors in micro environment often relate an organization to the macro issues influencing the way a firm reacts in the market place.

Macro environment

- Macro environment is the portion of the outside world that significantly affects how an organisation operates but is typically much beyond its direct control and influence.
- **Elements of Macro Environment**
  - Macro environment has broader dimensions as it consists of economic, socio- cultural, technological, political and legal factors.
  - The classification of the relevant environment into components or sectors helps an organization to cope with its complexity, comprehend the different influences operating, and relating the environmental changes to its strategic management process.
  - ***The environment includes factors outside the firm which can lead to opportunities for, or threats to the firm. Although, there are many factors, the most important of the factors are socio-economic, technological, supplier, competitors, and government."*** **-Gluek and Jauch**

Demographic Environment	○ Demographical analysis considers factors such as race, age, income, education, possession of assets, house ownership, job position, region, and the degree of education. Data about these qualities across homes and within a demographic variable are of importance to both businesses and economists. ○ Considering demographics is of immense importance for any business. Business Organizations need to study different demographic factors. **Particularly, they need to address following issues:** ○ What demographic trends will affect the market size of the industry? ○ What demographic trends represent opportunities or threats? ○ Identifying the implications of changing demographic characteristics or population components for a future strategic competitiveness is often a challenge for strategists.

Socio-Cultural Environment	○ It represents a complex group of factors such as social traditions, values and beliefs, level and standards of literacy, the ethical standards and state of society, the extent of social stratification, conflict, cohesiveness and so forth. ○ It differs from demographics in the sense that it is not the characteristics of the population, but it is the behaviour and the belief system of that population. ○ Socio-cultural environment consists of factors related to human relationships and the impact of social attitudes and cultural values which has bearing on the operations of the organization. ○ Businesses have to adjust to social norms and beliefs to operate successfully. The social environment primarily affects the strategic management process within the organization in the areas of mission and objective setting, and decisions related to products and markets.
Economic Environment	○ The economic environment refers to the overall economic situation around the business and include conditions at the regional, national and global levels. ○ Income distribution pattern determine the business possibilities. The important point to consider is to find out the effect of economic prospect, growth and inflation on the operations of the business. ○ Higher interest rates are detrimental for the businesses with high debt. In the real estate market, they reduce the capability of the prospective buyers to avail loan and pay instalments, thus lower the demand.
Political-Legal Environment	○ Business is highly guided and controlled by government policies. Hence the type of government running a country is a powerful influence on business. A business has to consider the changes in the regulatory framework and their impact on the business. Taxes and duties are other critical areas that may be levied and affect the business. ○ Businesses prefer to operate in a country where there is a sound legal system. Businesses must understand the relevant laws relating to companies, competition, intellectual property, foreign exchange, labour and so on.
Technological Environment	○ Technology has changed the way people communicate and do things. Technology has also changed the ways of how businesses operate now. ○ Technology and business are linked and are interdependent on one another. ○ Changes in technology have an effect on how a business runs its operations. The technological advancements might require a business to drastically alter its operational, production and marketing strategies. ○ Technology can act as opportunity, when a business effectively adopts technological innovations to their strategic advantage. However, at the same time technology can act as a threat too. ○ Artificial intelligence, machine learning, robotic process automation is some of the new technological tools that businesses are adopting and can act as both opportunity and threat to a business.

PESTLE- A TOOL TO ANALYSE MACRO ENVIRONMENT

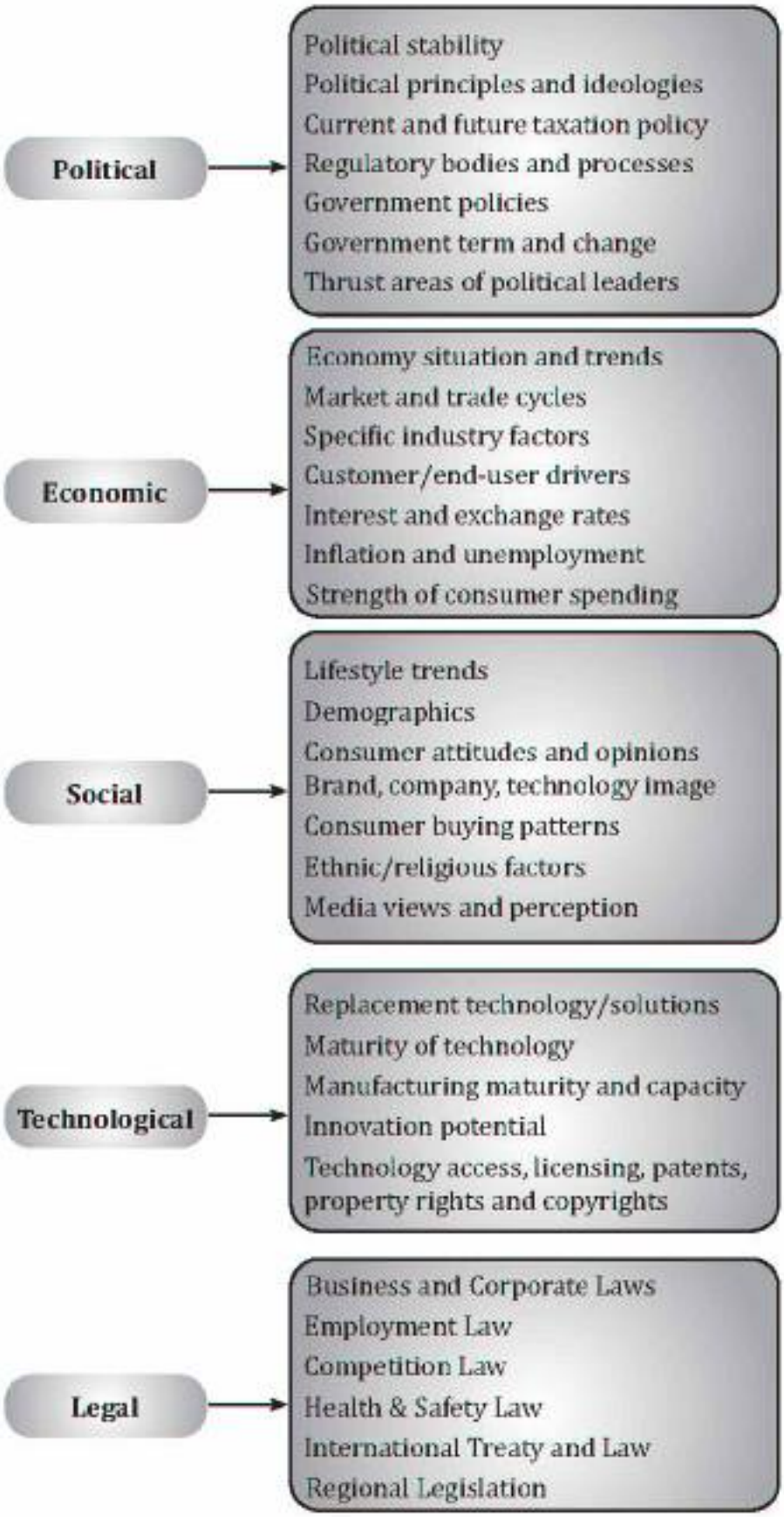
- The term PESTLE is often used to describe a framework for analysis of macro environmental factors.
- PESTLE analysis involves identifying the political, economic, socio-cultural, technological, legal and environmental influences on an organization and providing a way of scanning the environmental influences that have affected or are likely to affect an organization or its policy.
- **'PESTLE analysis** is an increasingly used and recognized analytical tool, and it is an **acronym** for:

- The advantage of this tool is that it encourages management into proactive and structured thinking in its decision making.

The Key Factors

Political Factors	Political factors are how and to what extent the government intervenes in the economy and the activities of business firms. Political factors may also influence goods and services which the government wants to provide or be provided and those that the government does not want to be provided.
Economic Factors	Economic factors have major impacts on how businesses operate and take decisions. **E.g:-** interest rates affect a firm's cost of capital and therefore to what extent a business grows and expands. Exchange rates affect the costs of exporting goods and the supply and price of imported goods in an economy.
Social Factors	Social factors affect the demand for a company's products and how that company operates.
Technological Factors	Technological factors can determine barriers to entry, minimum efficient production level and influence outsourcing decisions. Furthermore, technological shifts can affect costs, quality, and lead to innovation.
Legal Factors	Legal factors affect how a company operates, its costs, and the demand for its products, ease of business.
Environmental Factors	Environmental factors affect industries such as tourism, farming, and insurance. Growing awareness to climate change is affecting how companies operate and the products they offer--it is both creating new markets and diminishing or destroying existing ones.

Summarize


Political
Political stability
Political principles and ideologies
Current and future taxation policy
Regulatory bodies and processes
Government policies
Government term and change
Thrust areas of political leaders
Economic
Economy situation and trends
Market and trade cycles
Specific industry factors
Customer/end-user drivers
Interest and exchange rates
Inflation and unemployment
Strength of consumer spending
Social
Lifestyle trends
Demographics
Consumer attitudes and opinions
Brand, company, technology image
Consumer buying patterns
Ethnic/religious factors
Media views and perception
Technological
Replacement technology/solutions
Maturity of technology
Manufacturing maturity and capacity
Innovation potential
Technology access, licensing, patents, property rights and copyrights
Legal
Business and Corporate Laws
Employment Law
Competition Law
Health & Safety Law
International Treaty and Law
Regional Legislation

INTERNATIONALIZATION OF BUSINESS

- Enables a business **to enter new markets in search** of greater earnings and less expensive resources.
- Additionally, expanding internationally enable a business to achieve greater economies of scale and extend the lifespan of its products.
- A business can approach internationalisation systemically with the aid of international strategy planning.
- **Characteristics of a global business**

  To be specific, a global business has **three characteristics:**
  - It is a conglomerate of multiple units (located in different parts of the globe) but all linked by common ownership.
  - Multiple units draw on a common pool of resources, such as money, credit, information, patents, trade names and control systems.
  - The units respond to some common strategy. Besides, its managers and shareholders are also based in different nations.

Developing internationally

- International development is expensive and challenging. Moving on in a thorough and structured manner is thus the ideal approach to adopt.
- The steps in international strategic planning are as follows:
  - Evaluate global opportunities and threats and rate them with the internal capabilities.
  - Describe the scope of the firm's global commercial operations.
  - Create the firm's global business objectives.
  - Develop distinct corporate strategies for the global business and whole organisation.

Why do businesses go global?

- Technological developments and evolving political views are **two important factors** in the rapid rise of multinational organisations.
- Worldwide communication makes it easier to define and implement global strategy by linking corporate headquarters with their abroad operations. There are several reasons why companies go global.
- These are explained as follows:
  - The first and foremost reason is the need to grow. Often finding opportunities in the other parts of the globe, organisations extend their businesses and globalise their operations.
  - There is rapid shrinking of time and distance across the globe, because of faster communication, speedier transportation, growing financial flow of funds and rapid technological changes.

- It is being realised that the domestic markets are no longer adequate. The competition present domestically may not exist in some of the international markets.
- There can be varied other reasons such as need for reliable or cheaper source of raw-materials, cheap labour, etc.
- Companies often set up overseas plants to reduce high transportation costs. It may be cheaper to produce near the market to reduce the time and costs involved in transportation.
- When exporting organisations find foreign markets to open up or grow big, they may naturally look at overseas manufacturing plants and sales branches to generate higher sales and better cash flow.
- The rise of services to constitute the largest single sector in the world economy; and regional economic integration, which has involved both the world's largest economies as well as certain developing economies.
- The apparent and real collapse of international trade barriers redefines the roles of state and industry. The trend is towards increased privatization of manufacturing and services sectors, less government interference in business decisions and more dependence on the value-added sector to gain marketplace competitiveness. The trade tariffs and custom barriers are getting lowered, resulting in increased flow of business.
- Globalization has made companies in different countries to form strategic alliances to ward off economic and technological threats and leverage their respective comparative and competitive advantages.

INTERNATIONAL ENVIRONMENT

- An assessment of the external environment is the first step toward internationalisation.
- Analysing international environment is important since it allows organisation to discover opportunities in the global market and evaluate feasibilities of capitalising on these opportunities.
- Assessments of the **international environment can be done at three levels:** multinational, regional, and country.

Multinational Environmental Analysis	Multinational environmental analysis **involves** identifying, anticipating, and monitoring significant components of the global environment on a large scale. Understanding global developments covering economic and other macro elements is important. These characteristics are evaluated based on their present and expected future impact.
Regional Environmental Analysis	Regional environmental analysis is a **more in-depth evaluation** of the critical factors in a specific geographical area. The emphasis would be on discovering market opportunities for a goods, services, or innovations in the chosen location.
Country Environmental Analysis	Country environmental analysis has to take a deeper look at the important environmental factors. The analysis must be customised for each of the countries to develop effective market entrance strategies.

- International environment has become an inherent part of strategic management for businesses of all sizes with global interests. It becomes more important for the people at the decision-making levels to focus on factors comprising the international environment.

UNDERSTANDING PRODUCT AND INDUSTRY

Business products have certain characteristics as follows:

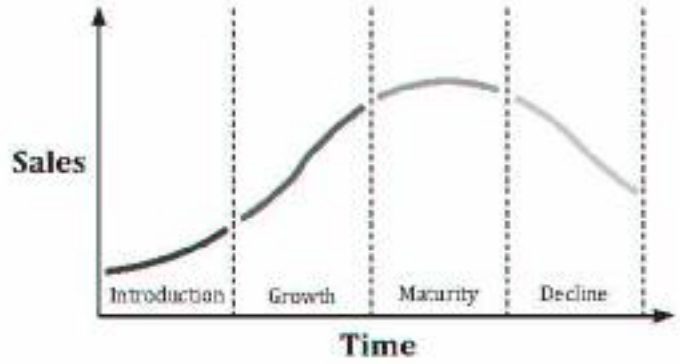
1. Products are **either tangible or intangible.** A tangible product can be handled, seen, and physically felt. Alternatively, an intangible product is not a physical good, such as telecom services, banking, insurance, or repair services.
2. Product **has a price.** The dynamics of supply and demand influence the market price of an item or service. The market price is the price at which quantity provided equals quantity desired. The price that may be paid is determined by the market, the quality, the marketing, and the targeted group. In the present competitive world price is often given by the market and businesses have to work on costs to maintain profitability.

   On account of competition, businesses are not able to fix market price by adding profit margin on the costs. Rather, they work on reducing the costs given the prevailing market price.
3. Products have certain **features that deliver satisfaction.** Products should be able to provide value satisfaction to the customers for whom they are meant. Features of the product will distinguish it in terms of its function, design, quality and experience. A customer's cumulative experience with a product from its purchase to the end of its useful life is an important component of a product feature.
4. Product is **pivotal for business.** The product is at the centre of business around which all strategic activities revolve. Product is the driving force behind business activities.
5. A product **has a useful life.** Every product has a usable life after which it must be replaced, as well as a life cycle after which it is to be reinvented or may cease to exist.

PRODUCT LIFE CYCLE

- An important concept in strategic choice is that of product life cycle (PLC).
- PLC is an **S-shaped curve** which exhibits the relationship of sales with respect of time for a product that passes through the four successive stages of introduction, growth, maturity and decline.

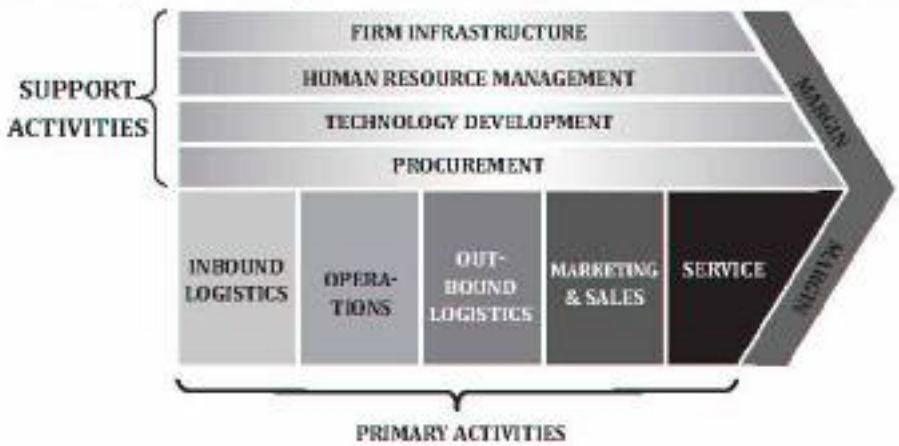
First stage:- of PLC is the introduction stage with **slow sales growth**, in which competition is almost negligible, prices are relatively high, and markets are limited. The growth in sales is at a lower rate because of lack of awareness on the part of customers.
Second phase:- of PLC is growth stage with rapid market acceptance. In the growth stage, the demand expands rapidly, prices fall, competition increases, and market expands. The customer has knowledge about the product and shows interest in purchasing it.
Third phase:- of PLC is maturity stage where there is slowdown in growth rate. In this stage, the competition gets tough, and market gets stabilized. Profit comes down because of stiff competition. At this stage, organisations have to work for maintaining stability.
Fourth stage:- of PLC is declines with sharp downward drift in sales. The sales and profits fall down sharply due to some new product replaces the existing product. So, a combination of strategies can be implemented to stay in the market either by diversification or retrenchment.



- The **main advantage of PLC approach** is that it can be used to diagnose a portfolio of products (or businesses) in order to establish the stage at which each of them exists.
- Particular attention is to be paid on the businesses that are in the declining stage.
- Depending on the diagnosis, appropriate strategic choice can be made. For instance, expansion may be a feasible alternative for businesses in the introductory and growth stages.
- Mature businesses may be used as sources of cash for investment in other businesses which need resources.
- A combination of strategies like selective harvesting, retrenchment, etc. may be adopted for declining businesses.

VALUE CHAIN ANALYSIS

- Value chain analysis is a method **used by strategists to break down** each process that their business employs.
- This analysis could be used to improve the sequence of operations, enhancing efficiency and creating a competitive advantage.
- Value chain analysis is a method of examining each activity in value chain of a business in order to identify areas for improvements. When you do a value chain analysis, you must analyse how each stage in the process adds or subtracts value from the end product or service.
- Value chain analysis has been widely used as a means of describing the activities within and around an organization and relating them to an assessment of the competitive strength of an organization (or its ability to provide value-for-money products or services).
- The **two basic steps of identifying** separate activities and assessing the value added from each were linked to an analysis of an organization's competitive advantage by **Michael Porter**.



- One of the key aspects of value chain analysis is the recognition that organizations are much more than a random collection of machines, material, money and people.
- These resources are of no value unless deployed into activities and organised into systems and routines which ensure that products or services are produced which are valued by the final consumer/user.
- Porter argued that an understanding of strategic capability must start with an identification of these separate value activities.
- The primary activities of the organization are grouped into five main areas:

Inbound Logistics	The activities concerned with receiving, storing and distributing the inputs to the product/service. This includes materials handling, stock control, transport etc. Like, transportation and warehousing.
Operations	Operations transform these inputs into the final product or service machining, packaging, assembly, testing, etc. convert raw materials in finished goods.
Outbound Logistics	Collect, store and distribute the product to customers. For tangible products this would be warehousing, materials handling, transport, etc. In the case of services, it may be more concerned with arrangements for bringing customers to the service, if it is a fixed location (e.g. sports events).
Marketing and Sales	Provide the means whereby consumers/users are made aware of the product/ service and are able to purchase it. This would include sales administration, advertising, selling and so on. In public services, communication networks which help users' access a particular service are often important.
Service	Service are all those activities, which enhance or maintain the value of a product/service, such as installation, repair, training and spares.

- Each of these groups of primary activities **are linked to support activities.**
- These can be divided into **four areas;**

Procurement	The processes for acquiring the various resource inputs to the primary activities (not to the resources themselves). As such, it occurs in many parts of the organization.
Technology Development	All value activities have a 'technology', even if it is simply know-how. The key technologies may be concerned directly with the product (e.g. R&D product design) or with processes (e.g. process development) or with a particular resource (e.g. raw materials improvements).
Human Resource Management	A particularly important area which transcends all primary activities. It is concerned with those activities involved in recruiting, managing, training, developing and rewarding people within the organization.
Infrastructure	The systems of planning, finance, quality control, information management, etc. are crucially important to an organization's performance in its primary activities. Infrastructure also consists of the structures and routines of the organization which sustain its culture.

INDUSTRY ENVIRONMENT ANALYSIS

- Industry analysis enable strategic understanding about the entire state of any industry and make decisions about whether the industry is a lucrative or not.
- The goal of the industry environment analysis, which is typically an important step of strategic analysis, is to estimate the amount of competitive pressures the business is presently facing and is expected to face in the near future.
- Analysing these elements enhances knowledge of surrounding and serves as the foundation for aligning strategy with changing industry circumstances and realities.

PORTER'S FIVE FORCES MODEL

- Every business operates in the competitive environment.
- Porter's Five Forces analysis is a simple but efficient way for determining the key sources of competition in business or industry.
- It is a powerful and widely used tool to systematically diagnose the significant competitive pressures in a market and assess the strength and importance of each.
- Michael Porter believes that the basic unit of analysis for understanding is a group of competitors producing goods or services that compete directly with each other.
- The model holds that the state of competition in an industry is a composite of competitive pressures operating in **five areas of the overall market**:

Competitive pressures associated with the market manoeuvring and jockeying for buyer patronage that goes on among rival sellers in the industry.
Competitive pressures associated with the threat of new entrants into the market.
Competitive pressures coming from the attempts of companies in other industries to win buyers over to their own substitute products.

Competitive pressures stemming from supplier bargaining power and supplier-seller collaboration.

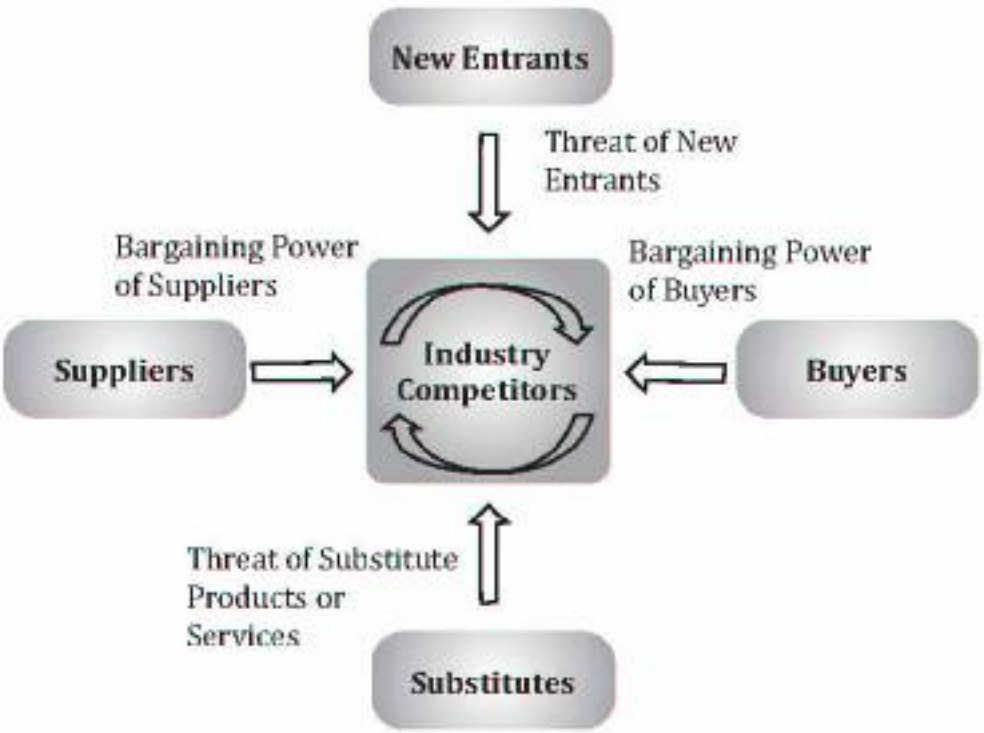
Competitive pressures stemming from buyer bargaining power and seller- buyer Collaboration.

The strategists can use the five-forces model to determine what competition is like in a given industry by undertaking the following steps:

Step-1
Identify the specific competitive pressures associated with each of the five forces.

Step-2
Evaluate how strong the pressures comprising each of the five forces are (fierce, strong, moderate to normal, or weak).

Step-3
Determine whether the collective strength of the five competitive forces is conducive to earning attractive profits.



By applying Porter's five forces model of industry attractiveness to their own industries, the manager can gauge their own firm's strengths, weaknesses, and future opportunities.

(I) The Threat of New Entrants

- New entrants can reduce industry profitability because they add new production capacity leading to an increase supply of the product even at a lower price and can substantially erode existing firm's market share position.
- The new capacity and product range they bring in throw up new competitive pressure. And the bigger the new entrant, the more severe the competitive effect.
- To discourage new entrants, existing firms can try to raise barriers to entry. Barriers to entry represent economic forces (or 'hurdles') that slow down or impede entry by other firms. These **are explained as follows:**

Capital Requirements	When a large amount of capital is required to enter an industry, firms lacking funds are effectively barred from the industry, thus enhancing the profitability of existing firms in the industry.
Economies of Scale	Economies of scale refer to the decline in the per-unit cost of production (or other activity) as volume grows. A large firm that enjoys economies of scale can produce high volumes of goods at successively lower costs. This tends to discourage new entrants.
Product Differentiation	Product differentiation refers to the physical or perceptual differences, or enhancements, that make a product special or unique in the eyes of customers.
Switching Costs	To make a switch, buyers may need to test a new firm's product, negotiate new purchase contracts, and train personnel to use the equipment, or modify facilities for product use. Buyers often incur substantial financial (and psychological) costs in switching between firms. When such switching costs are high, buyers are often reluctant to change.
Brand Identity	Brand identity is particularly important for infrequently purchased products that carry a high unit cost to the buyer. New entrants often encounter significant difficulties in building up the brand identity, because to do so they must commit substantial resources over a long period.
Access to Distribution Channels	Despite the growing power of the internet, many firms may continue to rely on their control of physical distribution channels to sustain a barrier to entry to rivals.
Possibility of Aggressive Retaliation	Sometimes the mere threat of aggressive retaliation by incumbents can deter entry by other firms into an existing industry. **E.g:-** Introduction of products by a new firm may lead incumbents firms to reduce their product prices and increase their advertising budgets.

(II) Bargaining Power of Buyers

- This force will become heavier depending on the possibilities of the buyers' forming groups or cartels.
- The bargaining power of the buyers influences not only the prices that the producer can charge but also influences in many cases, costs and investments of the producer because powerful buyers usually bargain for better services which involve costs and investment on the part of the producer.
- Buyers of an industry's products or services can sometimes exert considerable pressure on existing firms to secure lower prices or better services.
- This leverage is particularly evident when:

Buyers have full knowledge of the sources of products and their substitutes.
They spend a lot of money on the industry's products i.e. they are big buyers.
The industry's product is not perceived as critical to the buyer's needs and buyers are more concentrated than firms supplying the product. They can easily switch to the substitutes available.

(III) Bargaining Power of Suppliers

- The bargaining power of suppliers determines the cost of raw materials and other inputs of the industry and, therefore, industry attractiveness and profitability.
- Suppliers can influence the profitability of an industry in a number of ways.
- Suppliers can command bargaining power over a firm when:

Their products are crucial to the buyer and substitutes are not available. ⇨ **They can erect high switching costs.** ⇨ **They are more concentrated than their buyers.**

(IV) The Nature of Rivalry in the Industry

- The intensity of rivalry in an industry is a significant determinant of industry attractiveness and profitability.
- The intensity of rivalry can influence the costs of suppliers, distribution, and of attracting customers and thus directly affect the profitability.
- The more intensive the rivalry, the less attractive is the industry.
- Rivalry among competitors tends to be cutthroat and industry profitability low under various conditions explained as follows:

Industry Leader	A strong industry leader can discourage price wars by disciplining initiators of such activity. Because of its greater financial resources, a leader can generally outlast smaller rivals in a price war.
Number of Competitors	Even when an industry leader exists, the leader's ability to exert pricing discipline diminishes with the increased number of rivals in the industry as communicating expectations to players becomes more difficult.
Fixed Costs	When rivals operate with high fixed costs, they feel strong motivation to utilize their capacity and therefore are inclined to cut prices when they have excess capacity.
Exit Barriers	Rivalry among competitors declines if some competitors leave an industry. Exit barriers come in many forms. Assets of a firm considering exit may be highly specialized and therefore of little value to any other firm. Such a firm can thus find no buyer for its assets. This discourages exit. When barriers to exit are powerful, competitors desiring exit may refrain from leaving. Their continued presence in an industry exerts downward pressure on the profitability of all competitors.
Product Differentiation	Firms can sometimes insulate themselves from price wars by differentiating their products from those of rivals. As a consequence, profitability tends to be higher in industries that offer opportunity for differentiation. Profitability tends to be lower in industries involving undifferentiated commodities. **E.g:-** Memory chips, natural resources, processed metals and railroads.

Slow Growth	Industries whose growth is slowing down tend to face more intense rivalry. As industry growth slows, rivals must often fight harder to grow or even to keep their existing market share. The resulting intensive rivalry tends to reduce profitability for all.

(V) Threat of Substitutes

- Substitute products are a latent source of competition in an industry.
- Substitute products offering a price advantage and/or performance improvement to the consumer can drastically alter the competitive character of an industry. And they can bring it about all of a sudden.

E.g:- Coir suffered at the hands of synthetic fibre.

A final force that can influence industry profitability is the availability of substitutes for an industry's product.

E.g:- Real estate, insurance, bonds and bank deposits for example are clear substitutes for common stocks, because they represent alternate ways to invest funds.

The five forces together determine industry attractiveness/ profitability.

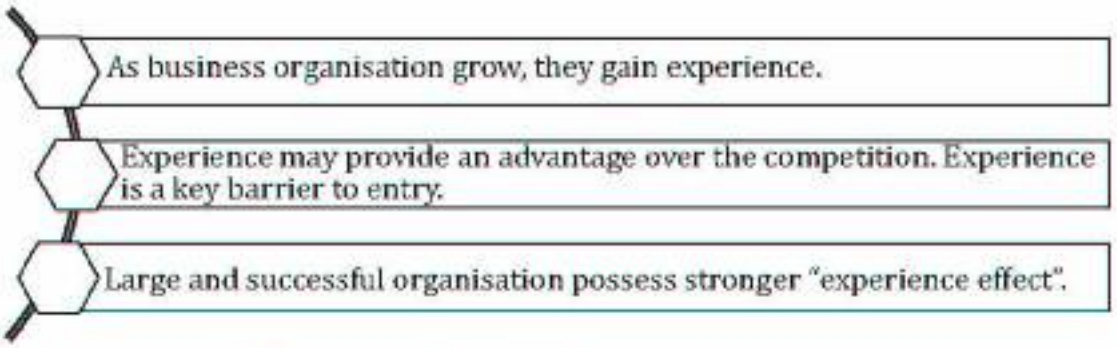
E.g:- Elements such as cost and investment needed for being a player in the industry decide industry profitability, and all such elements are governed by these forces. The collective strength of these five competitive forces determines the scope to earn attractive profits. The strength of the forces may vary from industry to industry.

■ ATTRACTIVENESS OF INDUSTRY

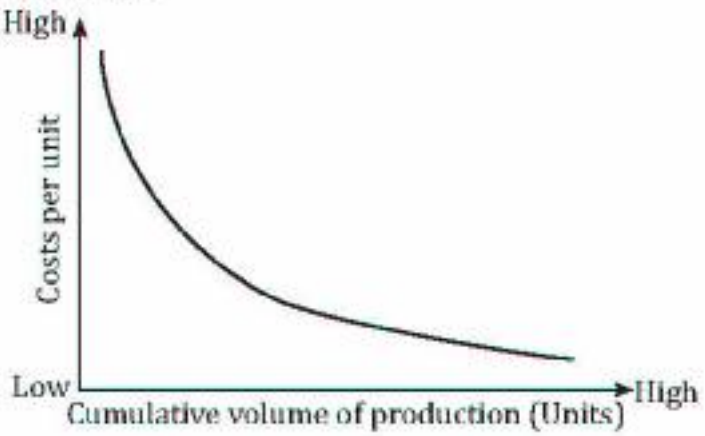
- The industry analysis culminates into identification of various issues and draw conclusions about the relative attractiveness or unattractiveness of the industry, both near-term and long-term.
- The important factors on which the management may base such conclusions include:
  - The industry's growth potential, is it futuristically viable?
  - Whether competition currently permits adequate profitability and whether competitive forces will become stronger or weaker?
  - Whether industry profitability will be favourably or unfavourably affected by the prevailing driving forces?
  - The competitive position of an organisation in the industry and whether its position is likely to grow stronger or weaker. (Being a well-entrenched leader or strongly positioned contender in an otherwise lackluster industry can still produce good profitability; however, having to fight an uphill battle against much stronger rivals can make an otherwise attractive industry unattractive).
  - The potential to capitalize on the vulnerabilities of weaker rivals (perhaps converting an unattractive industry situation into a potentially rewarding company opportunity).
  - Whether the company is able to defend against or counteract the factors that make the industry unattractive?
  - The degrees of risk and uncertainty in the industry's future.
  - The severity of problems confronting the industry as a whole.
  - Whether continued participation in this industry adds importantly to the firm's ability to be successful in other industries in which it may have business interests?

EXPERIENCE CURVE

- Experience curve **akin to a learning curve** which explains the efficiency increase gained by workers through repetitive productive work.
- Experience curve is based on the commonly observed phenomenon that unit costs decline as a firm accumulates experience in terms of a cumulative volume of production.
- It is based on the concept, **"we learn as we grow"**.
- Experience curve results from a variety of factors such as learning effects, economies of scale, product redesign and technological improvements in production.
- Experience curve has **following features:**

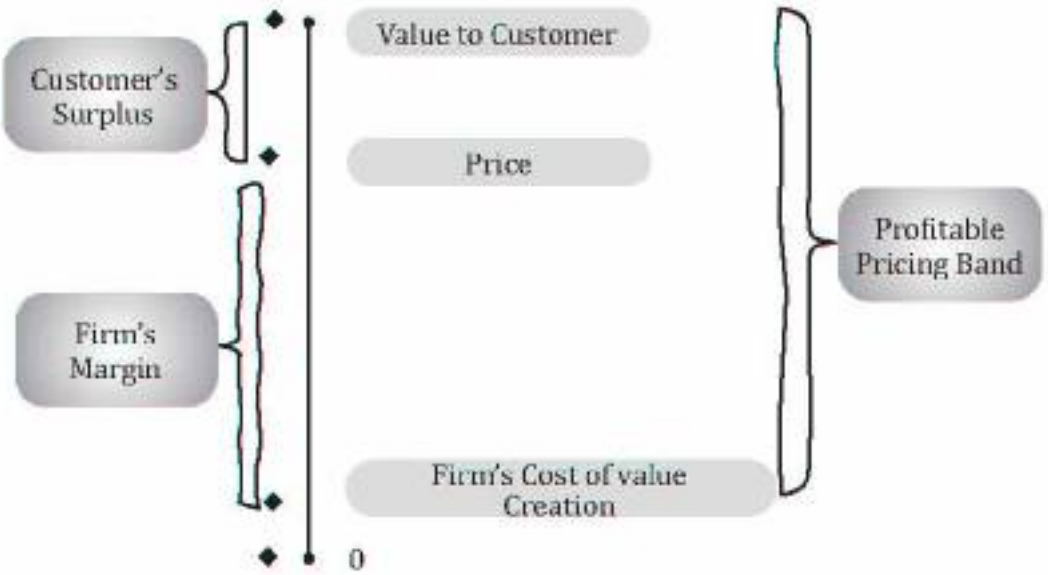


- A typical experience curve may be depicted as follows:
- As a business grows, it understands the complexities and benefits from its experiences.
- The concept of experience curve is relevant for a number of areas in strategic management.
- For instance, experience curve is considered a barrier for new firms contemplating entry in an industry.
- The likely strategic choice for competitors can be a market niche approach or segmentation based on demography or geography.



VALUE CREATION

- The concept of value creation was introduced primarily for providing products and services to the customers with more worth.
- The concept took more space in the business and organizations started discussing about the value creation for stakeholders.



- The value creation is an activity or performance by the firm to create value that increases the worth of goods, services, business processes or even the whole business system.
- This concept gives business a competitive advantage in the industry and helps them earn above average profits/returns.
- Competitive advantage leads to superior profitability.
- Profitable a company becomes depends on **three factors:**
  (*a*) the value customers place on the company's products;
  (*b*) the price that a company charges for its products; and
  (*c*) the costs of creating those products.
- The value customers place on a product reflects the utility they get from a product.
- Companies are ultimately aiming to achieve sustainable competitive advantage, which enables them to succeed in the long run.
- Michael Porter argues that a company can generate competitive advantage in **two different ways**, either through **differentiation or cost advantage.**
  - According to Porter's, differentiation means the capability to provide customers superior and special value in the form of product's special features and quality or in the form of aftersales customer service.
  - As a result of differentiation, a company can demand higher price for its products or services. A company will earn higher profits due to differentiation in case the expenses stay comparable to the costs of competitors.
  - The differentiation and cost advantage will affect a company's ability to achieve competitive advantage, but there are many different organizational functions that will influence whether a company can achieve cost advantage or differentiation advantage.
- Value chain analysis provides an excellent tool to examine the origin of competitive advantage. It divides the organisations into two different strategically important group of activities, namely, primary activities and supporting activities, which can help to comprehend the potential sources for differentiation and to understand an organisation's costs behaviour.

Market And Customer

- A market is a place for interested parties, buyers and sellers, where items and services can be exchanged for a price.
- The market might be physical, such as a departmental store where people engage in person.
- They may also be virtual, such as an online market where buyers and sellers do not meet in person but tools of technology to strike a deal.
- Example: it might be used to describe the stock exchange, where securities are traded.
- The term "marketing" encompasses a wide range of operations, including research, designing, pricing, promotion, transportation, and distribution.
- Often market activities are categorised and explained in terms of four Ps of marketing - product, place, pricing, and promotion.

Customer

- A customer is a person or business that buys products or services from another organisation.
- The terms customer and consumer are practically synonymous and are frequently used interchangeably. There is, a thin distinction.
- Individuals or businesses that consume or utilise products and services are referred to as consumers. Customers are the purchasers of products and services in the economy, and they might exist as consumers or only as customers.

Customer Analysis

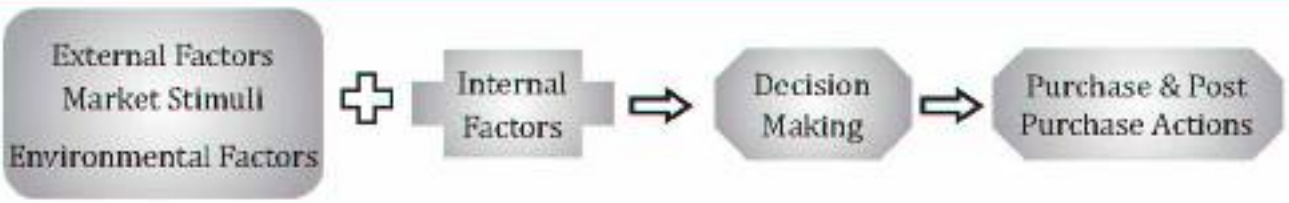
- Customer analysis is an essential marketing component of any strategic business plan.
- It identifies target clients, determines their wants, and then defines how the product meets those needs. Thus, it involves the examination and evaluation of consumer needs, desires, and wants.
- Customer analysis includes the administration of customer surveys, the study of consumer data, the evaluation of market positioning strategies, development of customer profiles, and the selection of the best market segmentation techniques.

Customer Behaviour

- Customer behaviour moves beyond the identification of customers to explain how they purchase products.
- Understanding the behaviours of customers enables businesses to establish effective marketing and advertising campaigns, provide products and services that meet their needs, and retain customers for repeat sales.
- Consumer behaviour may be influenced by a number of things. These elements can be categorised into the following **three conceptual domains**:

External Influences	External influences, like advertisement, peer recommendations or social norms. The focus of external effects is on the numerous elements that have an impact on customers as they choose which needs to satisfy and which products to use to do so. These aspects are divided into two groups - the company's marketing - efforts and the numerous environmental elements.
Internal Influences	Internal processes are psychological factors internal to customer and affect consumer decision making. Consumer behaviour is influenced by a combination of internal and external influences, including motivation and attitudes.

Decision Making	A rational consumer, as decision maker would seek information about potential decisions and carefully integrate this with the existing knowledge about the product. The **stages of decision-making process** can be described as: ○ Problem recognition, i.e., identify an existing need or desire that is unfulfilled ○ Search for desirable alternative and list them ○ Seeking information on available alternatives and weighing their pros and cons. ○ Make a final choice This behaviour of making decisions happens very frequently.
Post-decision Processes	After making a decision and purchasing a product, the final phase in the decision-making process is evaluating the outcome. The consumer's reaction may vary depending upon the satisfaction.



COMPETITIVE STRATEGY

- Competition is a fundamental attribute of economic systems and business, and it is frequently connected with small and large organisations.
- The competitive strategy of a business is concerned with how to compete in the business areas in which the organization operates.
- The competitive strategy of a firm within a certain business field is analysed using two criteria: **the creation of competitive advantage and the protection of competitive advantage.**
- An important component of industry and competitive analysis involves delving into the industry's competitive process to discover what the main sources of competitive pressure are and how strong each competitive force is.
- This analytical step is essential because managers cannot devise a successful strategy without in-depth understanding of the industry's competitive character.
- Even though competitive pressures in various industries are never precisely the same, the competitive process works similarly enough to use a common analytical framework in gauging the nature and intensity of competitive forces.

COMPETITIVE LANDSCAPE

- Competitive landscape is a business analysis which identifies competitors, either direct or indirect.
- Competitive landscape is about identifying and understanding the competitors and at the same time, it permits the comprehension of their vision, mission, core values, niche market, strengths and weaknesses.
- Understanding of competitive landscape requires an application of "competitive intelligence".

- Thus, understanding the competitive landscape is important to build upon a competitive advantage.
- Steps to understand the Competitive Landscape

Identify the Competitor	The firm's industry and have actual data about their respective market share. This answers the question: Who are the competitors and how big are they?
Understand the Competitors	The strategist can use market research report, internet, newspapers, social media, industry reports, and various other sources to understand the products and services offered by them in different markets. This answers the question: What are their product and services?
Determine the Strengths of the Competitors	This answers the questions: What are their financial positions? What gives them cost and price advantage?; What are they likely to do next? How strong is their distribution network? What are their human resource strengths?
Determine the Weaknesses of the Competitors	Identify the areas where the competitor is lacking or is weak. Weaknesses (and strengths) can be identified by going through consumer reports and reviews appearing in various media. Financial strength and weakness can always be learnt from annual reports.
Put all of the Information Together	The strategist should put together all information about competitors and draw inference about what they are not offering and what the firm can do to fill in the gaps. The strategist can also know the areas which need to be strengthen by the firm.

Key Factors For Competitive Success

- An industry's Key Success Factors (KSFs) are those things that most affect industry members' ability to prosper in the marketplace - the particular strategy elements, product attributes, resources, competencies, competitive capabilities, and business outcomes that spell the difference between profit and loss and, ultimately, between competitive success or failure.
- Key success factors are the prerequisites for industry success or, to put it another way, KSFs are the factors that shape whether a company will be financially and competitively successful.
- The answers to **three questions** help identify an industry's key success factors:

On what basis do customers choose between the competing brands of sellers? What product attributes are crucial to sales?

What resources and competitive capabilities does a seller need to have to be competitively successful, better human capital, quality of product or quantity of product, cost of service, etc.?

What does it take for sellers to achieve a sustainable competitive advantage, something that can be sustained for long term?

E.g:- In apparel manufacturing, the KSFs are appealing designs and colour combinations (to create buyer interest) and low-cost manufacturing efficiency (to permit attractive retail pricing and ample profit margins).

Key success factors vary from industry to industry and even from time to time within the same industry as driving forces and competitive conditions change. Only rarely does an industry have more than three or four key success factors at any one time.

The purpose of identifying KSFs is to make judgments about what things are more important to competitive success and what things are less important.

TEST YOUR KNOWLEDGE – MCQS

1. KSFs stand for:

(*a*) Key strategic factors
(*b*) Key supervisory factors
(*c*) Key success factors
(*d*) Key sufficient factors

2. Competitive landscape requires the application of-

(*a*) Competitive advantage
(*b*) Competitive strategy
(*c*) Competitive acumen
(*d*) Competitive intelligence

3. The term PESTLE analysis is used to describe a framework for analysing:

(*a*) Macro environment
(*b*) Micro environment
(*c*) Both Micro and Macro environment
(*d*) None of the above

4. 'Attractiveness of firms' while conducting industry analysis should be seen in-

(*a*) Relative terms
(*b*) Absolute terms
(*c*) Comparative terms
(*d*) All of the above

5. What is not one of Michael Porter's five competitive forces?

(*a*) New entrants
(*b*) Rivalry among existing firms
(*c*) Bargaining power of unions
(*d*) Bargaining power of suppliers

6. Which of the following constitute Demographic Environment?

(*a*) Nature of economy i.e. capitalism, socialism, Mixed
(*b*) Size, composition, distribution of population, sex ratio
(*c*) Foreign trade policy of Government
(*d*) Economic policy i.e. fiscal and monetary policy of Government

7. All are elements of Macro environment except:

(*a*) Society (*b*) Government (*c*) Competitors (*d*) Technology

8. The emphasis on product design is very high, the intensity of competition is low, and the market growth rate is low in the ____ stage of the industry life cycle.

(*a*) Maturity (*b*) Introduction (*c*) Growth (*d*) Decline

ANSWER KEY

1.	(c)	**2.**	(d)	**3.**	(a)	**4.**	(a)	**5.**	(c)	**6.**	(b)	**7.**	(c)	**8.**	(b)

TEST YOUR KNOWLEDGE – CASE STUDIES

1. **Suresh Singhania is the owner of an agri-based private company in Sangrur, Punjab. His unit is producing puree, ketchups and sauces. While its products have significant market share in the northern part of country, the sales are on decline in last couple of years. He seeks help of a management expert who advises him to first understand the competitive landscape.**

   Explain the steps to be followed by Suresh Singhania to understand competitive landscape.

Ans. Steps to understand the competitive landscape:

(*a*) **Identify the competitor:** The first step to understand the competitive landscape is to identify the competitors in the firm's industry and have actual data about their respective market share.

(*b*) **Understand the competitors**: Once the competitors have been identified, the strategist can use market research report, internet, newspapers, social media, industry reports, and various other sources to understand the products and services offered by them in different markets.

(*c*) **Determine the strengths of the competitors:** What is the strength of the competitors? What do they do well? Do they offer great products? Do they utilize marketing in a way that comparatively reaches out to more consumers? Why do customers give them their business?

(*d*) **Determine the weakness of the competitors:** Weakness (and strengths) can be identified by going through consumer reports and reviews appearing in various media. After all, consumers are often willing to give their opinions, especially when the products or service are either great or very poor.

(*e*) **Put all of the information together**: At this stage, the strategist should put together all information about competitors and draw inference about what they are not offering and what the firm can do to fill in the gaps. The strategist can also know the areas which need to be strengthen by the firm.

2. **Eco-carry bags Ltd., a recyclable plastic bags manufacturing, and trading company has seen a potential in the ever-growing awareness around hazards of plastics and the positive outlook of the society towards recycling and reusing plastics.**

   A major concern for Eco-carry bags Ltd. are paper bags and old cloth bags. Even though they are costlier than recyclable plastic bags, irrespective, they are being welcomed positively by the consumers.

   Identify and explain that competition from paper bags and old cloth bags fall under which category of Porter's Five Forces Model for Competitive Analysis?

Ans. Eco-carry bags Ltd. faces competition from paper bags and old cloth bags and falls under Threat of Substitutes force categories in Porter's five Forces Model for Competitive Analysis. Paper and cloth bags are substitutes of recyclable plastic bags as they perform the same function as plasctic bags. Substitute products are a latent source of competition in an industry. In many cases, they become a major constituent of competition. Substitute products offering a price advantage and/ or performance improvement to the consumer can drastically alter the competitive character of an industry.

3. **Baby Turtle is a children's clothing brand that has been created a new age demand for washable diapers. The major benefit for the brand has been that not many companies have shown interest in the product, thinking it is not viable, however, customers, majorly working mothers are loving their product. The core material needed for production is also**

used in many other water proofing products in various industries. Baby Turtle sources this material from a renowned supplier at comparatively low prices. Which of the five forces of competitive pressure would Baby Turtle experience due to above setup and what are major factors that create such pressure for a product? Do you think Baby Turtle has an advantage in some way to fight off this pressure?

Ans. Baby Turtle would experience, Bargaining Power of Suppliers, as a competitive pressure for their washable diaper product. This is because the core material for production is sourced from a single supplier, who is renowned and in a position to create pressure in terms of prices.

Further, other factors that lead to such pressure are:

(*a*) Their products are crucial to the buyer and substitutes to the material required for production are not available

(*b*) Suppliers can manipulate switching cost as the brand is in inception stage and making margins are important.

An advantage that Baby turtle has is even though the material required has no substitutes, but it used to make many other products and thus there are many other suppliers who can provide that material. It might affect operations in short term but will help to fight off the pressure created by existing supplier.

TEST YOUR KNOWLEDGE – DESCRIPTIVE QUESTIONS

1. Examine the significance of KSFs (Key Success Factors) for competitive success. (Nov 2018)

Ans. As industry's Key Success Factors (KSFs) are those things that most affect industry members' ability to prosper in the market place – the particular strategy elements, product attributes, resources, competencies, competitive capabilities and business outcomes that spell the difference between profit & loss and ultimately, between competitive success or failure. KSFs by their very nature are so important that all firms in the industry must pay close attention to them. They are the prerequisites for industry success, or, to put it in another way, KSFs are the rules that shape whether a company will be financially and competitively successful.

2. "Industry and competitive analysis begin with an overview of the industry's dominant economic features." Explain and also narrate the factors to be considered in profiling in industry's economic features. (Nov 2019)

Ans. Industry is "a group of firms whose products have the same and similar attributes such that they compete for the same buyers." Industries differ significantly in their basic character and structure. Industry and competitive analysis begins with an overview of the industry's dominant economic features.

The factors to be considered while profiling an industry's economic features are fairly standard and are given as under:

- Size and nature of market. Scope of competitive rivalry.
- Market growth rate and position in the business life.
- Number of rivals and their relative market share.
- The number of buyers and their relative sizes.
- The types of distribution channels used to access consumers.
- The pace of technological change in both production process innovation and new product introductions.

- Whether the products and services of rival firms are highly differentiated, weakly differentiated, or essentially identical?
- Whether organizations can realize economies of scale in purchasing, manufacturing, transportation, marketing, or advertising.
- Whether key industry participants are clustered in a location.
- Whether certain industry activities are characterized by strong learning and experience effects ("learning by doing") such that unit costs decline as cumulative output grows.
- Whether high rates of capacity utilization are crucial to achieve low-cost production efficiency.
- Capital requirements and the ease of entry and exit.
- Whether industry profitability is above or below par?

3. Explain the Strategic Alliance. Describe the advantages of Strategic Alliance. (Nov 2019)

Ans. A strategic alliance is a relationship between two or more businesses that enables each to achieve certain strategic objectives which neither would be able to achieve on its own. The strategic partners maintain their status as independent and separate entities, share the benefits and control over the partnership, and continue to make contributions to the alliance until it is terminated. Advantages of Strategic Alliance.

Strategic alliances usually are only formed if they provide an advantage to all the parties in the alliance. These advantages can be broadly categorized as follows:

(1) Organizational: Strategic alliance helps to learn necessary skills and obtain certain capabilities from strategic partners. Strategic partners may also help to enhance productive capacity, provide a distribution system, or extend the supply chain. Strategic partners may provide a good or service that complements thereby creating a synergy. Having a strategic partner who is well-known and respected also helps add legitimacy and credibility to a new venture.

(2) Economic: There can be reduction in costs and risks by distributing them across the members of the alliance. Greater economies of scale can be obtained in an alliance, as production volume can increase, causing the cost per unit to decline. Finally, partners can take advantage of co-specialization, creating additional value.

(3) Strategic: Rivals can join together to cooperate instead of compete. Vertical integration can be created where partners are part of the supply chain. Strategic alliances may also be useful to create a competitive advantage by the pooling of resources and skills. This may also help with future business opportunities and the development of new products and technologies. Strategic alliances may also be used to get access to new technologies or to pursue joint research and development.

(4) Political: Sometimes strategic alliances are formed with a local foreign business to gain entry into a foreign market either because of local prejudices or legal barriers to entry. Forming strategic alliances with politically-influential partners may also help improve your own influence and position.

4. Why should companies go global? Mention any five reasons. (Nov 2020)

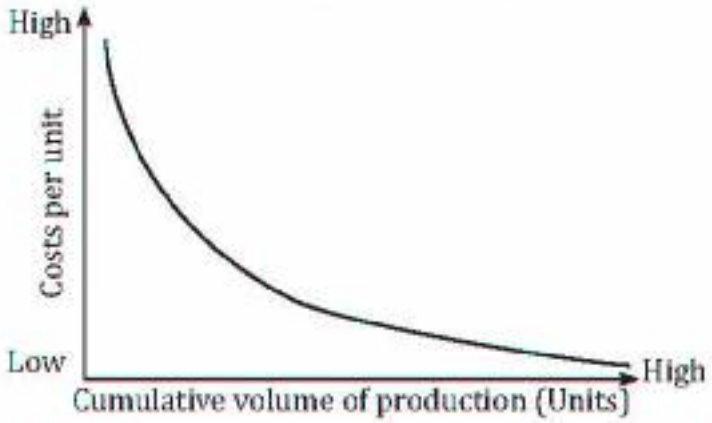
Ans. There are several reasons why companies go global. These are discussed as follows:

- One reason could be the rapid shrinking of time and distance across the globe - thanks to faster communication, speedier transportation, growing financial flows and rapid technological changes.

- It is being realized that the domestic markets are no longer adequate and rich. Companies globalize to take advantage of opportunities available elsewhere.
- A new product may gradually get acceptance and grow locally and then globally. This may initially be in the form of exports and then later production facilities may begin in other countries.
- Organizations may go global to take advantage of cheaper raw material and labor costs.
- Companies often set up overseas plants to reduce high transportation costs.
- The motivation to go global in high-tech industries is slightly different. Companies in electronics and telecommunications must spend large sums on research and development for new products and thus may be compelled to seek ways to improve sales volume to support high overhead expenses.
- The companies may also go global to take advantage of local taxation laws.
- To form strategic alliances to ward off economic and technological threats and leverage their respective comparative and competitive advantages.

5. Explain the concept of Experience Curve and highlight its relevance in strategic management. (SM)

Ans. Experience curve is similar to learning curve which explains the efficiency gained by workers through repetitive productive work. Experience curve is based on the commonly observed phenomenon that unit costs decline as a firm accumulates experience in terms of a cumulative volume of production. It is represented diagrammatically as shown below:



The implication is that larger firms in an industry would tend to have lower unit costs as compared to those of smaller organizations, thereby gaining a competitive cost advantage. Experience curve results from a variety of factors such as learning effects, economies of scale, product redesign and technological improvements in production.

The concept of experience curve is relevant for a number of areas in strategic management. For instance, experience curve is considered a barrier for new firms contemplating entry in an industry. It is also used to build market share and discourage competition.

6. Write a short note on Product Life Cycle (PLC) and its significance in portfolio diagnosis. (SM)

Ans. Refer to notes mentioned above.

7. Explain Porter's five forces model as to how businesses can deal with the competition. (SM)

Ans. Refer to notes mentioned above.

8. "The bargaining power of suppliers determines an industry's attractiveness and profitability." Discuss. (May 2022)

Ans. Quite often, suppliers too, exercise considerable bargaining power over purchasing companies. The more specialized the offering from the supplier, greater may be its clout. Further, when the suppliers are limited in number, they may openly exhibit their bargaining power. The bargaining power of suppliers determines the cost of raw materials and other inputs of the industry, and therefore, an industry's attractiveness and profitability.

Suppliers can influence the profitability of an industry in a number of ways.

Suppliers can command bargaining power over a firm when;

(i) Their products are crucial to the buyer and substitutes are not available.

(ii) They can erect/ensure high switching costs.

(iii) They are more concentrated than their buyers. Less suppliers, more buyers.

9. Buyers of an industry's products or services can sometimes exert considerable pressure on the company. In the light of the five forces as propagated by Michael Porter explain this force. Also state as to when this leverage is evident. (May 2023)

Ans. Bargaining Power of Buyers: This is another force that influences the competitive condition of an industry. This force becomes heavier depending on the possibility of buyers forming groups or cartels. Mostly, this is a phenomenon seen in industrial products. Quite often, users of industrial products come together formally or even informally and exert pressure on the producer. The bargaining power of the buyers influences not only the prices that the producer can charge but also influences costs and investments of the producer. This is because powerful buyers usually bargain for better services which involves more investment on the part of the producer.

Buyers of an industry's products or services can sometimes exert considerable pressure on existing firms to secure lower prices or better services.

This leverage is particularly evident when;

(i) Buyers have full knowledge of the source(s) of products and their substitutes. Thus, challenging the price being charged by producers.

(ii) They spend a lot of money on the industry's products i.e., they are big buyers. Thus, in a position to demand favourable terms of contract.

(iii) The industry's product is not perceived as critical to the buyer's needs and buyers are more concentrated than firms supplying the product. They can easily switch to the substitutes available.

15 CHAPTER

Strategic Analysis: Internal Environment

THEORY

INTRODUCTION

- Internal environment refers to the sum total of people – individuals and groups, stakeholders, processes- input-through-output, physical infrastructure- space, equipment and physical conditions of work, administrative apparatus-lines of authority & power, responsibility, accountability and organizational culture intangible aspects of working-relationships, philosophy, values, ethics- that shape an organization's identity.
- Internal environment also involves understanding of the ethics, principles, work environment, employee friendliness, confidence of investors and other philosophical and cultural aspects of business, which aim for the success of the organisation.

UNDERSTANDING KEY STAKEHOLDERS

Who are Stakeholders and how do we identify them?

- A firm may be viewed as **a coalition of stakeholders**-all those individuals and entities that have a stake in its success and can impact it as well.
- Thus, it may be reiterated that the stakeholders can be defined as any person/group of individuals, internal or external, that has an interest in, or impact on the business or corporate strategy of the organisation.
- They have the **power to influence** the strategy or performance of that organisation.
- It is important to identify the key stakeholders. Each stakeholder exerts a different level of influence and can have differing levels of interest in the organisation.
- **E.g:-** an organisation involved in healthcare innovation needs to have a long-term perspective about its return on investment (ROI) as there may be a long time between investment into research timelines and a commercial outcome.

- The expectations of key stakeholders can influence the organisation's strategy; a clash of objectives may have unfavourable consequences for the organisation.
- **Example of Key Stakeholders and their requirements for an OTT Platform**

Stakeholders	Requirements
Shareholders	▫ Innovation and continuous creative content ▫ Total shareholder return (RoI) ▫ Corporate social responsibility ▫ Top rankings of the organisation ▫ Highest market share
CEO and Board of Directors	▫ Prestige ▫ Market share ▫ Revenue and profit growth ▫ Market rankings
Major Vendors (Production Houses)	▫ Growth ▫ Stability of ordering ▫ Stable margins
Consumers (Viewers)	▫ New content - Innovation ▫ Better deals - Pricing Benefits ▫ Value for money ▫ Continuous supply
Employees	▫ Wages and benefits ▫ Stability of employment ▫ Pride of working for a reputed organisation

MENDELOW'S MATRIX

- The Mendelow Stakeholder matrix (**also known as the Stakeholder Analysis matrix and the Power-Interest matrix**) is a simple framework to help manage key stakeholders.
- Managing a project is extremely complicated as it involves managing the competing interests of various stakeholders. Who needs to know what and when, who needs to give their feedback and who has the final approval can be confusing.
- Mendelow suggests that one should analyse stakeholder groups based on **Power** (the ability to influence organisation strategy or resources) **and Interest** (how interested they are in the organisation succeeding).
- A thing to remember is that all stakeholders may seem to have lots of power and organisation may hope they would have lots of interest too. But in reality, some stakeholders will hold more Power than others, and some stakeholders will have more Interest than others.
- **E.g:-** A big shareholder is likely to have high power and high interest in the organisation, whereas a big competitor would have high power to impact strategy, but potentially less Interest in success of rival organisation.

Developing a Grid of Stakeholders

- Mendelow's Matrix is based on **Power and Interest**. It suggests to identify which stakeholders are incredibly important.

- Metrics to define the importance being High Power and High Interest which management would need to manage closely, while investing a lot of time and resources.
- **E.g:-** the CEO is likely to have more Power to influence the work and also high interest in it being successful. Keeping them informed almost daily should be a priority.
- However, those stakeholders with low power and low interest like research institutes seeking an organisation data should be monitored rarely and minimum effort expended on them in terms of time and money.

In the above figure, we see categorisation of stakeholders into **four groups by Mendelow's;**

Keep Satisfied Stakeholders	High power, less interested people - Organisation should put in enough work with these people to keep them satisfied with their intended information on a regular basis. **E.g:-** Banks, government, customers, etc.
Key Players Stakeholders	High power, highly interested people Organisation's aim should be to fully engage this group of stakeholders, making the greatest efforts to satisfy them, take their advice, build actions and keep them informed with all information on a regular basis. **E.g:-** Shareholders, CEO, Board of Directors, etc.
Low Priority Stakeholders	Low power, less interested people Organisation should only monitor them with no actions to satisfy their expectations. Strategically, minimal efforts should be spent on this group of stakeholders while keeping an eye to check if their levels of interest or power change. **E.g:-** Business magazines, media houses, etc.
Keep Informed Stakeholders	Low power, highly interested people - Organisation should adequately inform this group of people and communicate with them to ensure that no major issues arise. This audiences can also help with real time feedbacks and areas of improvement for an organisation. **E.g:-** Employees, vendors, suppliers, legal experts, etc.
An important thing that strategists should be aware of, is the importance to remember that environment is highly dynamic and certain things might happen that can cause stakeholders to suddenly move between quadrants.	

STRATEGIC DRIVERS

- An important aspect of **internal analysis is assessing the current performance** of the business. And in assessing current performance, the strategic drivers consider what differentiates an organisation from its competitors.
- There can be varied ways to **assess the current performance** of a business and it is highly subjective based on the managements metrics and ways of doing business. It can either be profit driven, purpose driven or any other metrics that the management seems to fit in.
- The key strategic drivers of an organisation include:
  - Industry and markets
  - Customers
  - Products/services
  - Channels

Industry and Markets

- In terms of the internal environment, it is very important for an organisation to understand it's relative position in the industry and in the market in which it operates.
- There are many ways to do this but require analysis and understanding of the environment. Similar companies are grouped together into industries.
- **E.g:-** Maruti, Mahindra, Tata Motors, TVS, Bajaj Auto, are all selling automotives as their primary product and thus categorised into Automotive Industry.

Is market the same for all businesses?

Market refers to all the buyers and sellers of a particular product/service and so it would be incorrect to say that market is the same for all businesses. Each business has its own set of customers i.e., market and more so, each product within a business has its own market.

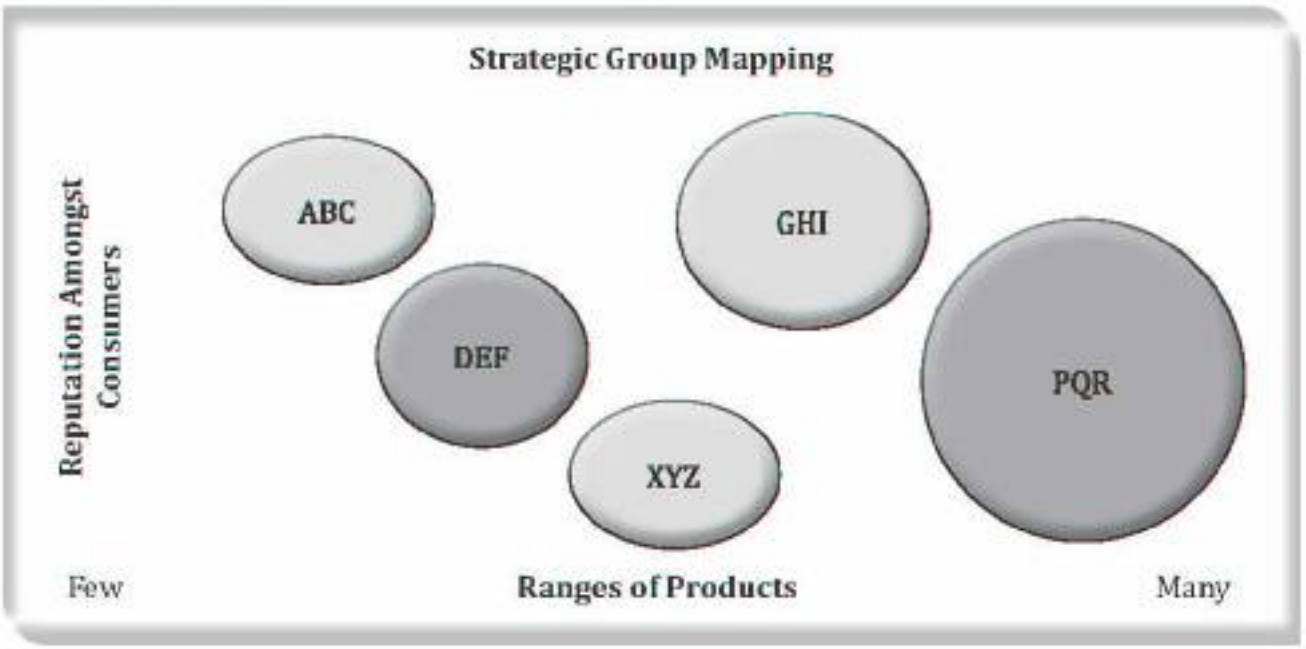
E.g:- For a FMCG brand selling Shampoos, Dairy Products, Flours, Washing Powder, etc. each product line will have a separate market to cater to and therefore build strategies specific to the market of concern.

Analysing Industry and Markets

- Industry and market analysis is extremely important to identify one's position as compared to the competitors, who can be of equal size and value, or bigger in size and value or even smaller and newer.
- A tool used for this is called – **Strategic Group Mapping.**
- A strategic group consists of those rival firms which have similar competitive approaches and positions in the market.
- The procedure for constructing a strategic group map and deciding which firms belong in which strategic group is straightforward:
  - Identify the competitive characteristics that differentiate firms in the industry typical variables are price/quality range (high, medium, low); geographic coverage (local, regional, national, global); degree of vertical integration (none, partial, full); product-line breadth

(wide, narrow); use of distribution channels (one, some, all); and degree of service offered (no-frills, limited, full]

- Plot the firms on a two-variable map using pairs of these differentiating characteristics.
- Assign firms that fall in about the same strategy space to the same strategic group.
- Draw circles around each strategic group making the circles proportional to the size of the group's respective share of total industry sales revenues.



CUSTOMERS

- Different customers may have different needs and require different sales models or distribution channels.
- As customers are often responsible for the generation of profits obtained by an organisation, it is important to be able to collect and display data in order to show customer trends and profitability. Issues with customers can be identified, and target areas for growth can be pursued based on the findings.
- Another interesting concept is the difference between Customer and Consumer - while a customer is the one buys a product/service, the consumer is the one who finally uses/ consumes the bought product or service.
- **E.g:-** A parent buying stationery products for their kids might be the customers, but consumers of stationery are the kids who would actually use it.
- Thus, understanding both is important for the marketers.
- From a pricing perspective - the customer is of more importance and from value creation and design/usability, consumer needs to be the kept at the center of decision making.

CUSTOMER VERSUS CONSUMER

A simple bifurcation yet extremely important for strategy build up. Consumers are the ones who finally use a product/service, while customers are the buyers of that product. A customer can be a consumer and vice versa. But for strategy teams especially marketing teams it is important to understand the customer and consumer separately. For example, baby diapers are bought by parents (customers) who are willing to pay higher price for higher quality, while the real consumers are the babies, who are more concerned about the comfort and easiness of the diaper. If babies do not accept the product i.e., if consumers aren't satisfied, it is difficult to retain the buyer i.e., customers as well.

Product/Services

- Products and services are closely linked and interrelated with the markets that the organisation wants to serve.
- It attempts to answer the general question: What business are we in and what should be done to win over competition in each product/ service we serve.

  Product stands for the combination of "goods-and-services" that the company offers to the target market.
- Strategies are needed for managing existing product over time, adding new ones and dropping failed products.

  Strategic decisions must also be made regarding branding, packaging and other product features such as warranties.
- For a new product, pricing strategies for entering a market need to be designed and for that matter at least three objectives must be kept in mind:
  - Have customer-centric approach while making a product.
  - Produce sufficient returns through a reasonable margin over cost.
  - Increasing market share.
- Products and services need heavy investment in reaching out to customers. Over the years, a number of marketing strategies have been evolved, which are given to handle marketing strategically and fight the competition in the market.

Social Marketing	It refers to the design, implementation, and control of programs seeking to increase the acceptability of a social ideas, cause, or practice among a target group to bring in a social change.
Augmented Marketing	This type of marketing includes additional customer services and benefits that a product can offer besides the core and actual product that is being offered.
Direct Marketing	Marketing through various advertising media that interact directly with consumers, generally calling for the consumer to make a direct response. Direct marketing includes catalogue selling, e-mail, telecomputing, electronic marketing, shopping, and TV shopping.

Relationship Marketing	The process of creating, maintaining, and enhancing strong, value-laden relationships with customers and other stakeholders. **E.g:-** Airlines offer special lounges at major airports for frequent flyers. Thus, providing special benefits to select customers to strengthen bonds. It can go a long way in building relationships.
Services Marketing	It is applying the concepts, tools, and techniques, of marketing to services. Services is any activity or benefit that one party can offer to another that is essentially intangible. This marketing requires different marketing strategies since it has peculiar characteristics of its own such as inseparability, variability etc.
Person Marketing	People can also be marketed. Person marketing consists of activities undertaken to create, maintain or change attitudes and behaviour towards particular person. For example, politicians, sports stars, film stars, etc. Le., market themselves to get votes, or to promote their careers.
Organization Marketing	It consists of activities undertaken to create, maintain, or change attitudes and behaviour of target audiences towards an organization. Both profit and non-profit organizations practice organization marketing.
Place Marketing	Place marketing involves activities undertaken to create, maintain, or change attitudes and behaviour towards particular places say, marketing of business sites, tourism marketing.
Enlightened Marketing	It is a marketing philosophy holding that a company's marketing should support the best long-run performance of the marketing system that is beyond the prevailing mindset, its five principles include customer-oriented marketing, innovative marketing, value marketing, sense-of-mission marketing, and societal marketing.
Differential Marketing	It is a market-coverage strategy in which a firm decides to target several market segments and designs separate offer for each. For example, Hindustan Unilever Limited has Lifebuoy, Lux and Rexona in popular segment and Dove and Pears in premium segment.
Synchro-marketing	When the demand for a product is irregular due to season, some parts of the day, or on hour basis, causing idle capacity or overworked capacities, synchro-marketing can be used to find ways to alter the pattern of demand through flexible pricing, promotion, and other incentives. **E.g:-** Products such as movie tickets can be sold at lower price over weekdays to generate demand.
Concentrated Marketing	It is a market-coverage strategy in which a firm goes after a large share of one or few sub-markets. It can also take the form of Niche marketing.
Demarketing	It includes marketing strategies to reduce demand temporarily or permanently. The aim is not to destroy demand, but only to reduce or shift it. This happens when there is overfull demand. **E.g:-** Buses are overloaded in the morning and evening, roads are busy for most of times, zoological parks are over-crowded on Saturdays, Sundays and holidays. Here demarketing can be applied to regulate demand.

Channels

- Channels are the distribution system by which an organisation distributes its product or provides its service. To understand the concept of channels let us see some examples of how the following companies distribute their products and services;
  - Lakme - sells its products via retail stores, intermediary
  - stores (like Nykaa, Westside, Reliance Trends), as well as online mode like amazon, flipkart, nykaa online and its own website.
  - Boat Headphones - only online via e-commerce platforms like flipkart and amazon
- There are typically three channels that should be considered: sales channel, product channel and service channel.

The Sales Channel	These are the intermediaries involved in selling the product through each channel and ultimately to the end user. The key question is: Who needs to sell to whom for your product to be sold to your end user?
The Product Channel	The product channel focuses on the series of intermediaries who physically handle the product on its path from its producer to the end user. This is true of Australia Post, who delivers and distributes many online purchases between the seller and purchaser when using eBay and other online stores.
The Service Channel	The service channel refers to the entities that provide necessary services to support the product, as it moves through the sales channel and after purchase by the end user. The service channel is an important consideration for products that are complex in terms of installation or customer assistance.

- Channel analysis is important when the business strategy is to scale up and expand beyond the current geographies and markets. When a business plans to grow to newer markets, they need to develop or leverage existing channels to get to new customers.
- **E.g:-** If a healthcare brand wants to reach out to elderly customers - they need to be more focused on offline mode of business where agents reach out physically to the elderly as most of their potential customers (i.e. the old aged) are not active on smartphones.

■ ROLE OF RESOURCES AND CAPABILITIES

Building Core Competency

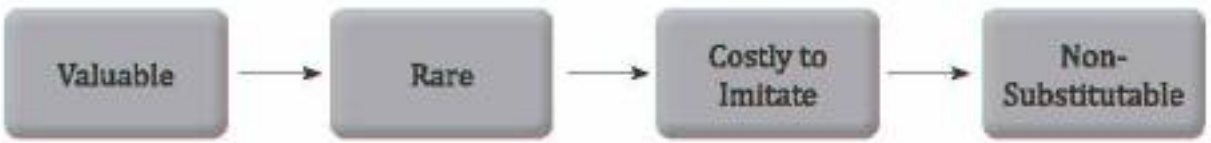
- **C.K. Prahalad and Gary Hamel** have advocated a concept of core competency, which is a widely used concept in management theories.
- They defined core competency as the collective learning in the organization, especially coordinating diverse production skills and integrating multiple streams of technologies.
- Competency is defined as a combination of skills and techniques rather than individual skill or separate technique.
- It is characteristic to have a combination of skills and techniques, which makes the whole organization utilize these several separate individual capabilities.
- Core competencies cannot be built on one capability or single technological know-how, instead, it has to be the integration of many resources.

- According to C.K. Prahalad and Gary Hamel, major core competencies are identified in **three areas** -
  - Competitor differentiation,
  - Customer value, and
  - Application to other markets

Competitor Differentiation	▫ The company can consider having a core competence if the competence is unique and it is difficult for competitors to imitate. ▫ Provide a company an edge compared to competitors. ▫ Company has to keep on improving these skills in order to sustain its competitive position. ▫ Competence does not necessarily have to exist within one company in order to define as core competence. ▫ **E.g:-** It is quite difficult to imitate patented innovation, like Tesla has been winning over competition in electric vehicles.
Customer Value	▫ When purchasing a product or service it has to deliver a fundamental benefit for the end customer in order to be a core competence. ▫ The essence is that the consumer should value the differentiation offered. Without it, the core competency does not make sense.
Application to Other Markets	▫ Core competence must be applicable to the whole organization; it cannot be only one particular skill or specified area of expertise. ▫ Although some special capability would be essential or crucial for the success of business activity, it will not be considered as core competence if it is not fundamental from the whole organization's point of view.
▫ If the three above-mentioned conditions are met, then the company can regard it competence as core competency. ▫ Core competencies are often visible in the form of organizational functions. ▫ A core competency for a firm is whatever it does best. ▫ Core competencies are created by superior integration of technological, physical and human resources. ▫ Core Competence-based diversification reduces risk and investment and increases the opportunities for transferring learning and best practice across business units.	

Criteria for Building a Core Competencies (CC)?

Four specific criteria of sustainable competitive advantage that firms can use to determine those capabilities that are core competencies.



Valuable	Valuable capabilities are the ones that allow the firm to exploit opportunities or avert the threats in its external environment. A firm created value for customers by effectively using capabilities to exploit opportunities. Finance companies build a valuable competence in financial services. In addition, to make such competencies as financial services highly successful require placing the right people in the right jobs. Human capital is important in creating value for customers.
Rare	Core competencies are very rare capabilities and very few of the competitors possess this. Capabilities possessed by many rivals are unlikely to be sources of competitive advantage for any one of them. Competitive advantage results only when firms develop and exploit valuable capabilities that differ from those shared with competitors.
Costly to Imitate	Costly to imitate means such capabilities that competing firms are unable to easily. **E.g:-** Intel has enjoyed a first-mover advantage more than once because of its rare fast R&D cycle time capability that brought SRAM and DRAM integrated circuit technology and brought microprocessors to market well ahead of the competitor. The product could be imitated in due course of time, but it was much more difficult to imitate the R&D cycle time capability.
Non-substitutable	Capabilities that do not have strategic equivalents are called non-substitutable capabilities. This final criterion for a capability to be a source of competitive advantage is that there must be no strategically equivalent valuable resources that are themselves either not rare or imitable. **For example**, Competitors are deeply aware about Apple's operating system's (iOS) successful model. However, to date, no competitor has been able to imitate Apple's capabilities. These are also protected through copyrights. To sum up, we can say that only when a capability is valuable, rare, costly to imitate, and non-substitutable, it is a core competence and a source of competitive advantage. Over a time, core competencies must be supported. Core competencies are a source of competitive advantage only when they allow the firm to create value by exploiting opportunities in its external environment.

Zero Customer Complaints!

Airtel has its marketing campaign that talks about - Zero Customer Complaints. This is about creating a core competency of great customer service.

Combining External and Internal Analysis (SWOT Analysis)

- SWOT analysis is the analysis of a business's strengths, weaknesses, opportunities and threats.
- The primary objective of a SWOT analysis is to help organizations develop a full awareness of all the factors (external as well as internal), involved in making a business decision.
- SWOT analysis shall be implemented before all company actions, whether it is exploring new initiatives, revamping internal policies, considering opportunities to grow or alter a plan midway. One shall also us SWOT analysis to discover recommendations and strategies, with a focus on leveraging strengths and opportunities to overcome weaknesses and threats.

- Since its creation, SWOT has been the most widely used tools for business owners to grow their companies. Sometimes it's wise to perform SWOT analysis just to check on the current landscape of your business to improve business operations as needed. The analysis can show areas where an organization is performing well, as well as areas that need improvement.

SWOT Analysis

	Helpful to achieve the objective	**Harmful** to achieve the objective
Internal origin (attributes to the organization)	S Strengths	W Weaknesses
External origin (attributes to the environment)	O Opportunities	T Threats

SWOT Analysis for Internal or External Environment?

SWOT stands for Strengths, Weaknesses, Opportunities and Threats. Internal analysis is more focused on understanding the existing structure and competencies of the business, thus highlighting the Strengths and Weaknesses, while External Analysis is about identifying and preparing for uncontrollable which can either be Opportunities or threats.

Therefore, SWOT Analysis is a tool which is used for both Internal and External Analysis.

Competitive Michael Porter's Generic Strategies

Why do some companies succeed while others fail?

Why did Hindustan Motors do so well for several decades?

How did Apple return from near obsolescence in the late 1990s and become the world leader and a dominant technology company of today?

In the Indian airline industry, how has Indigo Airlines managed to keep increasing its revenues and profits through both good times and bad, while rivals struggled?

- Strategic management involves development of competencies that managers can use to achieve better performance and a competitive advantage for their organization. Competitive advantage allows a firm to gain an edge over rivals when competing. It is a set of unique features of a company and its products that are perceived by the target market as significant and superior to the competition.
- ***"If you don't have a competitive advantage, don't compete"*- Jack Welch**

  The competitive advantage is the achieved advantage over rivals when a company's profitability is greater than the average profitability of firms in its industry. It is achieved when the firm successfully formulates and implements the value creation strategy and other firms are unable to duplicate it or find it too costly to imitate. Further, it can be said that a firm is successful in achieving competitive advantage only after other firm's efforts to duplicate or imitate it fails.

Sustainability of Competitive Advantage

The sustainability of competitive advantage and a firm's ability to earn profits from its competitive advantage depends upon **four major characteristics of resources and capabilities:**

Durability	The period over which a competitive advantage is sustained depends in part on the rate at which a firm's resources and capabilities deteriorate. The rate of product innovation is fast, product patents are quite likely to become obsolete. On the other hand, many consumers brand names have a highly durable appeal.
Transferability	Competitive advantage also depends on ability of rivals to gain access to necessary resources and capabilities easier it is to transfer resources and capabilities between companies, the less sustainable will be the competitive advantage

Imitability	If resources and capabilities cannot be purchased by a would-be imitator, then they must be built from scratch. How easily and quickly can the competitors build the resources and capabilities on which a firm's competitive advantage is based? This is the true test of imitability.
Appropriability	Appropriability refers to the ability of the firm's owners to appropriate the returns on its resource base. Even where resources and capabilities are capable of offering sustainable advantage, there is an issue as to who receives the returns on these resources.

MICHAEL PORTER'S GENERIC STRATEGIES

- According to **Porter**, strategies allow organizations to gain competitive advantage from **three different bases cost leadership, differentiation, and focus.** Porter called these base generic strategies.
- These strategies have been termed generic, because they can be pursued by any type or size of business firm and even by not-for-profit organisations.

Cost leadership emphasizes on producing standardized products at a very low per-unit cost for consumers who are price-sensitive	Differentiation is a strategy aimed at producing products and services considered unique industry-wide and directed at consumers who are relatively price-insensitive.	Focus means producing products and services that fulfil the needs of small groups of consumers with very specific taste.

- Porter stresses the need for strategists to perform cost-benefit analysis to evaluate **"sharing opportunities"** among the firm's existing and potential business units.
- In addition to prompting sharing, Porter stresses the need for firms to **"transfer"** skills and expertise among autonomous business units effectively in order to gain competitive advantage.

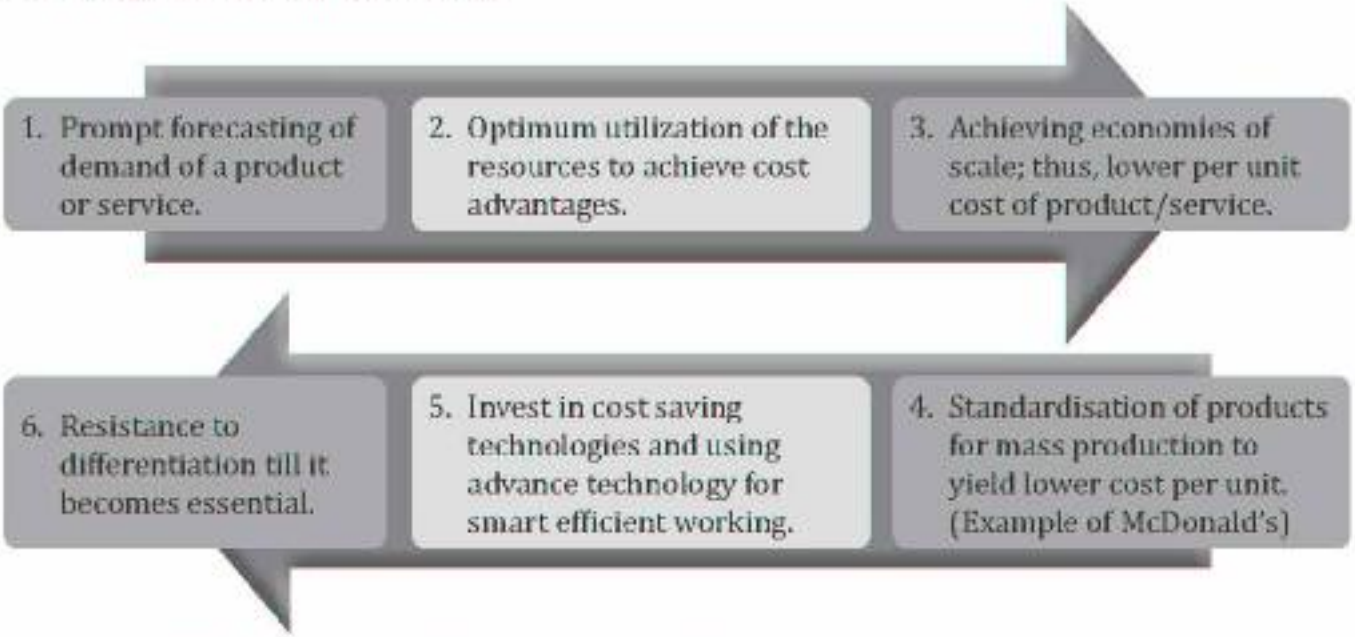
Cost Leadership Strategy

- It is a **low-cost competitive strategy** that aims at broad mass market.
- It requires vigorous pursuit of cost reduction in the areas of
  - Procurement,
  - Production,
  - Storage & distribution of product or service and
  - Also, economies in overhead costs.
- Because of its lower costs, the cost leader is able to charge a lower price for its products than most of its competitors and still earn satisfactory profits.
- **E.g:-** McDonald's fast-food restaurants have successfully followed low-cost leadership strategy. Decathlon Group's mega sports stores have been following low-cost leadership strategy to gain international recognition and also beat competition.
- A primary reason for pursuing forward, backward, and horizontal integration strategies is to **gain cost leadership benefits.**
- Generally, cost leadership must be pursued in conjunction with differentiation.
- Internal strategy of sharing resources to build a competitive advantage is called synergy benefit.
- Striving to be **a low-cost producer in an industry can especially be effective,**
  - when the market is composed of many price-sensitive buyers and
  - when there are few ways to achieve product differentiation.
- When buyers do not care much about differences from brand to brand, or when there are a large number of buyers with significant bargaining power.
- Some **risks of pursuing cost leadership are;**

that competitors may imitate the strategy, therefore driving overall industry profits down;

that technological breakthroughs in the industry may make the strategy ineffective; or that buyer interests may swing to other differentiating features besides price.

Achieving Cost Leadership Strategy



Advantages & Disadvantages of Cost Leadership Strategy

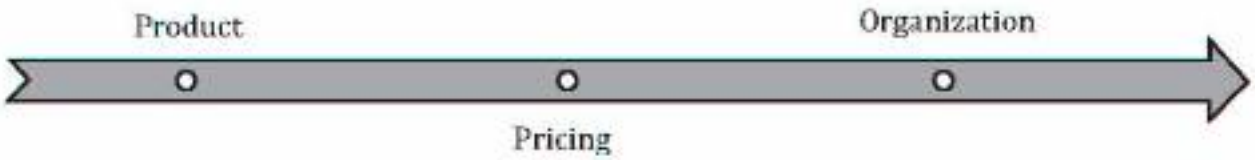
Advantages	Disadvantages
1. ***Rivalry*** – Competitors are likely to avoid a price war, since the low-cost firm will continue to earn profits even after competitors compete away their profits. 2. ***Buyers*** – Powerful buyers/customers would not be able to exploit the cost leader firm and will continue to buy its product. 3. ***Suppliers*** – Cost leaders are able to absorb greater price increases from suppliers before they need to raise prices for customers. 4. ***Entrants*** – Low-cost leaders create barriers to market entry through their continuous focus on efficiency and cost reduction. 5. ***Substitutes*** – Low-cost leaders are more likely to lower the costs to induce existing customers to stay with their products, invest in developing substitutes, and even purchase patents	1. Cost advantage may not last long as competitors may imitate cost reduction techniques. 2. Cost leadership can succeed only if the firm can achieve higher sales volume. 3. Cost leaders tend to keep their costs low by minimizing cost of advertising, market research, and research and development, but this approach can prove to be expensive in the long run. 4. Technological advancement areas a great threat to cost leaders.

Differentiation Strategy

- This strategy is aimed at broad mass market and involves the creation of a product or service that is perceived by the customers as unique.
- **E.g:-** Domino's Pizza has been offering home delivery within 30 minutes or the order is free, is a unique selling point that differentiates if from its rivals.
- Differentiation does not guarantee competitive advantage, especially if standard products sufficiently meet customer needs or if rapid imitation by competitors is possible.
- Successful differentiation can mean greater product flexibility, greater compatibility, lower costs, improved service, less maintenance, greater convenience, or more features.
- Differentiation strategy should be pursued only after a careful study of buyers' needs and preferences to determine the feasibility of incorporating one or more differentiating features into a unique product that features the customers' desired attributes.
- A risk associated with pursuing a differentiation strategy is that the unique product may not be valued high enough by customers to justify the higher price.

Basis of Differentiation

There are several bases of differentiation, major being:



Product	Innovative products that meet customer needs can be an area where a company has an advantage over competitors. However, the pursuit of a new product offering can be costly-research and development, as well as production and marketing costs can all add to the cost of production and distribution. **E.g:-** Apple iPhone, has invested huge amounts of money in R&D, and the customers' value that. They want to be among the first ones to try the new offerings from the company.
Pricing	Companies that differentiate based on product price can either determine to offer the lowest price or can attempt to establish superiority through higher prices. **E.g:-** Apple iPhone dominates the smart phone segment by charging higher prices for its products.
Organisation	Organisational differentiation is yet another form of differentiation. Maximizing the power of a brand or using the specific advantages that an organization possesses can be instrumental to a company's success. Location advantage, name recognition and customer loyalty can all provide additional ways for a company differentiate itself from the competition. For example, Apple has been building custom loyalty since years and has a fanbase of consumers that are called "Apple Fanboys/Fangirls".

Achieving Differentiation Strategy

Advantages & Disadvantage of Differentiation Strategy

Advantages	Disadvantages
1. ***Rivalry*** - Brand loyalty acts as a safeguard against competitors. It means that customers will be less sensitive to price increases, as long as the firm can satisfy the needs of its customers. 2. ***Buyers*** - They do not negotiate for price as they get special features and they have fewer options in the market. 3. ***Suppliers*** - Because differentiators charge a premium price, they can afford to absorb higher costs of supplies as the customers are willing to pay extra too. 4. ***Entrants*** - Innovative features are an expensive offer. So, new entrants generally, avoid these features because it is tough for them to provide the same product with special features at a comparable price. 5. ***Substitutes*** - Substitute products can't replace differentiated products which have high brand value and enjoy customer loyalty.	1. In the long term, uniqueness is difficult to sustain 2. Charging too high a price for differentiated features may cause the customer to switch-off to another alternative. As we see a shift of iPhone users to other android flagship smart phones. 3. Differentiation fails to work if its basis is something that is not valued by the customers. Home delivery of packed snacks in 30 minutes would not even be a differentiator as the consumer wouldn't value such an offer.

Focus Strategies

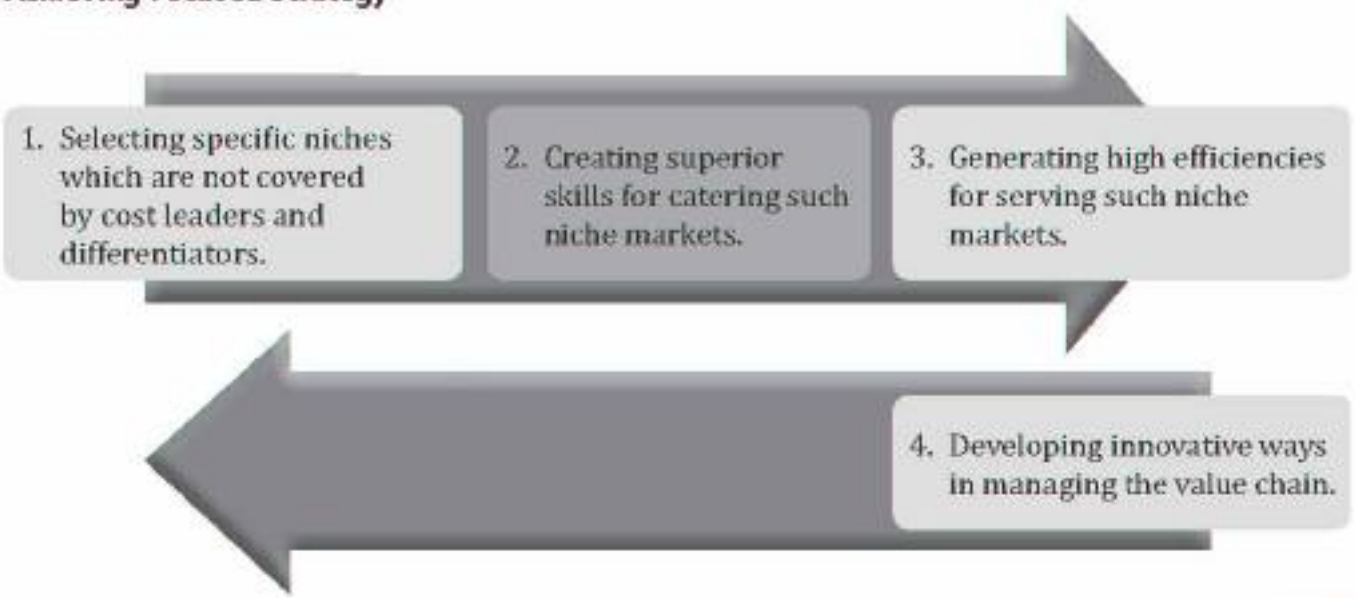
- A successful focus strategy depends on an industry segment that is of sufficient size, has good growth potential, and is not crucial to the success of other major competitors.

- Focus strategies are most effective when consumers have distinctive preferences or requirements, and when the rival firms are not attempting to specialize in the same target segment.
- Risks of pursuing a focus strategy include the possibility of numerous competitors recognizing the successful focus strategy and imitating it or that consumer preferences may drift towards the product attributes desired by the market as a whole.

- An organization using a focus strategy may concentrate on a particular group of customers, geographic markets, or on particular product-line segments in order to serve a well-defined but narrow market better than competitors who serve a broader market. **E.g:-** Ferrari sports cars.

Focused cost leadership	Focused differentiation
A focused cost leadership strategy requires competing based on price to target a narrow market. A firm that follows this strategy does not necessarily charge the lowest prices in the industry. Instead, it charges low prices relative to other firms that compete within the target market. Firms that compete based on price and target a narrow market follow a focused cost leadership strategy.	A focused differentiation strategy requires offering unique features that fulfil the demands of a narrow market. Similar to focused low- cost strategy, narrow markets are defined in different ways in different settings. Some firms using a focused differentiation strategy concentrate their efforts on a particular sales channel, such as selling over the internet only. Others target particular demographic groups. Firms that compete based on uniqueness and target a narrow market are following a focused differentiations strategy. **E.g:-** Rolls-Royce sells limited number of high-end, custom-built cars.

Achieving Focused Strategy



Advantages & Disadvantages of Focused Strategy

Advantages	Disadvantages
1. Premium prices can be charged by the organisations for their focused product/ services. 2. Due to the tremendous expertise in the goods and services that the organisations following focus strategy offer, rivals and new entrants may find it difficult to compete.	1. The firms lacking in distinctive competencies may not be able to pursue focus strategy. 2. Due to the limited demand of product/services, costs are high, which can cause problems 3. In the long run, the niche could disappear or be taken over by larger competitors by acquiring the same distinctive competencies.

Best-Cost Provider Strategy

- The new model of **best cost provider strategy** is a further development of above three generic strategies. It is directed towards giving customers more value for the money by emphasizing on both, low cost and upscale differences.
- The objective is to keep costs and prices lower than those of other sellers of "**comparable products**".

- Best-cost provider strategy involves providing customers more value for the money by emphasizing on lower cost and better-quality differences.
- It can be done through:
  (*a*) Offering products at lower price than what is being offered by rivals for products with comparable quality and features

  Or

  (*b*) Charging similar price as by the rivals for products with much higher quality and better features.
- **E.g:-** Android flagship phones from OnePlus, Xiaomi, Oppo, Vivo, etc, are all rooting for giving better quality at lowest prices to the customers. They are following the best-cost provider strategy to penetrate market.

TEST YOUR KNOWLEDGE – MCQS

1. **The goal of SWOT analysis is to ___ the organization's opportunities and strengths while ____ its threats and ____ its weakness.**
   (*a*) avoid; neutralizing; correcting
   (*b*) exploit; neutralizing; correcting
   (*c*) avoid; capitalizing; neutralizing
   (*d*) exploit; avoiding; ignoring

2. **SWOT analysis is an evaluation of the organization's ____ strengths and weaknesses and its ____ opportunities and threats.**
   (*a*) external; internal
   (*b*) internal; internal
   (*c*) external; external
   (*d*) internal; external

3. **External opportunities and threats are usually:**
   (*a*) the minor cause of organizational demise or success
   (*b*) lease important for CEOs and the board of directors
   (*c*) not as important as internal strengths and weaknesses
   (*d*) largely uncontrollable activities outside the organization

4. **The sustainability of competitive advantage and a firm's ability to earn profits from its competitive advantage depends upon:**
   (*a*) Durability, reliability, transferability, approximately
   (*b*) Appropriability, durability, transferability, imitability
   (*c*) Transferability, imitability, reliability, approximately
   (*d*) Imitability, durability, reliability, appropriability

5. **Internal ____ are activities in an organization that are performed especially well.**
   (*a*) Opportunities
   (*b*) Competencies
   (*c*) Strengths
   (*d*) Management

6. **'Strategic group mapping' helps in-**
   (*a*) Identifying the strongest rival companies
   (*b*) Identifying weakest rival companies
   (*c*) Identifying weakest and strongest rival companies
   (*d*) None of the above

7. **In Michael Porter's generic strategy ____ emphasizes producing standardized products at a very low per unit-cost for consumers who are price sensitive.**
   (*a*) Cheap leadership
   (*b*) Inferior product leadership
   (*c*) Cost leadership
   (*d*) Cost benefits

8. **Differentiation strategy can be achieved by following measures:**

   (i) Match products with tastes and preferences of customers

   (ii) Elevate the performance of the product

   (iii) Rapid product innovation

   Which of the above is true:

   (*a*) (i) and (ii) (*b*) (i) and (iii)

   (*c*) (ii) and (iii) (*d*) (i), (ii) and (iii)

9. **What are the three different bases given by Michael porter's Generic Strategies to gain competitive advantage?**

   (*a*) differentiation, integration and compensation

   (*b*) integration, focus and differentiation

   (*c*) compensation, integration and focus

   (*d*) cost leadership, differentiation and focus

10. **A firm successfully implementing a differentiation strategy would expect:**

    (*a*) customers to be sensitive to price increases

    (*b*) to charge premium prices

    (*c*) customer to perceive the product as standard

    (*d*) to automatically have high levels of power over suppliers

ANSWER KEY

1.	(b)	**2.**	(d)	**3.**	(d)	**4.**	(b)	**5.**	(c)	**6.**	(c)	**7.**	(d)	**8.**	(d)
9.	(d)	**10.**	(b)												

TEST YOUR KNOWLEDGE – CASE STUDIES

1. **Rohit Sodhi runs a charitable organisation for promotion of sports in the country. His organisation conducts regular free training camps for youths interested in playing cricket, football, hockey, badminton and so on. Many of his trainees have reached national level contests. Rohit notices that with the success of IPL (Cricket) tournament there is an increasing trend to extend similar format in other sports as well. He wishes to know how the development is going help sports and to which industries it will offer opportunities and threats. (SM)**

Ans. With the success of IPL, league matches are taking place in other sports as well. These are held in grandeur manner between several teams. For example, league matches in magnificent manner now take place in football, kabaddi and hocky in India. These events are profit and entertainment driven. These are going to help sports in India by generating interest in sports, making them more popular, increasing quality of competition and bringing money into sports.

A number of entities and processes are involved in these events from various industries offering opportunities and threat to them. An opportunity is a favourable condition in the organisation's environment which enables it to strengthen its position. On the other hand, a threat is a unfavourable condition in the organisation's environment which causes a risk for, or damage to, the organisation's position. An opportunity is also a threat in case internal weaknesses do not allow organization to take their advantage in a manner rival can. It will offer opportunity and threats to the following:

Opportunities

- Stadium
- Manufacture of sports goods
- Media industry – Sport channels/television, advertisers
- Hotel industry linking events with their offerings

Threats

- Entertainment industry engaged in TV serials, cinema theatres, entertainment theme parks as competitors will be fighting for the same viewers/target customers.
- Event management organisation engage in non-sports events.

2. Mr. Banerjee is head of marketing department of a manufacturing company. His company is in direct competition with thirteen companies at national level. He wishes to study the market positions of rival companies by grouping them into like positions.

Name the tool that may be used by Mr. Banerjee? Explain the procedure that may be used to implement the technique. (SM)

Ans. A tool to study the market positions of rival companies by grouping them into like positions is strategic group mapping. Grouping competitors is useful when there are many competitors such that it is not practical to examine each one in-depth. In the given scenario there are thirteen competitors. A strategic group consists of those rival firms which have similar competitive approaches and positions in the market.

The procedure for constructing a strategic group map and deciding which firm belong in which strategic group is as follows:

- Identify the competitive characteristics that differentiate firms in the industry typical variables that are price/quality range (high, medium, low); geographic coverage (local, regional, national, global); degree of verticle integration (none, partial, full); product-line breadth (wide, narrow); use of distribution channels (one, some, all); and degree of service offered (no frills, limited, full).
- Plot the firms on a two-variable map using pairs of these differentiating characteristics.
- Assign firms that fall in about the same strategy space to the same strategic group.
- Draw circles around each strategic group making the circles proportional to the size of the group's respective share of total industry sales revenues.

3. Mohan has joined as the new CEO of XYZ Corporation and aims to make it a dominant technology company in the next five years. He aims to develop competencies for managers for achieving better performance and a competitive advantage for XYZ Corporation. Mohan is well aware of the importance of resources and capabilities in generating competitive advantage. Discuss the four major characteristics of resources and capabilities required by XYZ Corporation to sustain the competitive advantage and its ability to earn profits from it. (SM, Jan 2021, May 2023)

Ans. XYZ Corporation is aiming to transform into a dominant technology company under the leadership of Mohan, the new CEO. He aims to develop competencies for managers for achieving better performance and a competitive advantage for the corporation. Mohan is also well aware of the importance of resources and capabilities in generating and sustaining the competitive advantage. Therefore, he must focus on characteristics of resources and capabilities of the corporation.

The sustainability of competitive advantage and a firm's ability to earn profits from it depends, to a great extent, upon four major characteristics of resources and capabilities which are as follows:

- **Durability:** The period over which a competitive advantage is sustained depends in part on the rate at which the firm's resources and capabilities deteriorate. In industries where the rate of product innovation is fast, product patents are quite likely to become obsolete. Similarly, capabilities which are the result of the management expertise of the CEO are also vulnerable to his or her retirement or departure. On the other hand, many consumer brand names have a highly durable appeal.
- **Transferability:** Even if the resources and capabilities on which a competitive advantage is based are durable, it is likely to be eroded by competition from rivals. The ability of rivals to attack positions of competitive advantage relies on their gaining access to the necessary resources and capabilities. The easier it is to transfer resources and capabilities between companies, the less sustainable will be the competitive advantage which is based on them.
- **Imitability:** If resources and capabilities cannot be purchased by a would-be imitator, then they must be built from scratch. How easily and quickly can the competitors build the resources and capabilities on which a firm's competitive advantage is based? This is the true test of imitability. Where capabilities require networks of organizational routines, whose effectiveness depends on the corporate culture, imitation is difficult.
- **Appropriability:** Appropriability refers to the ability of the firm's owners to appropriate the returns on its resource base. Even where resources and capabilities are capable of offering sustainable advantage, there is an issue as to who receives the returns on these resources.

4. Airlines industry in India is highly competitive with several players. Businesses face severe competition and aggressively market themselves with each other. Luxury jet is a private Delhi based company with a fleet size of 9 small aircrafts with seating capacity ranging between 6 seats to 9 seats. These aircrafts are chartered by big business houses and high net worth individuals for their personalised use. With customised tourism packages their aircrafts are also often hired by foreigners. Identify and explain the Michael Porter's Generic Strategy followed by luxury Jet. (SM)

Ans. The Airlines industry faces stiff competition. However, Luxury Jet has attempted to create a niche market by adopting focused differentiation strategy. A focused differentiation strategy requires offering unique features that fulfil the demands of a narrow market.

Luxury Jet compete in the market based on uniqueness and target a narrow market which provides business houses, high net worth individuals to maintain strict schedules. The option of charter flights provided several advantages including flexibility, privacy, luxury and many a times cost saving. Apart from conveniences, the facility will provide time flexibility. Travelling by private jet is the most comfortable, safe and secure way of flying your company's senior business personnel.

Chartered services in airlines can have both business and private use. Personalized tourism packages can be provided to those who can afford it.

5. Gennex is a company that designs, manufactures and sells computer hardware and software. Gennex is well known for its innovative product that has helped the company to have advantage over its competitors. It also spends on research and development and concerned with innovative software. Often the unique features of their product, that are not available with their competitors helps them to gain competitive advantage. Gennex using the strategy is consistently gaining its position in the industry over its competitors.

Identify and explain the Porter's generic strategy which Gennex has opted to gain the competitive advantage. (SM)

Ans. According to Porter, strategies allow organizations to gain competitive advantage from three different bases; cost leadership, differentiation, and focus, Porter called these base generic strategies.

Gennex has opted differentiation strategy. Its products are designed and produced to give the customer value and quality. They are unique and serve specific customer needs that are not met by other companies in the industry. Highly differentiated and unique hardware and software enables Gennex to charge premium prices for its products hence making higher profits and maintain its competitive position in the market.

Differentiation strategy is aimed at broad mass market and involves the creation of a product or service that is perceived by the customers as unique. The uniqueness can be associated with product design, brand image, features, technology, dealer network or customer service.

6. **Sohan and Ramesh are two friends who are partners in their business of making biscuits. Sohan believe in making profits through selling more volume of products. Hence, he believes in charging lesser price to the customers. Ramesh, however, of the opinion that high prices should be charged to create an image of exclusivity and for this, he proposes that the product to undergo some change. Analyse the nature of generic strategy used by Sohan and Ramesh. (SM)**

Ans. Considering the generic strategies of Porter there are three different bases: cost leadership, differentiation and focus. Sohan and Ramesh are contemplating pricing for their product.

Sohan is trying to have a low price and high volume is thereby trying for cost leadership. Cost leadership emphasized producing standardised products at a very low per unit cost for consumers who are price sensitive.

Ramesh desires to create perceived value for the product and charge higher prices. He is trying to adopt differentiation. Differentiation is aimed at producing products and services considered unique industry wide and directed at consumers who are relatively price insensitive.

7. **Infant care is a successful store chain that caters products for expectant mothers and new moms. They offer everything from nursing classes to strollers, toys, infant clothes, diapers and baby furniture. Due to a on-stop shop for infants, they are charging a premium for its products. Identify and explain how the strategy adopted by infant care. (SM)**

Ans. Infant care is option for differentiation strategy. A one-stop is a benefit for this type of customers, seeking convenience in a time. Infant care is catering the product only related to an infant that is perceived by the customers as unique. Because of differentiation, the Infant care is charging a premium for its products.

8. **A century-old footwear company "Mota Shoes" had an image of being the footwear choice for formal occasions. In an attempt to reinvent its brand, it ties up with a foreign footwear giant "Buffrine" to manufacture and sell its Hideseek brand in the country. Putting his best foot forward, it launched extra soft, casual and relaxed footwear for young. Aiming at a brand and image makeover the "Mota Shoes" decided to price the Hide seek products at premium.**

   What kind of Michael porter business level strategy is being used by "Mota shoe company"? State its advantages. (SM)

Ans. Mota shoes is trying to use differentiation. This strategy is aimed at broad mass market and involves the creation of a product or service that is perceived by the customers as unique. The uniqueness can be associated with product design, brand image, features, technology, dealer network or customer service, because of differentiation, the business can charge a premium for its product.

A differentiation strategy has definite advantages as it may help to remain profitable even with rivalry, new entrants, suppliers' power, substitute products, and buyers' power.

- **Rivalry**: Brand loyalty acts as a safeguard against competitors. It means that customers will be less sensitive to price increases, as long as the firm can satisfy the needs of its customers.
- **Buyers:** They do not negotiate for price as they get special features and also, they have fewer options in the market.
- **Suppliers:** Because differentiators charge a premium price, they can afford to absorb higher costs of supplies and customers are willing to pay extra too.
- **New entrants:** Innovative features are expensive to copy. So, new entrants generally avoid these features because it is tough for them to provide the same product with special features at a comparable price.
- **Substitutes:** Substitute products can't replace differentiated products which have high brand value and enjoy customer loyalty.

9. Rohit Patel is having a small chemist shop in the central part of Ahmedabad. What king of competencies Rohit can build to gain competitive advantage over online medicine sellers? (SM)

Ans. Capabilities that are valuable, rare, costly to imitate, and non-substitutable are core competencies. A small chemist shop has a local presence and functions within a limited geographical area. Still, it can build its own competencies to gain competitive advantage. Rohit Patel can build competencies in the areas of:

(*a*) Developing personal and cordial relations with the customers.

(*b*) Providing home delivery with no additional cost

(*c*) Developing a system of speedy delivery that can be difficult to match by online sellers. Being in central part of city, he can create a network to supply at wider locations in the city.

(*d*) Having extended working hours for convenience of buyers.

(*e*) Providing easy credit or a system of monthly payments to the patients consuming regular medicines.

10. 'Value for money' is a leading retail chain, on account of its ability to operate its business at low costs. The retail chain aims to further strengthen its top position in the retail industry. Marshal, the ECO of the retail chain is of the view that to achieve the goals they should focus on lowering the costs of procurement of products.

Highlight and explain the core competence of the 'Value for Money' retail chain. (SM)

Ans. A core competence is a unique strength of an organization which may not be shared by others. Core competencies are those capabilities that are critical to a business achieving competitive advantage. In order to qualify as a core competence, the competency should differentiate the business from any other similar businesses. A core competency for a firm is whatever it does is highly beneficial to the organisation.

'Value for Money' is the leader on account of its ability to keep costs low. The cost advantage that 'Value for Money' has created for itself has allowed the retailer to price goods lower than competitors. The core competency in this case is derived from the company's ability to generate largest volume, allowing the company to remain profitable with low profit margin.

TEST YOUR KNOWLEDGE – DESCRIPTIVE QUESTIONS

1. Explain competitive advantage. **(May 2018)**

Ans. Competitive advantage is the position of a firm to maintain and sustain a favorable market position when compared to the competitors. Competitive advantage is the ability to offer buyers something different and thereby providing more value for the money. It is the result of a successful strategy. This position gets translated into higher market share, higher profits when compared to those that are obtained by competitors operating in the same industry. Competitive advantage may also be in the form of low-cost relationships in the industry or being unique in the industry along dimensions that are widely valued by the customers in particular and the society at large.

2. Write a short note on SWOT analysis. **(May 2018)**

Ans. SWOT analysis is a tool used by organizations for evolving strategic options for the future. The term SWOT refers to the analysis of strengths, weaknesses, opportunities and threats facing a company. Strengths and weaknesses are identified in the internal environment, whereas opportunities and threats are located in the external environment.

(a) **Strength:** Strength is an inherent capability of the organization which it can use to gain strategic advantage over its competitor.

(b) **Weakness:** A weakness is an inherent limitation or constraint of the organization which creates strategic disadvantage to it.

(c) **Opportunity:** An opportunity is a favorable condition in the external environment which enables it to strengthen its position.

(d) **Threat:** An unfavorable condition in the external environment which causes a risk for, or damage to the organization's position.

The major purpose of SWOT analysis is to enable the management to create a firm - specific business model that will best align, fit or match an organizational resources and capabilities to the demands for the environment in which it operates.

3. Core competencies provide an edge to a business over its competitors. Discuss. Also, briefly state the three areas in which major core competencies are identified. **(Jan 2021)**

Ans. A core competence is a unique strength of an organization which may not be shared by others. Core competencies are those capabilities that are critical to a business achieving competitive advantage. In order to qualify as a core competence, the competency should differentiate the business from any other similar businesses.

An organization's combination of technological and managerial know-how, wisdom and experience are a complex set of capabilities and resources that can lead to a competitive advantage compared to a competitor.

According to C.K. Prahalad and Gary Hamel, major core competencies are identified in following three areas:

(a) **Competitor differentiation:** The Company can consider having a core competence if the competence is unique and it is difficult for competitors to imitate. This can provide a company an edge compared to competitors. It allows the company to provide better products and services to market with no fear that competitors can copy it.

(b) **Customer value:** When purchasing a product or service it has to deliver a fundamental benefit for the end customer in order to be a core competence. It will include all the skills needed to provide fundamental benefits. The service or the product has to have a real impact on the customer as the reason to choose to purchase them. If a customer has chosen the company

without this impact, then competence is not a core competence and it will not affect the company's market position.

(c) **Application of competencies to other markets:** Core competence must be applicable to the whole organization; it cannot be only one particular skill or specified area of expertise. Therefore, although some special capability would be essential or crucial for the success of business activity, it will not be considered as core competence if it is not fundamental from the whole organization's point of view. Thus, a core competence is a unique set of skills and expertise, which will be used throughout the organization to open up potential markets to be exploited.

4. Capabilities that are valuable, rare, costly to imitate, and non-substitutable are core competencies. Explain these four specific criteria of sustainable competitive advantage that firms can use to determine those capabilities that are core competencies. (May 2022)

Ans. Four specific criteria of sustainable competitive advantage that firms can use to determine those capabilities that are core competencies. Capabilities that are valuable, rare, costly to imitate, and non-substitutable are core competencies

(a) **Valuable:** Valuable capabilities are the ones that allow the firm to exploit opportunities or avert the threats in its external environment. A firm created value for customers by effectively using capabilities to exploit opportunities. Finance companies build a valuable competence in financial services. In addition, to make such competencies as financial services highly successful requires placing the right people in the right jobs. Human capital is important in creating value for customers.

(b) **Rare:** Core competencies are very rare capabilities and very few of the competitors possess this. Capabilities possessed by many rivals are unlikely to be sources of competitive advantage for any one of them. Competitive advantage results only when firms develop and exploit valuable capabilities that differ from those shared with competitors.

(c) **Costly to imitate:** Costly to imitate means such capabilities that competing firms are unable to develop easily.

Eg:- Intel has enjoyed a first-mover advantage more than once because of its rare fast R&D cycle time capability that brought SRAM and DRAM integrated circuit technology, and brought microprocessors to market well ahead of the competitor. The product could be imitated in due course of time, but it was much more difficult to imitate the R&D cycle time capability.

(d) **Non-substitutable:** Capabilities that do not have strategic equivalents are called non substitutable capabilities. This final criterion for a capability to be a source of competitive advantage is that there must be no strategically equivalent valuable resources that are themselves either not rare or imitable.

5. Strategy formulation and strategy implementation are intertwined and linked with each other." Elucidate this statement with suitable arguments. (May 2022)

Ans. The strategy formulation and strategy implementation are intertwined and linked with each other. Two types of linkages exist between these two phases of strategic management. The forward linkages deal with the impact of strategy formulation on strategy implementation while the backward linkages are concerned with the impact in the opposite direction.

Forward Linkages: The different elements in strategy formulation starting with objective setting through environmental and organizational appraisal, strategic alternatives and choice to the strategic plan determine the course that an organization adopts for itself. With the formulation of new strategies, or reformulation of existing strategies, many changes have to be affected within the organization. For instance, the organizational structure has to undergo a change in the light of the requirements of the modified or new strategy. The style of leadership has to be adapted to the needs of the modified or new strategies. In this way, the formulation of strategies has forward linkages with their implementation.

Backward Linkages: Just as implementation is determined by the formulation of strategies, the formulation process is also affected by factors related with implementation. While dealing with strategic choice, remember that past strategic actions also determine the choice of strategy. Organizations tend to adopt those strategies which can be implemented with the help of the present structure of resources combined with some additional efforts. Such incremental changes, over a period of time, take the organization from where it is to where it wishes to be. It is to be noted that while strategy formulation is primarily an entrepreneurial activity, based on strategic decision- making, the implementation of strategy is mainly an administrative task based on strategic as well as operational decision-making.

6. What is cost leadership strategy? Under what circumstances an organization can gain competitive advantages from cost leadership strategy? Is there any risk in pursuing cost leadership strategy? (Nov 2022)

Ans. Cost leadership strategy emphasizes producing standardized products at a very low per-unit cost for consumers who are price-sensitive. It frequently results from productivity increases and aggressive pursuit of cost reduction throughout the development, production, marketing, and distribution processes. It allows a firm to earn higher profits than its competitors.

The circumstances in which an organization can gain competitive advantages from cost leadership strategy are:

- When the market is composed of many price-sensitive buyers.
- When there are few ways to achieve product differentiation.
- When buyers do not care much about differences from brand to brand.
- When there are a large number of buyers with significant bargaining power.

The basic idea is to underprice competitors and thereby gain market share driving some of the competitors out of the market.

Some risks of pursuing cost leadership are:

- That competitors may imitate the strategy, therefore driving overall industry profits down
- That technological breakthroughs in the industry may make the strategy ineffective; or that buyer interests may swing to other differentiating features besides price.

7. A manufacturing company is in direct competition with fifteen companies at national level. Head of the marketing department of this company wishes to study the market position of rival companies by grouping them into similar positions. Name the tool that may be used by him/her. Explain the procedure that may be used to implement the techniques. (July 2021)

Ans. A tool to identify the market positions of rival companies by grouping them into like positions is strategic group mapping. A strategic group consists of those rival firms which have similar competitive approaches and positions in the market.

The procedure for constructing a strategic group map and deciding which firms belong in which strategic group are as follows:

(*a*) Identify the competitive characteristics that differentiate firms in the industry typical variables that are price/quality range (high, medium, low); geographic coverage (local, regional, national, global); degree of vertical integration (none, partial, full); product-line breadth (wide, narrow); use of distribution channels (one, some, all); and degree of service offered (no-frills, limited, full).

(*b*) Plot the firms on a two-variable map using pairs of these differentiating characteristics.

(*c*) Assign firms that fall in about the same strategy space to the same strategic group.

(*d*) Draw circles around each strategic group making the circles proportional to the size of the group's respective share of total industry sales revenues.

16 CHAPTER

Strategic Choices

THEORY

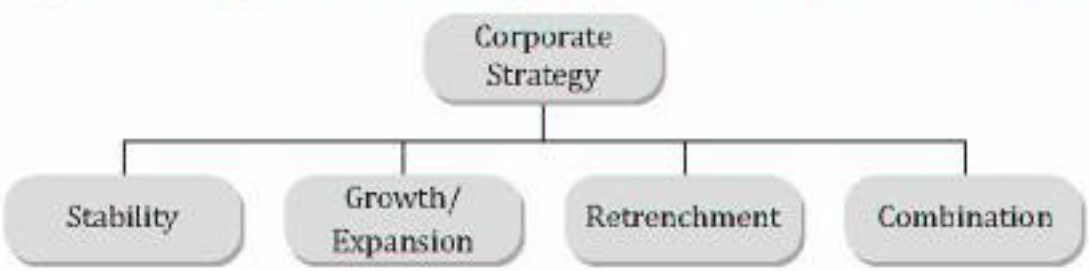
INTRODUCTION

Strategy formulation **involves** well thought of decision making and cover actions dealing with the objective of the firm, shareholders and allocation of resources and coordination of strategies of various business units for optimal performance.

STRATEGIC CHOICES

- Businesses follow different types of strategies to enter the market, to stay relevant and grow in the market.
- **William F Glueck and Lawrence R. Jauch** discussed four generic strategies including stability, growth, retrenchment and combination.
- These strategies have also been called Grand Strategies/Directional Strategies by many other authors.
- **Michael E. Porter** suggested competitive strategies including Cost Leadership, Differentiation, Focus Cost Leadership and Focus Differentiation which could be used by the corporates for their different business units.

- Functional Strategies are meant for strategic management of distinct functions such as Marketing, Financial, Human Resource, Logistics, Production etc.
- Business conglomerates having multiple product folios formulate strategies at different levels, viz.,
  - Corporate,
  - Business Unit and
  - Functional.
- **The corporate strategies a firm can adopt may be classified into four broad categories:**



The basic features of the corporate strategies are as follows:

Stability	The firm stays with its current businesses and product markets; maintains the existing level of effort; and is satisfied with incremental growth.
Expansion	Here, the firm seeks significant growth-maybe within the current businesses; maybe by entering new business that are related to existing businesses; or by entering new businesses that are unrelated to existing businesses.
Retrenchment	The firm retrenches some of the activities in some business (es), or) drops the business as such through sell-out or liquidation
Combination	The firm combines the above strategic alternatives in some permutation/ combination so as to suit the specific requirements of the firm.

Stability Strategy

- **A stability strategy is pursued by a firm when:**
  - It continues to serve in the same or similar markets and deals in same or similar products and services.
  - This strategy is typical for those firms whose product have reached the maturity stage of product life cycle or those who have a sufficient market share but need to retain that.
- Hence, stability strategy should not be confused with **'do nothing'** strategy. Small organizations may also follow stability strategy to consolidate their market position and prepare for the launch of growth strategies.

Characteristics of Stability Strategy

A firm opting for stability strategy stays with the same business, same product-market posture and functions, maintaining same level of effort as at present.

The endeavour is to enhance functional efficiencies in an incremental way. through better deployment and utilization of resources. The assessment of the firm is that the desired income and profits would be forthcoming through such incremental improvements in functional efficiencies.

Stability strategy does not involve a redefinition of the business of the corporation

It is a safe strategy that maintains status quo.

It does not warrant much of fresh investments.

While opting for this strategy, the organization can concentrate on its resources and existing businesses/products and markets, thus leading to building of core competencies.

The firms with modest growth objective choose this strategy.

Major Reasons for Stability Strategy

A product has reached the maturity stage of the product life cycle.

The staff feels comfortable with the status quo as it involves less changes and less risks.

It is opted when the environment in which an organisation is operating is relatively stable.

After rapid expansion, a firm might want to stabilize and consolidate itself.

Why don't Startups aim for stability?

A startup is an entrepreneurial venture in the early stages of ideation and development, generally created for solving real-life problems through technology. For it, the most important factors are speed and agility, because of it being in a nascent stage of operations. Stability on the other hand is more meaningful strategy when the size of operations is expanded to full capacity and business is at a mature stage. Thereby, we rarely see startups aiming for stability.

Growth/Expansion Strategy

- Growth/Expansion strategy is implemented by redefining the business by enlarging the scope of business and substantially increasing investment in the business.
- It is a strategy that can be equated with dynamism, vigour, promise and success.
- This strategy may take the enterprise along relatively unknown and risky paths, full of promises and pitfalls.

Characteristics of Growth/Expansion Strategy

Expansion strategy involves a redefinition of the business of the corporation.

Expansion strategy is the opposite of stability strategy. While in stability strategy, rewards are limited, in expansion strategy they are very high. In the matter of risks, too, the two are the opposites of each other.

Expansion strategy leads to business growth. A firm with a mammoth growth ambition can meet its objective only through the expansion strategy.

The process of renewal of the firm through fresh investments and new businesses/ products/markets is facilitated only by expansion strategy.

Expansion strategy is a highly versatile strategy; it offers several permutations and combinations for growth.

Expansion strategy holds within its fold two major strategy routes: Intensification Diversification. Both of them are growth strategies; the difference lies in the way in which the firm actually pursues the growth.

Major Reasons for Growth/Expansion Strategy

May become imperative when environment demands increase in pace of activity.

Strategists may feel more satisfied with the prospects of growth from expansion, chief executives may take pride in presiding over organizations perceived to be growth-oriented.

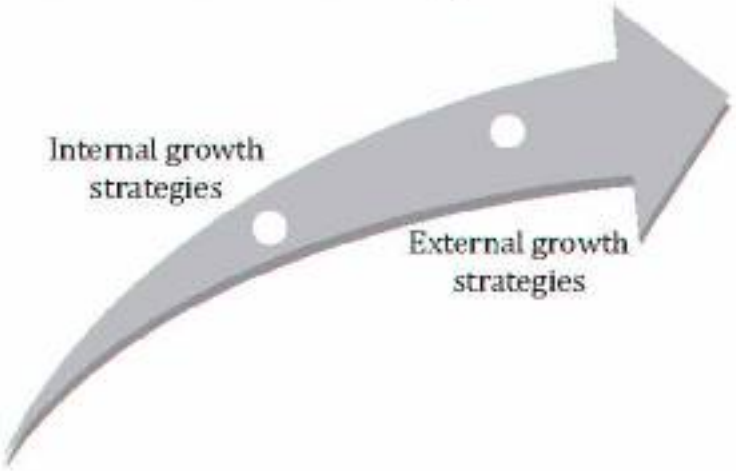
Expansion may lead to greater control over the market vis-a-vis competitors.

Advantages from the experience curve and scale of operations may accrue.

Expansion also includes intensifying, diversifying, acquiring and merging businesses.

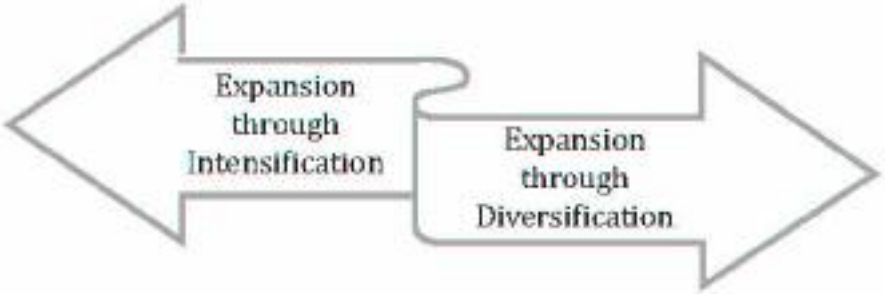
Types of Growth/ Expansion Strategy

The growth strategies can be classified into **two main types:**



■ INTERNAL GROWTH STRATEGIES

Internal growth strategies **can be further divided into:**



I. Expansion or growth through Intensification

- Expansion or growth through intensification means that the organisation tries to grow internally by intensifying its operations either by market penetration or market development or by product development.
- **The firm can intensify by adopting any of the following strategies:**

Market Penetration

- Highly common expansion strategy is market penetration/ concentration on the current business.
- The firm directs its resources to the profitable growth of its existing product in the existing market.

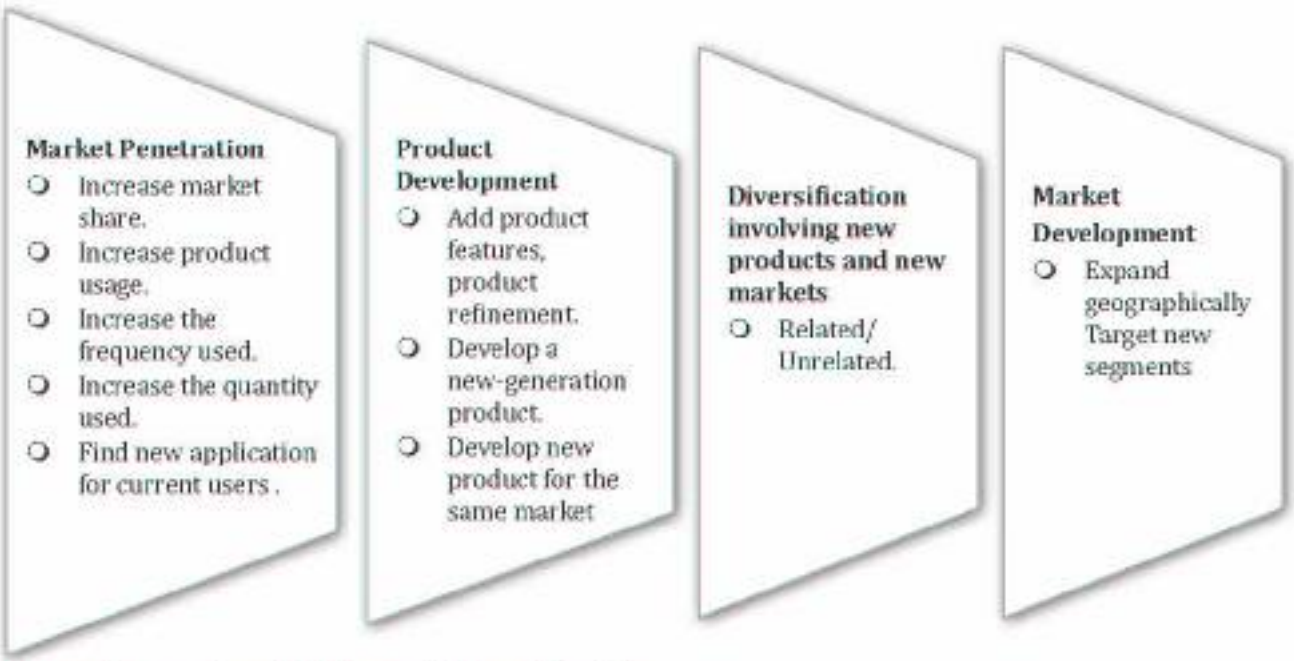
Market Development

- It consists of marketing present products, to customers in related market areas by adding different channels of distribution or by changing the content of advertising or the promotional media.

Product Development

- Product development involves substantial modification of existing products or creation of new but related items that can be marketed to current customers through establish channels.

- Igor. H. Ansoff gave a framework as shown in figure below which describes the intensification options available to a firm.



II. Expansion or Growth through Diversification

- When a firm tries to grow and expand by diversifying into various products or fields, it is called growth by diversification. This is also an internal growth strategy.
- **Diversification is defined** as an entry into new products or productlines, new services or new markets, involving substantially different skills, technology and knowledge.
- When an established firm introduces a new product, which has little or no affinity with its present product line and which is meant for a new class of customers different from the firm's existing customer groups, the process is known as conglomerate diversification.

- **Based on the nature and extent of their relationship to existing businesses, diversification can be classified into two broad categories:**

Concentric Diversification

- Concentric diversification takes place when the products are related.
- In this diversification, the new business that is it diversifies into is linked to the existing businesses through process, technology or marketing.
- The new product is a spin-off from the existing facilities and products/ processes.
- The new product is only connected in a loop-like manner at one or more points in the firm's existing process/technology/product chain.
- **Example,** a company producing clothes ventures into the manufacturing of shoes.
- Concentric diversification is generally understood in two directions, vertical and horizontal integration;

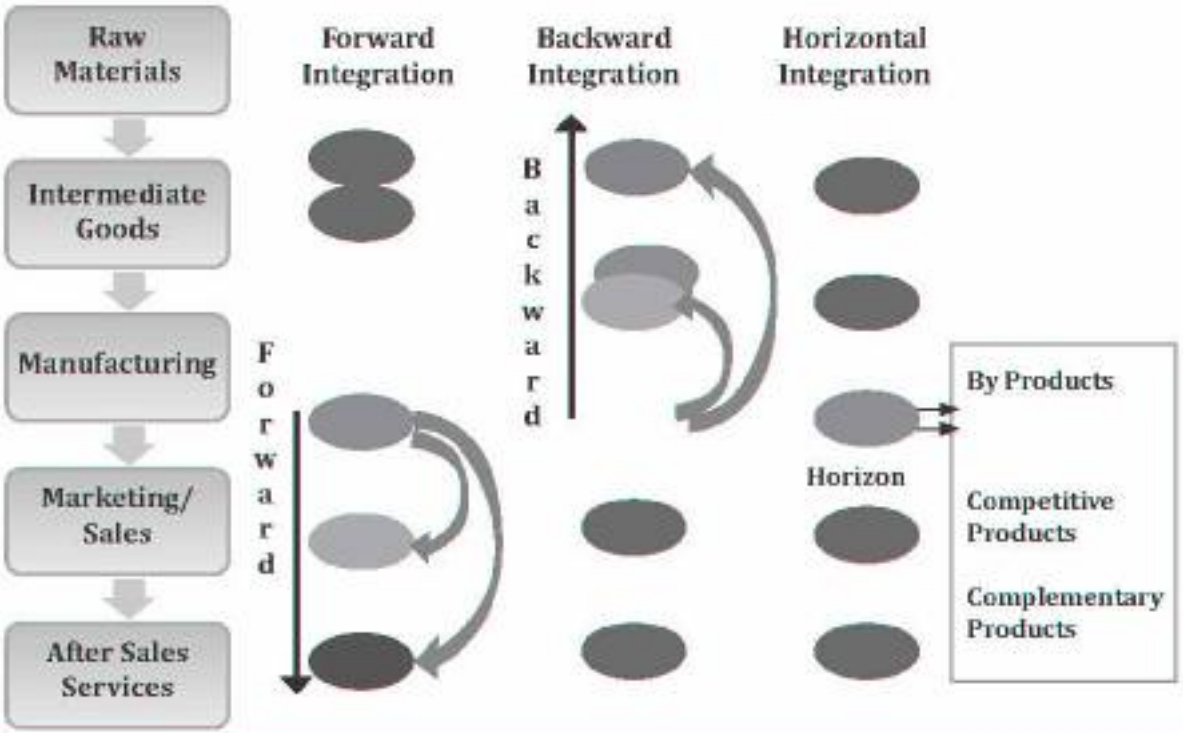
Vertically Integrated Diversification

- Firms opt to engage in businesses that are related to the existing business of the firm.
- The characteristic feature of vertically integrated diversification is that the firm remains in the vertically linked product-process chain. A firm can either opt for forward or backward integration or horizontal integration.
- Forward and backward integration forms part of vertically integrated diversification.

Backward Integration	Forward Integration
Concerned with creation of effective supply by entering business of input providers.	Moving forward in the value chain and entering business lines that use existing products.
Strategy employed to expand profits and gain greater control over production/ supply of a product whereby a company will purchase or build a business that will increase its own supply capability or lessen its cost of production.	Forward integration will also take place where organizations enter into businesses of distribution channels.
Example, A large supermarket chain considers to purchase a number of farms that would provide it a significant amount of fresh produce.	**Example,** A coffee bean manufacture may choose to merge with a coffee cafe.

Horizontal Integrated Diversification

A firm gets horizontally diversified by integrating through acquisition of one or more similar businesses operating at the same stage of the production-marketing chain. They can also integrate with the firms producing complementary products or by-products or by taking over competitors' products.



Conglomerate Diversification	○ No linkages related to product, market or technology exist; the new businesses/products are disjointed from the existing businesses/ products in every way; it is a totally unrelated diversification. ○ Conglomerate diversification has no common thread at all with the firm's present position. ○ **Example,** A cement manufacturer diversifies into the manufacture of steel and rubber products.

❑ **Related vs. Unrelated Diversification**

Related Diversification	Unrelated Diversification
○ Exchange or share assets or competencies by exploiting. ○ Brand name. ○ Marketing skills. ○ Sales and distribution capacity ○ Manufacturing skills. ○ R&D and new product capability. ○ Economies of scale.	○ Investment in new product portfolios. ○ Employment of new technologies. ○ Focus on multiple products. ○ Reduce risk by operating in multiple product markets. ○ Defend against takeover bids. ○ Provide executive interest.

Is it really worth expanding so much to diversify a business into unrelated products?

Despite of its complexity, conglomerate diversification (diversification into unrelated business) financially makes a lot of sense. It creates access a new pool of customers, thereby expanding its customer base. It allows access to markets and cross-selling new products, leading to increased revenues. Further, it eases the management of losses in a business; profits in one business can be used to keep the loss-making business afloat within the same organisation.

Innovation

Innovation drives upgradation of existing product lines or processes, leading to increased market share, revenues, profitability and most important, customer satisfaction. Some may argue that innovation leads to unnecessary expenses that do not give as much returns, but on the contrary, for a business to grow long term, **innovation offers the following;**

Help to solve complex problems	○ A business strives to find opportunities in existing problems of the society, and it does so though planned innovation in areas of expertise. ○ **Example,** the pressing problem of environmental damage is being tackled heads on by shifting to renewable sources of energy like solar, wind, sea waves, etc. ○ It might be costly in introductory stages but in the long run it will only have economic and environmental sustainability.
Increases Productivity	○ Innovation leads to simplification and in most cases automation of existing tasks. ○ Productivity is defined as a measure of final output from a task or a process, and companies are willing to spend millions on increasing their productivity. ○ **Example,** MS Excel, every finance professional uses this software to simplify and automate their manual tasks. ○ Improved productivity, creates opportunities to further develop processes and products within and outside the organization. ○ Thus, innovation creates a ripple effect that has a far and wide impact across industries.
Gives Competitive Advantage	○ An interesting concept about innovation is- the faster a business innovates, the farther it goes from its competitor's reach. ○ Innovative products need less marketing as they aim to provide added satisfaction to consumers, thus, creating a competitive advantage. ○ Innovation not only helps retain the existing customers but helps acquire new ones with ease.

■ EXTERNAL GROWTH STRATEGIES

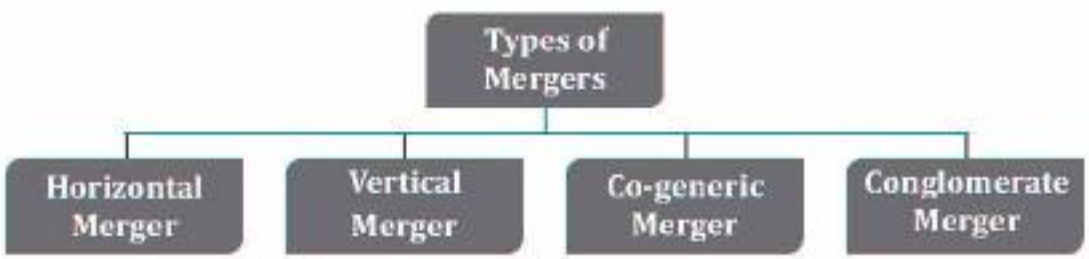
When the organization instead of growing internally thinks of diversifying by making alliances with external organisations, it is called external growth diversification.

It can be classified in two ways:

I. Expansion through Mergers and Acquisitions

- Acquisition or merger with an existing concern is an instant means of achieving the expansion.
- It is an attractive and tempting proposition in the sense that it circumvents the time, risks and skills involved in screening internal growth opportunities, seizing them and building up the necessary resource base required to materialise growth.
- Synergy may result from such bases as physical facilities, technical and managerial skills, distribution channels, general administration, research and development and so on.
- Positive synergistic effects are relevant in this connection which denotes that the positive effects of the merged resources are greater than the effects of the individual resources before merger or acquisition.
- There is a thin line of difference between the two terms but the impact of combination is completely different in both the cases. Some organizations prefer to grow through mergers, Merger is a process when two or more companies come together to expand their business operations.
- A merger two organizations combine to increase their strength and financial gains along with breaking of the trade barriers.
- When one organization takes over the other organization and controls all its business operations, it is known as acquisition.
- In acquisition, one financially strong organization overpowers the weaker one.
- Acquisitions often happen during recession in economy or during declining profit margins. The stronger one overpowers the weaker one.
- A deal in case of an acquisition is often done in an unfriendly manner, it is more or less a forced association where the powerful organization acquires the operations of the company that is in a weaker position and is forced to sell its entity.

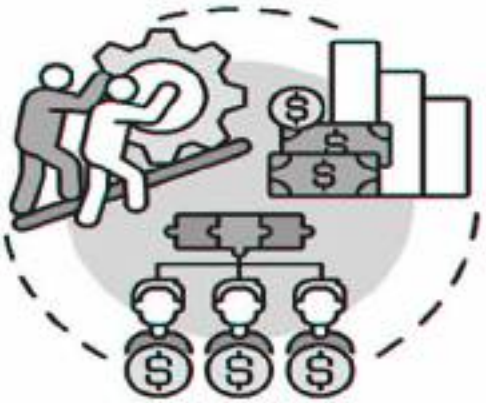
■ TYPES OF MERGERS



Horizontal Merger	Vertical Merger	Co-generic Merger	Conglomerate Merger
○ Horizontal merger is a combination of firms engaged in the same industry. ○ It is a merger with a direct competitor. ○ The principal objective behind this type of merger is to achieve economies of scale in the production process by shedding duplication of installations and functions, widening the line of products, decrease in working capital and fixed assets investment, getting rid of competition and so on. ➢ **Example,** formation of Brook Bond Lipton India Ltd. through the merger of Lipton India and Brook Bond.	○ It is a merger of two organizations that are operating in the same industry but at different stages of production or distribution system. ○ This often leads to increased synergies with the merging firms. ○ If an organization takes over its supplier/producers of raw material, then it leads to backward integration. ○ On the other hand, forward integration happens when an organization decides to take over its buyer organizations or distribution channels. ○ Vertical merger results in many operating and financial economies. ○ Vertical mergers help to create an advantageous position by restricting the supply of inputs to other players, or by providing the inputs at a higher cost. ➢ **Example,** backward integration and forward integration.	○ In Co-generic merger two or more merging organizations are associated in some way or the other related to the production processes, business markets, or basic required technologies. ○ Such merger includes the extension of the product line or acquiring components that are required in the daily operations. ○ It offers great opportunities to businesses to diversify around a common set of resources and strategic requirements. ➢ **Example,** an organization in the white goods category such as refrigerators can diversify by merging with another organization having business in kitchen appliances.	○ Conglomerate mergers are the combination of organizations that are unrelated to each other. ○ There are no linkages with respect to customer groups, customer functions and technologies being used. ○ There are no important common factors between the organizations in production, marketing, research and development and technology. ○ In practice, however, there is some degree of overlap in one or more of these factors.

II. Expansion through Strategic Alliance

- A strategic alliance is a relationship between two or more businesses that enables each to achieve certain strategic objectives which neither would be able to achieve on its own.
- The strategic partners maintain their status as independent and separate entities, share the benefits and control over the partnership, and continue to make contributions to the alliance until it is terminated.



Strategic Alliance

Advantages of Strategic Alliance

Strategic alliance usually is only formed if they provide an advantage to all the parties in the alliance.

Organizational	Strategic alliance helps to learn necessary skills and obtain certain capabilities from strategic partners. Strategic partners may also help to enhance productive capacity, provide a distribution system, or extend supply chain. Strategic partners may provide a good or service that complements thereby creating a synergy. Having a strategic partner who is well-known and respected also helps add legitimacy and creditability to a new venture.
Economic	There can be reduction in costs and risks by distributing them across the members of the alliance. Greater economies of scale can be obtained in an alliance, as production volume can increase, causing the cost per unit to decline. Finally, partners can take advantage of co-specialization, creating additional value, such as when a leading computer manufacturer bundles its desktop with a leading monitor manufacturer's monitor.
Strategic	Rivals can join together to cooperate instead of competing with each other. Vertical integration can be created where partners are part of supply chain. Strategic alliances may also be useful to create a competitive advantage by the pooling of resources and skills. This may also help with future business opportunities and the development of new products and technologies. Strategic alliances may also he used to get access to new technologies or to pursue joint research and development.
Political	Sometimes strategic alliances are formed with a local foreign business to gain entry into a foreign market either because of local prejudices or legal barriers to entry. Forming strategic alliances with politically influential partners may also help improve your own influence and position.

Disadvantages of Strategic Alliance

Strategic alliances do come with some disadvantages and risks.
The major disadvantage is sharing.
Strategic alliances require sharing of resources and profits, and also sharing knowledge and skills that otherwise organisations may not like to share.
Sharing knowledge and skills can be problematic if they involve trade secrets.

Agreements can be executed to protect trade secrets, but they are only as good as the willingness of parties to abide by the agreements or the courts willingness to enforce them.
Strategic alliances may also create potential competition when an ally becomes an opponent in future when it decides to separate out.

STRATEGIC EXITS

- Strategic Exits are followed when an organization substantially reduces the scope of its activity. This is done through an attempt to find out the problem areas and diagnose the causes of the problems. Next, steps are taken to solve the problems.

I. Turnaround Strategy

- Retrenchment may be done either internally or externally. For internal retrenchment to take place, emphasis is laid on improving internal efficiency, known as turnaround strategy.
- There are certain conditions or indicators which point out that a turnaround is needed if the company has to survive. These danger signals are:
  - Persistent negative cash flow from business(es)
  - Uncompetitive products or services
  - Declining market share
  - Deterioration in physical facilities
  - Over-staffing, high turnover of employees, and low morale
  - Mismanagement

Action Plan for Turnaround

For turnaround strategies to be successful, it is imperative to focus on the short and long-term financing needs as well as on strategic issues. A workable action plan for turnaround would involve the following stages:

Stage One - Assessment of Current Problems	The first step is to assess the current problems and get to the root causes and the extent of damage the problem has caused. Once the problems are identified, the resources should be focused toward those areas essential to efficiently work on correcting and repairing any immediate issues.
Stage Two - Analyze the Situation and Develop a Strategic Plan	Before you make any major changes, determine the chances of the business's survival. Identify appropriate strategies and develop a preliminary action plan. For this one should look for the viable core businesses, adequate bridge financing and available organizational resources. Analyze the strengths and weaknesses in the areas of competitive position. Once major problems and opportunities are identified, develop a strategic plan with specific goals and detailed functional actions.

Stage Three-Implementing an Emergency Action Plan	If the organization is in a critical stage, an appropriate action plan must be developed to stop the bleeding and enable the organization to survive. The plan typically includes human resource, financial, marketing and operations actions to restructure debts, improve working capital, reduce costs, improve budgeting practices, prune product lines and accelerate high potential products. A positive operating cash flow must be established as quickly as possible and enough funds to implement the turnaround strategies must be raised.
Stage Four-Restructuring the Business	The financial state of the organization's core business is particularly important. The core business is irreparably damaged, then the outlook for the entire organization may be bleak. Prepare cash forecasts, analyse assets and debts, review profits and analyze other key financial functions to position the organization for rapid improvement. During the turnaround, the "product mix" may be changed, requiring the organization to do some repositioning. Core products neglected over time may require immediate attention to remain competitive. Morale building is another important ingredient in the organization's competitive effectiveness. Reward and compensation systems that encourage dedication and creativity amongst employees to think about profits and return on investments.
Stage Five -Returning to Normal	In the final stage of turnaround strategy process, the organization should begin to show signs of profitability, return on investments and enhancing economic value-added. Emphasis is placed on a number of strategic efforts such as carefully adding new products and improving customer service, creating alliances with other organizations, increasing the market share, etc.

- **The important elements of turnaround strategy are as follows:**

Changes in the top management

Initial credibility-building actions

Neutralising external pressures

Identifying quick payoff activities

Quick cost reductions

Revenue generation

Asset liquidation for generating cash

Better internal coordination

II. Divestment Strategy

- Divestment strategy involves the sale or liquidation of a portion of business, or a major division, profit centre or SBU.
- Divestment is usually a part of rehabilitation or restructuring plan and is adopted when a turnaround has been attempted but has proved to be unsuccessful.
- **A divestment strategy may be adopted due to various reasons:**

A business that had been acquired proves to be a mismatch and cannot be integrated within the company.

Persistent negative cash flows from a particular business create financial problems for the whole company, creating the need for divestment of that business.

Severity of competition and the inability of a firm to cope with it may cause it to divest.

It is not possible for the business to do Technological upgradation that is required for the business to survive, a preferable option would be to divest.

A better alternative may be available for investment, causing a firm to divest a part of its unprofitable business.

Characteristics of Divestment Strategy

This strategy involves divestment of some of the activities in a given business of the firm or sell-out of some of the businesses as such.

Divestment is to be viewed as an integral part of corporate strategy without any stigma attached.

Major Reasons for Retrenchment/Turnaround Strategy

- The management no longer wishes to remain in business either partly or wholly due to continuous losses and unviability.
- The management feels that business could be made viable by divesting some of the activities or liquidation of unprofitable activities.
- A business that had been acquired proves to be a mismatch and cannot be integrated within the company.
- Persistent negative cash flows from a particular business create financial problems for the whole company, creating the need for divestment of that business.
- Severity of competition and the inability of a firm to cope with it may cause it to divest.
- Technological upgradation is required if the business is to survive but where it is not possible for the firm to invest in it, a preferable option would be to divest.
- A better alternative may be available for investment, causing a firm to divest a part of its unprofitable businesses.

Is Turnaround strategy only relevant to loss making businesses?

Interestingly, turnaround strategy is relevant when a company is experiencing a period of poor performance. Poor performance does not always mean losses, it may also mean lower than expected growth, no future clarity, or even lesser than target profits.

STRATEGIC OPTIONS

- Strategic options need to be carved out from existing products and innovations that are happening in the industry.
- Primarily used for competitive analysis and corporate strategic planning in multi-product and multi business firms.
- They may also be used in less diversified firms, if these consist of a main business and other minor complementary interests.
- A diversified company may decide to divert resources from its cash rich businesses to more prospective ones that hold promise of a faster growth so that the company achieves its corporate level objectives efficiently.

ANSOFF'S PRODUCT MARKET GROWTH MATRIX

The Ansoff's product market growth matrix (proposed by Igor Ansoff) is a useful tool that helps businesses decide their product and market growth strategy. With the use of this matrix a business can get a fair idea about how its growth depends upon it markets in new or existing products in both new and existing markets. Companies should always be looking to the future. One useful device for identifying growth opportunities for the future is the product/market expansion grid. The product/market growth matrix is a portfolio-planning tool for identifying growth opportunities for the company.

Market Penetration	Market penetration refers to a growth strategy was the business focuses on selling existing products into existing markets. It is achieved by making more sales to present customers without changing products in any major way. Penetration might require greater spending on advertising or personal selling. Penetration is also done by effort on increasing usage by existing customers. **Example,** Gucci, a luxury clothing brand, selling its luxury clothing in European markets with new designs, is market penetration.
Market Development	Market development refers to a growth strategy where the business seeks to sell its existing products into new markets. It is a strategy for company growth by identifying and developing new markets for current company products. **Example,** Gucci, a luxury clothing brand, selling its luxury clothing in Chinese markets, is market development.
Product Development	Product development refers to a growth strategy was business aims to introduce new products into existing markets. It is a strategy for company growth by offering modified or new products to current markets. This strategy may require the development of new competencies and requires the business to develop modified products which can appeal to existing markets. **Example,** Gucci, a luxury clothing brand, selling casual clothing in European markets, is product development.
Diversification	Diversification refers to a growth strategy where a business market new product in new markets. It is a strategy by starting up or acquiring businesses outside the company's current products and markets. This strategy is risky because it does not rely on either the company's successful product or its position in established markets. Typically, the business is moving into markets in which it has little or no experience. **Example,** Gucci, a luxury clothing brand, selling casual clothing in Chinese markets, is diversification. As market conditions change overtime, a company may shift product-market growth strategies. For example, when its present market is fully saturated a company may have no choice other than to pursue new market.

ADL MATRIX

- The ADL matrix (derived its name from Arthur D. Little) is a portfolio analysis technique that is based on product life cycle.
- The approach forms a two- dimensional matrix based on stage of industry maturity and the firm's competitive position, environmental assessment and business strength assessment.
- Stage of industry maturity is an environmental measure that represents a position in industry's life cycle.
- Competitive position is a measure of business strengths that helps in categorization of products or SBU's into one of five competitive positions:
  - dominant,
  - strong,

- favourable,
- tenable and
- weak

It is four by five matrix as follows:

Stage of industry maturity - Arthur D. Little (ADL) Matrix				
Competitive Position	**Embryonic**	**Growth**	**Mature**	**Ageing**
Dominant	- Fast grow - Build barriers - Act offensively	- Fast grow - Attend cost leadership - Renew - Defend position - Act offensively	- Defend position - Attend cost leadership - Renew - Fast grow - Act offensively	- Defend position - Renew - Focus - Consider withdrawal
Strong	- Differentiate - Fast grow	- Differentiate - Lower cost - Attack small firms	- Lower cost - Focus Differentiate - Grow with industry	- Find niche - Hold niche - Harvest
Favourable	- Differentiate - Focus - Fast grow	- Focus - Differentiate - Defend	- Focus Differentiate - Harvest - Find niche - Hold niche - Turnaround - Grow with industry - Hit smaller firms	- Harvest Turnaround
Tenable	- Grow with industry - Focus	- Hold niche - Turnaround - Focus - Grow with industry - Withdraw	- Turnaround - Hold niche - Retrench	- Divest - Retrench
Weak	- Find niche - Catch-up - Grow with industry	- Turnaround - Retrench - Niche or withdraw	- Withdraw - Divest	- Withdraw

The competitive position of a firm is based on an assessment of the following criteria:

Dominant	This is a comparatively rare position and in many cases is attributable either to a monopoly or a strong and protected technological leadership.
Strong	By virtue of this position, the firm has a considerable degree of freedom over its choice of strategies and is often able to act without its market position being unduly threatened by its competitions.
Favourable	This position, which generally comes about when the industry is fragmented and no one competitor stand out clearly, results in the market leaders a reasonable degree of freedom.
Tenable	Although the firms within this category are able to perform satisfactorily and can justify staying in the industry, they are generally vulnerable in the face of increased competition from stronger and more proactive companies in the market.
Weak	The performance of firms in this category is generally unsatisfactory although the opportunities for improvement do exist.

BOSTON CONSULTING GROUP (BCG) GROWTH-SHARE MATRIX

- The BCG growth-share matrix is the simplest way to portray a corporation's portfolio of investments.
- Growth share matrix also known for its cow and dog metaphors is popularly used for resource allocation in a diversified company.
- Using the BCG approach, a company classifies its different businesses on a two-dimensional growth-share matrix.

In the matrix:

- The vertical axis represents market growth rate and provides a measure of market attractiveness.
- The horizontal axis represents relative market share and serves as a measure of company strength in the market.

Using the matrix, organisations can identify four different types of products or SBU as follows:

Stars	Are products or SBUs that are growing rapidly. They also need heavy investment to maintain their position and finance their rapid growth potential. They represent best opportunities for expansion.
Cash Cows	Are low-growth, high market share businesses or products. They generate cash and have low costs. They are established, successful, and need less investment to maintain their market share. In long run when the growth rate slows down, stars become cash cows.
Question Marks	Sometimes **called problem children or wildcats,** are low market share business in high-growth markets. They require a lot of cash to hold their share. They need heavy investments with low potential to generate cash. Question marks if left unattended are capable of becoming cash traps. Since growth rate is high, increasing it should be relatively easier. It is for business organisations to turn them stars and then to cash cows when the growth rate reduces.
Dogs	Are low-growth, low-share businesses and products. They may generate enough cash to maintain themselves, but do not have much future. Sometimes they may need cash to survive. Dogs should be minimised by means of divestment or liquidation.

BCG MATRIX: POST IDENTIFICATION STRATEGIES

- After a firm, has classified its products or SBUS, it must determine what role each will play in the future. The **four strategies that can be pursued are:**

1. Build	Here the objective is to increase market share, even by forgoing short-term earnings in favour of building a strong future with large market share.
2. Hold	Here the objective is to preserve market share.
3. Harvest	Here the objective is to increase short-term cash flow regardless of long-term effect.
4. Divest	Here the objective is to sell or liquidate the business because resources can be better used elsewhere.

Is BCG Matrix really helpful?

The growth-share matrix has done much to help strategic planning; however, there are some problems and limitations with the technique. BCG matrix can be difficult, time-consuming, and costly to implement. Management may find it difficult to define SBUS and measure market share and growth. It also focuses on classifying current businesses but provide little advice for future planning. They can lead the company to placing too much emphasis on market-share growth or growth through entry into attractive new markets. This can cause unwise expansion into hot, new, risky ventures or divesting established units too quickly.

GENERAL ELECTRIC MATRIX ["STOP-LIGHT" STRATEGY MODEL]

- This model has been used by General Electric Company (developed by GE with the assistance of the consulting firm McKinsey and Company).
- This model is also known as Business Planning Matrix, GE Nine-Cell Matrix and GE Model.
- The strategic planning approach in this model has been inspired from traffic control lights.
- The lights that are used at crossings to manage traffic are: green for go, amber or yellow for caution, and red for stop.
- This model uses two factors while taking strategic decisions: Business Strength and Market Attractiveness.

Understanding the GE Matrix

The vertical axis indicates market attractiveness, and the horizontal axis shows the business strength in the industry. The market attractiveness is measured by a number of factors like:

- Size of the market.
- Market growth rate.
- Industry profitability.
- Competitive intensity.
- Availability of Technology.
- Pricing trends.
- Overall risk of returns in the industry.
- Opportunity for differentiation of products and services.
- Demand variability
- Segmentation.
- Distribution structure (e.g., direct marketing, retail, wholesale) etc.

Business strength is measured by considering the typical drivers like:

- Market share.
- Market share growth rate.
- Profit margin.
- Distribution efficiency.
- Brand image.
- Ability to compete on price and quality.
- Customer loyalty.
- Production capacity.
- Technological capability.
- Relative cost position.
- Management calibre, etc.

- If a product falls in the green section, the business is at advantageous position.
- To reap the benefits, the strategic decision can be to expand, to invest and grow. If a product is in the amber or yellow zone, it needs caution and managerial discretion is called for making the strategic choices.
- If a product is in the red zone, it will eventually lead to losses that would make things difficult for organisations.
- In such cases, the appropriate strategy should be retrenchment, divestment or liquidation.
- This model is similar to the BCG growth-share matrix.
- However, there are differences. Firstly, market attractiveness replaces market growth as the dimension of industry attractiveness and includes a broader range of factors other than just the market growth rate.
- Secondly, competitive strength replaces market share as the dimension by which the competitive position of each SBU is assessed.

TEST YOUR KNOWLEDGE – MCQS

1. Which strategy is implemented after the failure of turnaround strategy?

(*a*) Expansion strategy (*b*) Diversification strategy

(*c*) Divestment strategy (*d*) Growth strategy

2. Retrenchment strategy in the organisation can be explained as

(*a*) Reducing trenches (gaps) created between individuals

(*b*) Divesting a major product line or market

(*c*) Removal of employees from job through the process of reorganization

(*d*) Removal of employees from job in one business to relocate them in other business.

3. An organisation diversifies in backward sequence in the product chain and enters specific product/process to be used in existing products. It is:

(*a*) Forward diversification (*b*) Vertical diversification

(*c*) Horizontal diversification (*d*) Reactive diversification

4. Corporate strategy includes:

(*i*) Expansion and growth, diversification, takeovers and mergers

(ii) Vertical and horizontal integration, new investment and divestment areas

(iii) Determination of the business lines

From the combinations given below select a correct alternative:

(*a*) (i) and (ii) (*b*) (i) and (iii)

(*c*) (ii) and (iii) (*d*) (i), (ii) and (iii)

5. Vertical integration may be beneficial when

(*a*) Lower transaction costs and improved coordination are vital and achievable through vertical integration

(*b*) Flexibility is reduced, providing a more stationary position in the competitive environment.

(*c*) Various segregated specializations will be combined

(*d*) The minimum efficient scales of two corporations are different.

6. Stability strategy is a _____ strategy.

(*a*) SBU level (*b*) Corporate level (*c*) Business level (*d*) Functional level

7. Conglomerate diversification is another name for which of the following?

(*a*) Related diversification (*b*) Unrelated diversification

(*c*) Portfolio diversification (*d*) Acquisition diversification

8. Diversification primarily helps to:

(*a*) Reduce competition (*b*) Reduce risk (*c*) Reduces taxes (*d*) Reduce costs

9. If suppliers are unreliable or too costly, which of these strategies may be appropriate?

(*a*) Horizontal integration (*b*) Backward integration

(*c*) Market penetration (*d*) Forward integration

ANSWER KEY

1.	(c)	2.	(b)	3.	(b)	4.	(d)	5.	(a)	6.	(b)
7.	(b)	8.	(b)	9.	(b)						

TEST YOUR KNOWLEDGE – CASE STUDIES

1. Gautam and Siddhartha, two brothers, are the owners of a cloth manufacturing unit located in Faridabad. They are doing well and have substantial surplus funds available within the business. They have different approaches regarding corporate strategies to be followed to be more competitive and profitable in future.

Gautam is interested in acquiring another industrial unit located in Faridabad manufacturing stationery items such as permanent markets, notebooks, pencils and pencil sharpeners, envelopes and other office supplies. On the other hand, Siddhartha desires to start another unit to produce readymade garments.

Discuss the nature of strategic choices being suggested by the two brothers with reference to the payoffs and the risks involved.

Ans. Gautam wishes to diversify in a business that is not related to their existing line of product and can be termed as conglomerate diversification. He is interested in acquiring another industrial unit located in Faridabad manufacturing stationery items such as permanent markets, notebooks, pencils and pencil sharpeners, envelopes and other office supplies, which is not related to their existing product. In conglomerate diversification, the new business/products are disjointed from the existing business/products in every way; it is an unrelated diversification. In process/technology/function, there is no connection between the new products and the existing ones. Conglomerate diversification has no common thread at all with the firm's present position.

On the other hand, Siddhartha seeks to move forward in the chain of existing product by adopting vertically integrated diversification/forward integration. The cloth being manufactured by the existing processes can be used as raw material of garments manufacturing business. In such diversification, firms opt to engage in businesses that re related to the existing business of the firm. The firm remains vertically withing the same process and moves forward or backward in the chain. It enters specific product/process steps with the intention of making them into new businesses for the firm. The characteristic feature of vertically integrated diversification is that here, the firm does not jump outside the vertically linked product-process chain.

Both types of diversifications have their own risks. In conglomerate diversification, there are no linkages with customer group, customer marketing functions and technology used, which is a risk. In the case of vertical integrated diversification, there is a risk of lack of continued focus on the original business.

2. XYZ Company is facing continuous losses. There is decline in sales and product market share. The products of the company became uncompetitive and there is persistent negative cash flow. The physical facilities are deteriorating and employees have low morale. At the board meeting, the board members decided that they should continue the organization and adopt such measures such that the company functions properly. The board has decided to hire young executive Shayamli for improving the functions of the organization. What corporate strategy should Shayamli adopt for this company and what steps need to be taken to implement the corporate strategy adopted by Shayamli? [SM, Nov 2019]

Ans. XYZ Company is facing continuous losses, decline in sales and product market share, persistent negative cash flow, uncompetitive products, declining market share, deterioration in physical facilities, low morale of employees. In such a scenario, Shayamli may choose a turnaround strategy as this strategy attempts to reverse the process of decline and bring improvement in organizational health. This is also important as the Board has decided to continue the company and adopt measures for its proper functioning. For success, Shayamli needs to focus on the short and long-term financing needs as well as on strategic issues. During the turnaround, the "product mix" may be changed, requiring the organization to do some repositioning. A workable action plan for turnaround would involve:

Stage One – Assessment of current problems: In the first step, assess the current problems and get to the root causes and the extent of damage.

Stage Two – Analyze the situation and develop a strategic plan: Identify major problems and opportunities, develop a strategic plan with specific goals and detailed functional actions.

Stage Three – Implementing an emergency action plan: If the organization is in a critical stage, an appropriate action plan must be developed to stop the bleeding and enable the organization to survive.

Stage Four – Restructuring the business: If the core business is irreparably damaged, then the outlook for the entire organization may be bleak. Efforts to be made to position the organization for rapid improvement.

Stage Five – Returning to normal: In the final stage of the turnaround strategy process, the organization should begin to show signs of profitability, return on investments and enhance economic value-added.

3. Organo is a large supermarket chain. It is considering the purchase of a number of farms that provides organo with a sufficient amount of its fresh produce. Organo feels that by purchasing the farms, it will have greater control over its supply chain. Identify and explain the type of diversification opted by Organo? (SM)

Ans. Organo is large supermarket chain. By opting backward integration and purchase a number of farms, it will have greater control over its supply chain. Backward integration is a step towards, creation of effective supply by entering business of input providers. Strategy employed ot expand profits and gain greater control over production of a product whereby a company will purchase or build a business that will increase its own supply capability or lessen its cost of production.

4. With the global economic recession Soft Cloth Ltd. incurred significant losses in all its previous five financial years. Currently, they are into manufacturing of cloth made of cotton, silk, polyester, rayon, lycra and blends. Competition is also intense on account of cheap imports. The company is facing cash crunch and has not been able to pay the salaries to its employees in the current month.

Suggest a grad strategy that can be opted by Soft Cloth Ltd. (SM)

Ans. Soft Cloth Ltd. is facing internal as well as external challenges. The external environment is in economic recession and the organization is facing cash crunch. The company needs to work on retrenchment/turnaround strategy. The strategy is suitable in case of issues such as:

- Persistent negative cash flows
- Uncompetitive products or services
- Declining market share
- Deterioration in physical facilities
- Overstaffing, high turnover or employees, and low morale
- Mismanagement

The company may consider to substantially reduce the scope of its activity. This is done through an attempt to find out the problem areas and diagnose the causes of the problems. Next steps are taken to solve the problems.

These steps result in different kinds of retrenchment strategies. If the organization chooses to focus on ways and means to reverse the process of decline, it adopts at turnaround strategy. If it cuts off the loss-making units, divisions, or SBUs, curtails its product line or reduces the functions performed, it adopts a divestment strategy. If none of these actions work, then it may choose to abandon the activities totally, a resulting in a liquidation strategy.

5. X Pvt. Ltd. had recently ventured into the business of co-working spaces when the global pandemic struck. This has resulted in the business line becoming unprofitable and unviable, and a failure of the existing strategy. However, the other businesses of X Pvt. Ltd. are relatively less affected by the pandemic as compared to the recent co-working spaces. Suggest a strategy for X Pvt. Ltd. with reasons to justify your answer. [SM, Jan 2021]

Ans. It is advisable that divestment strategy should be adopted by X Pvt. Ltd. In the given situation where the business of co-working spaces became unprofitable and unviable due to Global pandemic, the best option for the company is to divest the loss-making business. Retrenchment may be done either internally or externally. Turnaround strategy is adopted in case of internal retrenchment where emphasis is laid on improving internal efficiency of the organization, while divestment strategy is adopted when a business turns unprofitable and unviable due to some external factors. In view of the above, the company should go for a divestment strategy.

Further, divestment helps address issues like:

1. Persistent cash flows from loss making segments could affect other profit-making segments, which is the case in the given scenario.
2. Inability to cope from the losses, which again is uncertain due to pandemic.
3. Better investment opportunity, which could be the case if X Pvt. Ltd. can invest the money it generates from divestment.

6. Atrix Ltd. is a company engaged in the designing, manufacturing, and marketing of mechanical instruments like speed meters, oil pressure gauges, and so on. Their products are fitted into two and four wheelers. During the last couple of years, the company ahs been observing a fall in the market share. This is on account of shift to the new range of electronic instruments. The customers are switching away mechanical instruments that have been the backbone of Atrix Ltd.

As a CEO of Atrix Ltd., what can be the strategic options available with you. (SM)

Ans. Atrix is having a product portfolio that is evidently in the decline stage. The product is being replaced with the technologically superior product. Strategically the company should minimize their dependence on the existing products and identify other avenues for the survival and growth. As a CEO of Atrix Ltd., following can be the strategic options available:

(*a*) Invest in new product development and switchover to the new technology. Atrix Ltd. also need time to invest in emerging new technology.

(*b*) They can acquire or takeover a competitor provided they have or are able to generate enough financial resources.

(*c*) They may also consider unrelated growth and identify other areas for expansion. This will enable Atrix Ltd. to spread their risks.

(*d*) In longer run, they should divest the existing products. However, they may continue with the existing products in a limited manner for such time there is demand for the product.

7. XYZ Ltd. is a multi-product company, suffering from continuous losses since the last few years and has accumulated heavy losses which have eroded its net worth. What strategic option is available to the management of this sick company? Advise with reasons. [May 2018]

Ans. XYZ Ltd. is a sick company with accumulated losses that have eroded its net worth. The multi-product company may analyze its various products to make decisions on the viability of each. The company may consider a retrenchment strategy. Retrenchment becomes necessary for coping with hostile and adverse situations in the environment and when any other strategy is likely to be suicidal. Retrenchment strategy is adopted because of continuous losses and unviability and stability can be ensured by reallocation of resources from unprofitable to profitable businesses. Retrenchment strategy is followed when an organization substantially reduces the scope of its activity. This is done through an attempt to find out the problem areas and diagnose the causes of the problems. Next, steps are taken to solve the problems. These steps result in different kinds of retrenchment strategies as follows:

Turnaround strategy: If the organization chooses to transform itself into a leaner structure and focuses on ways and means to reverse the process of decline, it adopts a turnaround strategy. It may try to reduce costs, eliminate unprofitable outputs, generate revenue, improve coordination, better control, and so on.

Divestment Strategy: Divestment strategy involves the sale or liquidation of a portion of business, or a major division, profit center or SBU. Divestment is usually a part of rehabilitation or restructuring plan and is adopted when a turnaround has been attempted but has proved to be unsuccessful.

Liquidation Strategy: In the retrenchment strategy, the most extreme and unattractive is liquidation strategy. It involves closing down a firm and selling its assets. It is considered as the last resort because it leads to serious consequences such as loss of employment for workers and other employees, termination of opportunities where a firm could pursue any future activities, and the stigma of failure. The management of multiproduct sick companies manufacturing various items need to understand the pros and cons of each strategic option. The decision will depend upon the specific circumstances of each product and management goals of the company.

8. ABC Steel Industries finds out that its products have reached at maturity stage and already has overcapacity. Therefore, it concentrates on maintaining operational efficiency of its plants. Identity the strategy implemented by ABC Steel Industries along with reasons. [May 2022]

Ans. ABC Steel Industries has opted to implement a Stability strategy. Stability strategies are intended to safeguard the existing interests and strengths of business. It involves organizations to pursue established and tested objectives, continue on the chosen path, maintain operational efficiency and so on. A stability strategy is pursued when a firm continues to serve in the same or similar markets and deals in the same products and services. In stability strategy, few functional changes are made in the products or markets, however, it is not a 'do nothing' strategy. This strategy is typical for mature business organizations. Some small organizations also frequently use stability as a strategic focus to maintain a comfortable market or profit position.

Major reasons for Stability strategy are:

- A product has reached the maturity stage of the product life cycle.
- The staff feels comfortable with the status quo as it involves less changes and less risks.
- It is opted when the environment in which an organization is operating is relatively stable.
- Where it is not advisable to expand as it may be perceived as threatening.
- After rapid expansion, a firm might want to stabilize and consolidate itself.

9. Quick N Sturdy Inc., a multinational company, is undergoing feasibility study to introduce new luxury and sports car for specific group of customers. The product is meant for customers with distinctive preferences and special requirements. The product is not a standard one and as such the target market is also narrow. Company knows that demand for the product is large enough to be profitable for the company, but small enough to be ignored by other major industry players. The company wants to position itself in the niche market with the prime consideration to offer unique features in the product for the target market.

In the given situation, identify the generic strategy as suggested by Michael Porter. Also state the advantages and disadvantages of such strategy. [Nov 2022]

Ans. Quick N Sturdy Inc. has adopted Focused Differentiation Strategy which is one of the Michael Porter's Generic strategies. A focused differentiation strategy requires offering unique features that fulfil the demands of a narrow market. Some firms using a focused differentiation strategy concentrate their efforts on a particular sales channel, such as selling over the internet only. Others target particular demographic groups. Firms that compete based on uniqueness and target a narrow market are following a focused differentiation strategy.

Advantages of Focused Strategy

1. Premium prices can be charged by the organisations for their focused product/services.
2. Due to the tremendous expertise in the goods and services that the organisations following focus strategy offer, rivals and new entrants may find it difficult to compete.

Disadvantages of Focused Strategy

1. The firms lacking in distinctive competencies may not be able to pursue focus strategy.
2. Due to the limited demand of product/services, costs are high, which can cause problems.
3. In the long run, the niche could disappear or be taken over by larger competitors by acquiring the same distinctive competencies.

10. A company started its operation in 2015 with Product Alpha. In early 2021, with intent to have its better presence in the market, the company diversifies by acquiring a company with product Beta. After sometime, it was observed that product Beta is not faring well. Aggressive competition was therein market for the product. It was also revealed that though customers are not price sensitive, but product was not keeping pace with the fast-changing unique features as expected by its customers.

Company has tried one of the retrenchment strategies by putting efforts to improve its internal efficiency, but could not get desired results. In the situation, company is of a considered view to remain and grow in product alpha and to decouple with product Beta from its portfolio.

As a strategist, suggest the retrenchment strategy to be adopted by the company. Also delineates reasons why a company should adopt such strategy? [Nov 2022]

Ans. As per the facts of the case, company had tried to improve its internal efficiency. In other words, had tried turnaround strategy but could not get the desired results. Company does not want to go for complete close down of business. Rather it wants to continue and grow in its original business i.e., product Alpha. As a strategist, it is advisable that the company should adopt divestment strategy. In the given situation where the business of product Beta is not faring well and became unprofitable and unviable due to aggressive competition in the market, the best option for the company is to divest the product Beta which is loss-making business. Retrenchment may be done either internally or externally. Turnaround strategy is adopted in case of internal retrenchment where emphasis is laid on improving internal efficiency of the organization, while divestment

strategy is adopted when a business turns unprofitable and unviable due to some external factors. In view of the above, the company should go for divestment strategy.

A divestment strategy may be adopted due to various reasons:

1. A business that had been acquired proves to be a mismatch and cannot be integrated within the company.
2. Persistent negative cash flows from a particular business create financial problems for the whole company, creating the need for divestment of that business.
3. Severity of competition and the inability of a firm to cope with it may cause it to divest.
4. It is not possible for the business to do Technological up-gradation that is required for the business to survive, a preferable option would be to divest.
5. A better alternative may be available for investment, causing a firm to divest a part of its unprofitable business

TEST YOUR KNOWLEDGE – DESCRIPTIVE QUESTIONS

1. Explain the meaning of Directional Strategy. **[May 2018]**

Ans. Directional strategies, also called grand strategies, provide basic directions for strategic actions towards achieving strategic goals. Such strategies are formulated at the corporate level so are also known as corporate strategies. The corporate strategies a firm can adopt have been classified into four broad categories: stability, expansion, retrenchment, and combination.

2. Briefly describe the meaning of divestment and liquidation strategy and establish difference between the two. **[Nov 2020]**

Ans. Divestment strategy involves the sale or liquidation of a portion of business, or a major division, profit center or SBU. Divestment is usually a part of rehabilitation or restructuring plan and is adopted when a turnaround has been attempted but has proved to be unsuccessful. Liquidation strategy is a retrenchment strategy considered the most extreme and unattractive strategy, which involves closing down a firm and selling its assets.

Difference between Divestment strategy and Liquidation strategy:

Basis of Difference	Divestment Strategy	Liquidation Strategy
Meaning	Divestment strategy involves sale or liquidation of a portion of business	Liquidation strategy involves closing down a firm and selling its business
Policy Option	Divestment is usually a part of rehabilitation or restructuring plan and is adopted when a turnaround has been attempted but has proved to be unsuccessful. Option of a turnaround may even be ignored if it is obvious that divestment is the only answer	Liquidation becomes the only option in case of severe and critical conditions where either turnaround or divestment are not seen as a solution or have been attempted but failed.

Basis of Difference	Divestment Strategy	Liquidation Strategy
Purpose	Efforts are made for the survival of the organization.	Liquidation as a form of retrenchment strategy is unattractive and considered as the last resort
Consequences	Survival of organization helps in retaining personnel, at least to some extent	There is loss of employment and opportunities with stigma of failure.

3. The CEO of a textile mill is convinced that his loss-making company can be turned around. Suggest an action plan for a turnaround to the CEO. **(July 2021)**

Ans. A workable action plan for turnaround of the textile mill would involve:

- **Stage One -** Assessment of current problems: In the first step, assess the current problems and get to the root causes and the extent of damage.
- **Stage Two -** Analyze the situation and develop a strategic plan: Identify major problems and opportunities develop a strategic plan with specific goals and detailed functional actions after analysing strengths and weaknesses in the areas of competitive position.
- **Stage Three -** Implementing an emergency action plan: If the organization is in a critical stage, an appropriate action plan must be developed to stop the bleeding and enable the organization to survive.
- **Stage Four -** Restructuring the business: If the core business is irreparably damaged, then the outlook for the entire organization may be bleak. Efforts to be made to position the organization for rapid improvement.
- **Stage Five -** Returning to normal: In the final stage of the turnaround strategy process, the organization should begin to show signs of profitability, return on investments and enhancing economic value- Added.

4. "There are certain conditions or indicators which point out that a turnaround is needed if the company has to survive". Discuss. **(Dec 2021)**

Ans. Rising competition, business cycles and economic volatility have created a climate where no business can take viability for granted. Turnaround strategy is a highly targeted effort to return an organization to profitability and increase positive cash flows to a sufficient level. Organizations that have faced a significant crisis that has negatively affected operations require turnaround strategy. Turnaround strategy is used when both threats and weaknesses adversely affect the health of an organization so much that its basic survival is a question. When an organization is facing both internal and external pressures making things difficult then it has to find something which is entirely new, innovative and different. Being an organization's first objective is to survive and then grow in the market; turnaround strategy is used when an organization's survival is under threat. Once turnaround is successful the organization may turn to focus on growth.

Conditions for turnaround strategies: When firms are losing their grip over market profits due to several internal and external factors, and if they have to survive under the competitive environment, they have to identify danger signals as early as possible and undertake rectification steps immediately. These are certain conditions or indicators which point out that a turnaround is needed if the company has to survive.

These danger signals are:

- Uncompetitive products or services.
- Declining market share.
- Deterioration in physical facilities.
- Over-staffing, high turnover of employees, and low morale.
- Mismanagement.

5. What is cost leadership strategy? Under what circumstances an organization can gain competitive advantages from cost leadership strategy? Is there any risk in pursuing cost leadership strategy? (Nov 2022)

Ans. Cost leadership strategy emphasizes producing standardized products at a very low per-unit cost for consumers who are price-sensitive. It frequently results from productivity increases and aggressive pursuit of cost reduction throughout the development, production, marketing, and distribution processes. It allows a firm to earn higher profits than its competitors.

The circumstances in which an organization can gain competitive advantages from cost leadership strategy are:

- When the market is composed of many price-sensitive buyers.
- When there are few ways to achieve product differentiation.
- When buyers do not care much about differences from brand to brand.
- When there are a large number of buyers with significant bargaining power.

The basic idea is to underprice competitors and thereby gain market share driving some of the competitors out of the market.

Some risks of pursuing cost leadership are:

- That competitors may imitate the strategy, therefore driving overall industry profits down
- That technological breakthroughs in the industry may make the strategy ineffective; or that buyer interests may swing to other differentiating features besides price.

6. Describe the construction of BCG matrix and discuss its utility in strategic management. (SM)

Ans. Refer to above notes.

7. An industry comprises of only two firms – Soorya Ltd. and Chandra Ltd. From the following information relating to Soorya Ltd., prepare BCG Matrix:

Product	Revenues (in ₹)	Percent Revenues	Profits (in ₹)	Percent Profits	Percentage Market Share	Percentage Industry Growth rate
A	6 crore	48	120 lakh	48	80	+15
B	4 crore	32	50 lakh	20	40	+10
C	2 crore	16	75 lakh	30	60	-20
D	50 lakh	4	5 lakh	2	5	-10
Total	12.5 crore	100	250 lakh	100		

Ans. Using the BCG approach, a company classifies its different businesses on a two dimensional growth-share matrix. In the matrix, the vertical axis represents market growth rate and provides

a measure of market attractiveness. The horizontal axis represents relative market share and serves as a measure of company strength in the market. With the given data on markets share and industry growth rate of Soorya Ltd, its four products are placed in the BCG matrix as follows:

Market Growth Rate	Retain Market Share: High	Retain Market Share: Low
High	*Product A* *[80% Market Share + 15% Growth Rate]* **Stars**	*Product B* *[40% Market Share +10% Growth Rate]* **Question Marks**
Low	*Product C* *[60% Market Share – 20% Growth Rate]* **Cash Cows**	*Product D* *[05% Market Share – 10% Growth Rate]* **Dogs**

Product A is in best position as it has a high relative market share and a high industry growth rate. On the other hand, product B has a low relative market share, yet competes in a high growth industry. Product C has a high relative market share but competes in an industry with negative growth rate. The company should take advantage of its present position that may be difficult to sustain in long run. Product D is in the worst position as it has a low relative market share and competes in an industry with negative growth rate.

8. Aurobindo, the pharmaceutical company wants to grow its business. Draw Ansoff's Product Market Growth Matrix to advise them of the available options. (SM)

Ans. The Ansoff's product market growth matrix (proposed by Igor Ansoff) is a useful tool that helps businesses decide their product and market growth strategy. With the use of this matrix, a business can get a fair idea about how its growth depends upon its markets in new or existing products in both new and existing markets. The Ansoff's product market growth matrix is as follows:

	Existing Products	New Products
Existing Market	Market Penetration	Product Development
New Market	Market Development	Diversification

Ansoff's Product Market Growth Matrix

Based on the matrix, Aurobindo may segregate its different products. Being in pharmaceuticals, development of new products its result of extensive research and involves huge costs. There are

social dimensions that may influence the decision of the company. It can adopt penetration, product development, market development or diversification simultaneously for its different products.

Market penetration refers to a growth strategy where the business focusses on selling existing products into existing markets. It is achieved by making more sales to present customers without changing products in any major way.

Market development refers to a growth strategy where the business seeks to sell its existing products into new markets. It is a strategy for company growth by identifying and developing new markets for the existing products of the company.

Product development refers to a growth strategy where business aims to introduce new products into existing markets. It is a strategy for company growth by offering modified or new products to current markets.

Diversification refers to a growth strategy where a business markets new products in new markets. It is a strategy by starting up or acquiring businesses outside the company's current products and markets.

As market conditions change overtime, a company may shift product market growth strategies. For example, when its present market is fully saturated a company have no choice other than to pursue new market.

9. In the context of Ansoff's Product-Market Growth Matrix, identify with reasons, the type of growth strategies followed in the following cases:

(i) A leading producer of tooth paste, advises its customers to brush teeth twice a day to keep breath fresh.

(ii) A business giant in hotel industry decides to enter into dairy business.

(iii) One of India's premier utility vehicles manufacturing company ventures to foray into foreign markets.

(iv) A renowned auto manufacturing company launches ungeared scooters in the market.

Ans. The Ansoff's product market growth matrix (proposed by Igor Ansoff) is a useful tool that helps businesses decide their product and market growth strategy. This matrix further helps to analyse different strategic directions. According to Ansoff there are four strategies that organisation might follow:

(i) Market Penetration – A leading producer of toothpaste, advises its customers to brush teeth twice a day to keep breath fresh. It refers to a growth strategy where the business focuses on selling existing products into existing markets.

(ii) Diversification – A business giant in hotel industry decides to enter into dairy business. It refers to a growth strategy where a business markets new products in new markets.

(iii) Market development – One of India's premier utility vehicles manufacturing company ventures to foray into foreign markets. It refers to a growth strategy where the business seeks to sell its existing products into new markets.

(iv) Product Development – A renowned auto manufacturing company launches ungeared scooters in the market. It refers to a growth strategy where business aims to introduce new products into existing markets.

17 CHAPTER

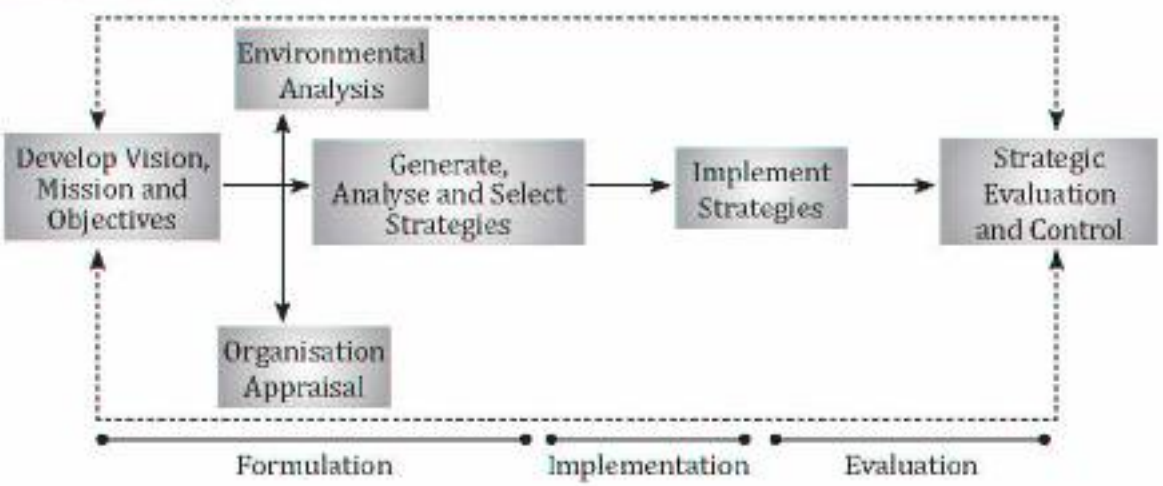
Strategy Implementation and Evaluation

INTRODUCTION

- Strategy implementation and evaluation are critical phases of the process of strategic management in an organization.
- Implementation involves putting the plans and initiatives developed as part of the strategy into action, while evaluation refers to the process of measuring and assessing the effectiveness of these actions.

STRATEGIC MANAGEMENT PROCESS

- The process of developing an organisation's strategy is quite methodical. The organisation first develops a clear vision, mission, values and goals.
- All these aspects come together in a strategic plan that details the organisation's vision, mission, values, goals, strategic themes, a high level implementation plan and key performance measures.
- The key performance measures are included in the strategic plan and are used to link the themes back to the organisation's goals and to measure the success of the strategy after it is implemented.
- The strategic management process is dynamic and continuous.
- For instance, a shift in the economy could represent a major opportunity and require a change in long-term objectives and strategies; a failure to accomplish annual objectives could require a change in policy; or a major competitor's change in strategy could require a change in the firm's mission.
- Therefore, strategy formulation, implementation, and evaluation activities should be performed on a continual basis, not just at the end of the year or semi-annually. The strategic management process never really ends.

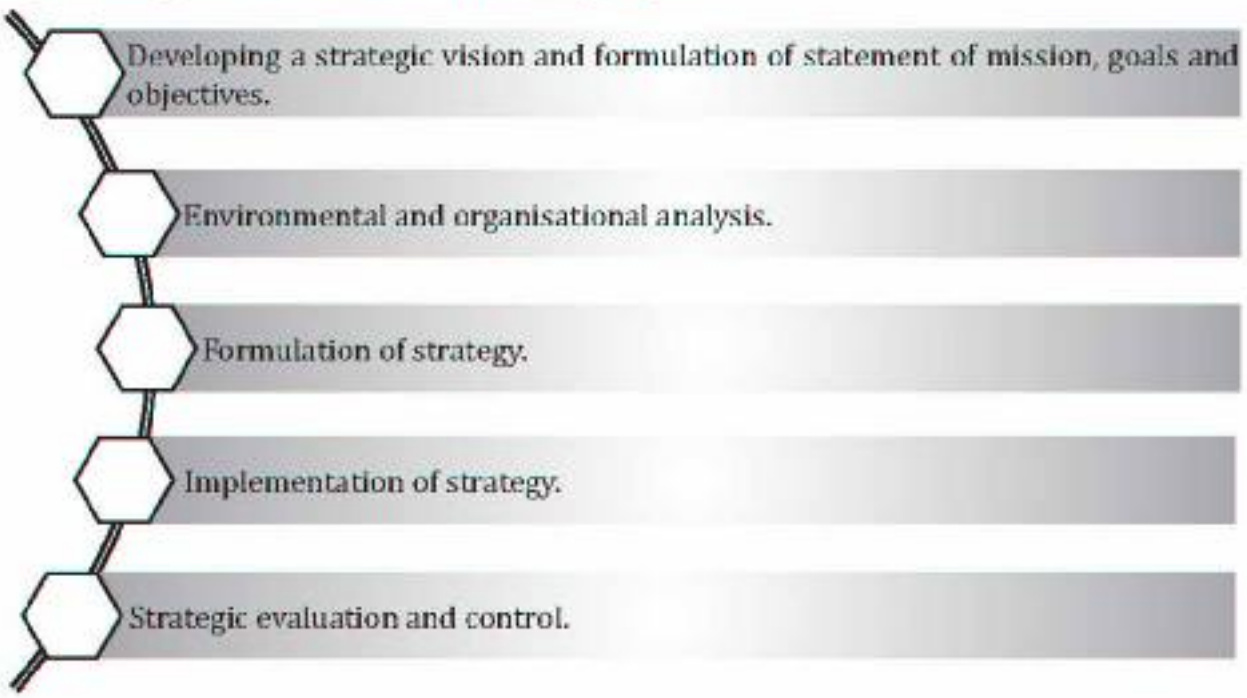


- Strategic Management Model **(Fred R David)** is a widely accepted, comprehensive.
- This model like any other model of management does not guarantee sure-shot success, but it does represent a clear and practical approach for formulating, implementing, and evaluating strategies.
- Relationships among major components of the strategic management process are shown in the model.
- In practice, strategists do not go through the process in lockstep fashion.
- Generally, there is give-and-take among hierarchical levels of an organisation.
- The process essentially is iterative and involves a lot of back-and-forth considerations across different stages in the strategic management process.
- Many organisations conduct formal meetings semi-annually to discuss and update the firm's vision/mission, opportunities/threats, strengths/weaknesses, strategies, objectives, policies, and performance.
- Creativity from participants is encouraged in meeting.
- Good communication and feedback are needed throughout the strategic management process.

STAGES IN STRATEGIC MANAGEMENT

- Crafting and executing strategy are the heart and soul of managing a business enterprise.
- But exactly what is involved in developing a strategy and executing it proficiently?
- And who besides top management has strategy – formulation – executing responsibility?

Strategic management involves the following stages:



Stage 1: Strategic Vision, Mission and Objectives

- First, Co. should develop a Vision i.e., future blueprint.
- It answers the question 'where it wants to land'.

- Top management's views and conclusions about company's direction and product, customer, market, technology focus constitute strategic vision of company.
- Mission statements define what we are and what we do. Hence, the focus is on the role played by organizational in society and overall direction and not any SBU specific direction.
- Objectives & goals of an Org flows from V & M.
- They provide a means of performance measurement at each level of management.

Stage 2: Environmental and Organisational Analysis

This stage is the diagnostic phase of strategic analysis. It entails two types of analysis:

1. **Environmental scanning**
2. **Organisational analysis**

1. **Environmental Analysis:** It consists of economic, social, technical& market analysis. It is dynamic and uncertain & helps in determining opportunities and threats.
2. **Organizational Analysis:** It consists of analysis of Co. resources, tech resources, Productive capacity, distribution channel, R&D, HR, etc. It reveals strength and weakness of Organisation.

This stage helps in SWOT analysis.

Stage 3: Formulating Strategy

- First stage in strategy formulation is developing strategic alternatives in line with SWOT of organization.
- Second stage involves choosing appropriate alternative which will serve as strategy of Firm.

Examples of Strategic Alternatives:

(*a*) Should company continue in same business on same level of operation?
(*b*) If it should continue in same business, should it grow by expanding same unit; establishing new units; or acquiring other units in same Industry?
(*c*) If it should diversify, should it diversify into related or unrelated areas?
(*d*) Should it get out of existing business fully or partially?
(*e*) Combination of any of the above strategies

Stage 4: Implementation of Strategy

- It is operation-oriented activity.
- Most demanding & time-consuming stage.

Strategy execution process includes following aspects:

(*a*) Developing budget to allocate ample resource for strategy implementation.
(*b*) Staffing Org. with needed skills & expertise.
(*c*) Motivating people to pursue target energetically.
(*d*) Creating a Co. culture & work climate that support successful strategy execution.
(*e*) Ensuring policies, procedures and internal operations facilitate effective execution.
(*f*) Exerting Leadership needed for strategic execution & continuous improvement.

Good strategy execution creates strong fits between

(*a*) Strategy & Org's capability
(*b*) Strategy & reward structure
(*c*) Strategy & Org work culture
(*d*) Strategy & internal system

Stage 5: Strategic Evaluation and Control

Final stage of SM process involves

- Evaluating Co.'s strategy implementation &
- Assessing impact of new external Developments and make corrective adjustments to V, M, Objectives & strategy.

Successful strategy execution requires searching for:

(*a*) Ways to continuously improve and

(*b*) Corrective adjustments whenever external & and internal environment demands.

It may be in form of:

- Simple fine-tuning strategy if strategy is working well; or
- Modifying strategy when strategy is not yielding desired result or there is changes in environment.

STRATEGY FORMULATION CORPORATE STRATEGY

- Planning entails choosing what has to be done in the future (today, next week, next month, next year, over the next couple of years, etc.) and creating action plans. An essential element of effective management is adequate planning.
- Choosing a path of action to achieve defined goals is a part of planning.
- The game plan that really directs the company towards success is called "corporate strategy". Planning may be operational or strategic.
- Senior management develops strategic plans for the entire organisation after evaluating the organization's strengths and weaknesses in light of potential possibilities and dangers in the outside world.

Strategic Planning: The game plan that really directs the company towards success is called **"corporate strategy"**. The success of the company depends on how well this game plan works. Because of this, the core of the process of strategic planning is the formation of corporate strategy. The formation of corporate strategy is the result of a process **known as strategic planning**.

- Strategic planning is the process of determining the objectives of the firm, resources required to attain these objectives and formulation of policies to govern the acquisition, use and disposition of resources.

- Strategic planning involves a fact of interactive and overlapping decisions leading to the development of an effective strategy for the firm.
- Strategic planning determines where an organisation is going over the next year or more and the ways for going there.
- The process is organisation-wide or focused on a major function such as a division or other major function.

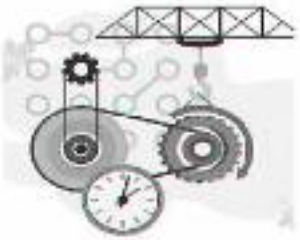
STRATEGIC UNCERTAINTY AND HOW TO DEAL WITH IT?

- Strategic uncertainty refers to the unpredictability and unpredictability of future events and circumstances that can impact an organization's strategy and goals.

- It can be driven by factors such as changes in the market, technology, competition, regulation, and other external factors.
- Dealing with strategic uncertainty can be challenging and organizations need to have the flexibility, resilience, and agility to quickly respond to changes in the environment and minimize its impact.
- To be manageable, they need to be grouped into logical clusters or themes.
- It is then useful to assess the importance of each cluster in order to set priorities with respect to Information gathering and analysis.

Flexibility	Organizations can build flexibility into their strategies to quickly adapt to changes in the environment.
Diversification	Diversifying the organization's product portfolio, markets, and customer base can reduce the impact of strategic uncertainty.
Monitoring and Scenario Planning	Organizations can regularly monitor key indicators of change and conduct scenario planning to understand how different future scenarios might impact their strategies.
Building Resilience	Organizations can invest in building internal resilience, such as strengthening their operational processes, increasing their financial flexibility, and improving their risk management capabilities.
Collaboration and Partnerships	Collaborating with other organizations, suppliers, customers, and partners can help organizations pool resources, share risk, and gain access to new markets and technologies.
Impact of Uncertainty	Each element of strategic uncertainty involves potential trends or events that could have an impact on present, proposed, and even potential businesses., a trend toward natural foods may present opportunities for juices for a firm producing aerated drinks on the basis of a strategic uncertainty. The impact of a strategic uncertainty will depend on the importance of the impacted SBU to a firm. The importance of established SBUs may be indicated by their associated sales, profits, or costs. However, such measures might need to be supplemented for potential growth as present sales, profits, or costs may not reflect the true value.

STRATEGY IMPLEMENTATION



- Strategy implementation concerns the managerial exercise of putting a freshly chosen strategy into action.
  Deals with the managerial exercise of supervising the ongoing pursuit of strategy, making it works, improving the competence with which it is executed and showing measurable progress in achieving the targeted results.
- Strategic implementation is concerned with translating a strategic decision into action, which presupposes that the decision itself (i.e., the strategic choice) was made with some thought being given to feasibility and acceptability.

RELATIONSHIP WITH STRATEGY FORMULATION

Strategy Formulation

Sound

A

- Square A represents a situation where strategy formulation is sound and strategy implementation is weak.
- It may be due to lack of resources, experience, leadership etc.
- Company should try to move from square A to B.

B

- Square B represents a situation where strategy formulation is sound and strategy excellent.
- Ideal situation which every Firm wants to achieve.

Flawed

C

- Square C represents a situation where strategy formulation is flawed and strategy implementation is weak.
- In this case, company needs to redesign their strategy and read just their implementation skills.

D

- Square D represents a situation where strategy formulation is flawed and strategy implementation is excellent.
- In this case, company needs to redesign their strategy before readjusting them implementation skills.

Weak **Excellent**

Strategic Formulation

Effective **Ineffective**

Operational Management

Effective

Thrive/ Grow

A situation where strategy formulation is effective and operational management is efficient. Such company is well placed and thrives as it is achieving what it wants to achieve with efficient input-output ratio.

Die slowly

A situation where strategy formulation is ineffective and operational management is efficient. Such company is doomed to fail unless there is change in strategic direction.

Ineffective

Survive

A situation where strategy formulation is effective and operational management is inefficient. Such company will survive as strategic direction to ensure effectiveness is there even if too much input is used to generate output.

Die quickly

A situation where strategy formulation is ineffective and operational management is inefficient. Such company is doomed to fail unless there is change in strategic direction.

Difference between Strategy Formulation and Implementation

Summarized are the key distinctions between strategy formulation and strategy implementation:

Strategy Formulation	Strategy Implementation
Strategy Formulation includes planning and decision-making involved in developing organization's strategic goals and plans.	Strategy Implementation involves all those means related to executing the strategic plans.
In short, Strategy Formulation is placing the Forces before the action.	In short, Strategy Implementation is managing forces during the action.
An Entrepreneurial Activity based on strategic decision-making.	An Administrative Task based on strategic and operational decisions.
Emphasizes on effectiveness.	Emphasizes on efficiency.
Primarily an intellectual and rational process.	Primarily an operational process.
Requires co-ordination among few individuals at the top level.	Requires co-ordination among many individuals at the middle and lower levels.
Requires a great deal of initiative, logical skills, conceptual intuitive and analytical skills.	Requires specific motivational and leadership traits.
Strategic Formulation precedes Strategy Implementation.	Strategy Implementation follows Strategy Formulation.

- Strategy formulation concepts and tools do not differ greatly for small, large, for - profit, or non-profit organizations. However, strategy implementation varies substantially among different types and sizes of organizations.
- These types of activities obviously differ greatly among manufacturing, service, and governmental organizations.
- Two types of linkages exist between these two phases of strategic management. The forward linkages deal with the impact of strategy formulation on strategy implementation while the backward linkages are concerned with the impact in the opposite direction.

Linkages and Issues in Strategy Implementation Linkages

Noteworthy is the fact that while strategy formulation is primarily an entrepreneurial activity, based on strategic decision-making, the implementation of strategy is mainly an administrative task based on strategic as well as operational decision-making.

Forward Linkages	○ The different elements in strategy formulation starting with objective setting through environmental and organizational appraisal, strategic alternatives and choice to the strategic plan determine the course that an organization adopts for itself. ○ With the formulation of new strategies, or reformulation of existing strategies, many changes have to be affected within the organization. ○ The organizational structure has to undergo a change in the light of the requirements of the modified or new strategy. ○ The style of leadership has to be adapted to the needs of the modified or new strategies.

Backward Linkages	○ Just as implementation is determined by the formulation of strategies, the formulation process is also affected by factors related with implementation. ○ While dealing with strategic choice, remember that past strategic actions also determine the choice of strategy. ○ Organizations tend to adopt those strategies which can be implemented with the help of the present structure of resources combined with some additional efforts. Such incremental changes, over a period of time, take the organization from where it is to where it wishes to be.

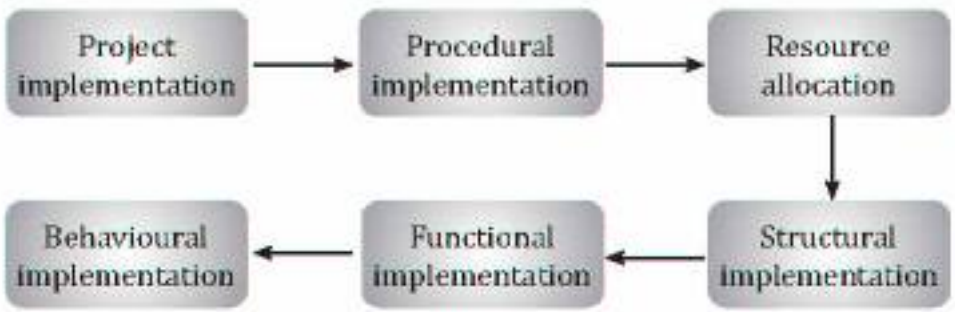
■ ISSUES IN STRATEGY IMPLEMENTATION

A strategist, therefore, has to bring a wide range of knowledge, skills, attitudes, and abilities. The implementation tasks put to test the strategists' abilities to allocate resources, design organisational structure, formulate functional policies, and to provide strategic leadership.

The strategic plan devised by the organization proposes the manner in which the strategies could be put into action. Strategies, by themselves, do not lead to action. They are, in a sense, a statement of intent. Implementation tasks are meant to realise the intent. Strategies, therefore, have to be activated through implementation.
Strategies should lead to formulation of different kinds of programmes. A programme is a broad term, which includes goals, policies, procedures, rules, and steps to be taken in putting a plan into action. Programmes are usually supported by funds allocated for plan implementation.
Programmes lead to the formulation of projects. A project is a highly specific programme for which the time schedule and costs are predetermined. It requires allocation of funds based on capital budgeting by organizations. Thus, research and development programme may consist of several projects, each of which is intended to achieve a specific and limited objective, requires separate allocation of funds, and is to be completed within a set time schedule.

Implementation of strategies is not limited to formulation of plans, programmes, and projects. Projects would also require resources. After resources have been provided, it would be essential to see that a proper organizational structure is designed, systems are installed, functional policies are devised, and various behavioural inputs are provided so that plans may work.

Given below in sequential manner the issues in strategy implementation which are to be considered:



- The above activities need not be performed one after other. They can be done simultaneously as well.
- Strategy implementation requires shift in responsibility from Strategist to divisional and functional managers/ employees.
- This shift in responsibility may create implementation problem if new strategy comes as surprise to them. Hence, divisional & functional managers should be involved as much as possible in strategy formulation process.
- Similarly, strategists should also be involved in strategy implementation process.
- Strategist's genuine personal commitment to implementation is necessary and powerful motivation for managers and employees.
- Major competitors' accomplishments, products, plans, actions, and performance should be apparent to all organizational members. Major external opportunities and threats should be clear, and managers and employees' questions should be answered satisfactorily.
- Top-down flow of communication is essential for developing bottom-up support.
- Firms need to develop a competitor focus on all hierarchical levels by gathering and widely distributing competitive intelligence; every employee should be able to benchmark her or his efforts against best-in-class competitors so that the challenge becomes personal. This is a challenge for strategists of the firm. Firms should provide training for both managers and employees to ensure that they have and maintain the skills necessary to be world-class performers.

Strategic Change Through Digital Transformation

- Organizations are being pushed harder than ever to shift digitally in order to stay competitive.
- Digital transformation, however, may be a difficult and complicated process. To guarantee that projects for digital transformation are effective, change management is crucial.

STRATEGIC CHANGE

The changes in the environmental forces often require businesses to make modifications in their existing strategies and bring out new strategies. Strategic change is a complex process that involves a corporate strategy focused on new markets, products, services and new ways of doing business.

Steps to initiate strategic change: For initiating strategic change, three steps can be identified as under:

Recognize the Need for Change	○ The first step is to diagnose which facets of the present corporate culture are strategy supportive and which are not. ○ This basically means going for environmental scanning involving appraisal of both internal and external capabilities may be through SWOT analysis and then determining where the lacuna lies and scope for change exists.
Create a Shared Vision to Manage Change	○ Objective of both organization and individual should coincide and there should not be any conflict. ○ This needs creation of shared vision between organization and management which needs to be communicated.
Institutionalise the Change	○ It is action stage that requires implementation of change strategy. ○ Change process should be monitored and in case of any deviation, corrective action should be taken.

Kurt Lewin's Model of Change: To make the change lasting, Kurt Lewin proposed three phases of the change process for moving the organization from the present to the future. These stages are unfreezing, changing and refreezing.

Unfreezing the Situation	○ Lewin proposed that change should not come as surprise to organization members as it lowers their morale. ○ Process of unfreezing makes individual aware of necessity for change & help prepare for such change. ○ It involves breaking down old attitude & behaviour, custom & tradition so that they start clean slate and are willing to change. ○ This can be achieved by making announcements and holding meetings throughout the organization.
Changing to the New Situation	○ Once the unfreezing process has been completed and the members of the organization recognise the need for change and have been fully prepared to accept such change, their behaviour patterns need to be redefined. H.C. Kellman has proposed three methods for reassigning new patterns of behaviour. These are compliance, identification and internalization. ○ **Compliance:** It is achieved by strictly enforcing the reward and punishment strategy for good or bad behaviour. Fear of punishment, actual punishment or actual reward seems to change behaviour for the better. ○ **Identification:** Identification occurs when members are psychologically impressed upon to identify themselves with some given role models whose behaviour they would like to adopt and try to become like them. ○ **Internalization:** Internalization involves some internal changing of the individual's thought processes in order to adjust to the changes introduced. They have given freedom to learn and adopt new behaviour in order to succeed in the new set of circumstances.
Refreezing	○ It occurs when new behavior pattern becomes way of life. ○ New behavior must replace former behavior completely & permanently. ○ Change process is not one time process but a continuous one due to dynamism and ever- changing environment.

How does digital transformation work?

The use of digital technologies to develop fresh, improved, or entirely new company procedures, goods, or services is known as "digital transformation." It's a fundamental adjustment that can be challenging to identify and even more challenging to implement.

Change management in the digital transition consists of four essential elements:

1. Defining the goals and objectives of the transformation.
2. Assessing the current state of the organization and identifying gaps.
3. Creating a roadmap for change that outlines the steps needed to reach the desired state.
4. Implementing and managing the change at every level of the organization.

How does change management work?

The role of change management in digital transformation, Digital transformation is a process of organizational change that enables an organization to use technology to create new value for customers, employees, and other stakeholders. A good change management strategy is necessary for a successful digital transformation.

Change management is the process of planning, implementing, and monitoring changes in an organization. It provides organizations in achieving their objectives while reducing risks and disruptions. For any organisation undergoing a digital transition, change management is crucial.

A properly implemented change management strategy can help an organization to:

- Specify the parameters and goals of the digital transformation.
- Determine which procedures and tools need to be modified.
- Make a plan for implementing the improvements.
- Involve staff members and parties involved in the transformation process.
- Track progress and make required course corrections

A crucial component of any digital transition is changing management.

Change Management Strategies for Digital Transformation

One of the most important areas of focus for guaranteeing a successful transformation is changing management. In essence, modern firms must be able to manage change. They must modify their management techniques in order to achieve this.

The five best practices for managing change in small and medium-sized businesses are:

Begin at the Top	○ A focused, invested, united leadership that is on the same page about the company's future is reflected in change that begins at the top. ○ The culture that will motivate the rest of the organisation to accept change can only be generated and promoted in this way.
Ensure that the Change is Both Necessary and Desired	○ The fact that decision-makers are unaware of how to properly handle a digital transformation and the effects it will have on their firm is one of the main causes of this. ○ If a corporation doesn't have a sound strategy in place introducing too much too fast can frequently become a major issue down the road.
Reduce Disruption	○ Employee perceptions of what is required or desirable change can differ by department, rank, or performance history. ○ It's crucial to lessen how changes affect staff. ○ The introduction of new tactics or technologies intended to improve management and corporate operations causes employee concern about change. **It is possible to reduce workplace disruption by:** (*a*) Getting the word out early and preparing for some interruption. (*b*) Giving staff members the knowledge and tools, they need to adjust to change. (*c*) Creating an environment that encourages transformation or change. (*d*) Empowering change agents to provide context and clarity for changes, such as project managers or team leaders. (*e*) Ensuring that IT department is informed of changes in technology or infrastructure and is prepared to support them.

Encourage Communication	○ Create channels so that workers may contact you with queries or complaints. ○ Encourage departmental collaboration to propagate ideas and innovations as new procedures take root. ○ Communication promotes efficiency and has the power to influence culture, just like your vision. ○ The people who will be affected the most by these changes are reassured that they are not in danger through effective communication, which keeps everyone on the same page.
Recognize that Change is the Norm, not the Exception	○ Change readiness may be defined as "the ability to continuously initiate and respond to change in ways that create advantage, minimize risk, and sustain performance." ○ In order to keep up with the customers, businesses must also adapt their operations. ○ They must prepare for change in advance and expect them. ○ It may run into difficulties because change is not a project but rather an ongoing process.

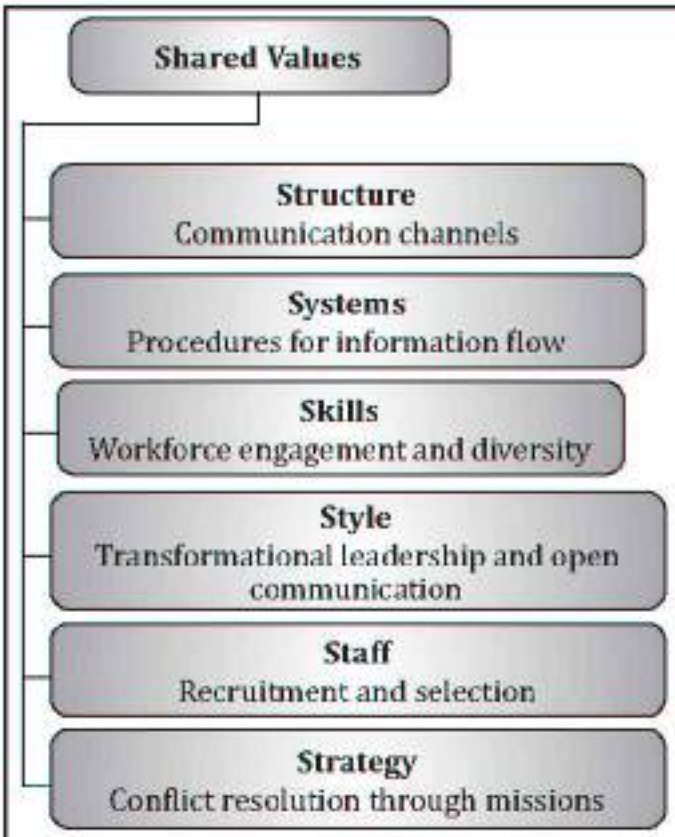
How to manage change during transformation?

Any organisation may find the work of digital transformation challenging and overwhelming. To ensure that a digital transition is effective, change management is essential. Here are some pointers for navigating change during the digital transformation:

■ ORGANIZATIONAL FRAMEWORK

The **McKinsey 7S Model refers** to a tool that analyses a company's "organizational design."

- The McKinsey 7s Model focuses on how the "Soft Ss" and "Hard Ss" elements are interrelated, suggesting that modifying one aspect might have a ripple effect on the other elements in order to maintain an effective balance.



Hard elements are:

Strategy: What steps does the company intend to take to address current and futures challenges?

Structure: How is work divided, how do different departments work and collaborate?

Systems: Which formal and informal processes is the company's structure based on?

Soft elements are:

Shared Values: What is the idea the organization subscribes to? Is this idea communicated credibly to others?

Staff: This element refers to employee's development and relevant processes, performances and feedback programs etc.

Skill: What is the company's base of skills and competencies?

Style: This depicts the leadership style and how it influences the strategic decisions of the organization.

The **Hard elements are directly controlled** by the management. The following elements are the hard elements in an organization.

Strategy	The direction of the organization, a blueprint to build on a core competency and achieve competitive advantage to drive margins and lead the industry.
Structure	Depending on the availability of resources and the degree of centralisation or decentralization that the management desires, its choses from the available alternatives of organizational structures.
Systems	The development of daily tasks, operations and teams to execute the goals and objectives in the most efficient and effective manner. The Soft elements are difficult to define as they are more governed by the culture. But these soft elements are equally important in determining an organization's success as well as growth in the industry. The following are the soft elements in this model;
Shared Values	The core values which get reflected within the organizational culture or influence the code of ethics of the management.
Style	This depicts the leadership style and how it influences the strategic decisions of the organisation. It also revolves around people motivation and organizational delivery of goals.
Staff	The talent pool of the organisation.

Skills	The core competencies or the key skills of the employees play a vital role in defining the organizational success. But like any other strategic model, this model has its limitations as well; ○ It ignores the importance of the external environment and depicts only the most crucial elements within the organization. ○ The model does not clearly explain the concept of organizational effectiveness or performance. ○ The model is considered to be more static and less flexible for decision making. ○ It is generally criticized for missing out the real's gaps in conceptualization and execution of strategy.

■ ORGANIZATION STRUCTURE

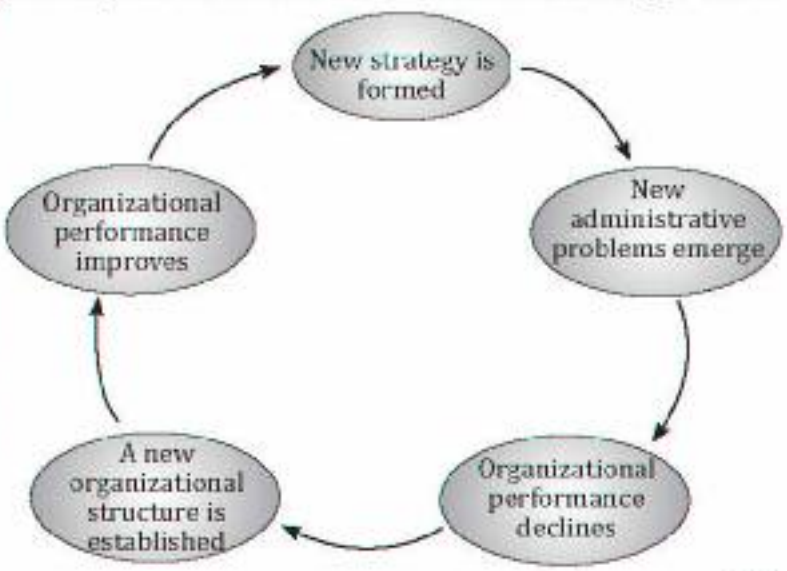
The ideal organizational structure is a place where ideas filter up as well as down, where the merit of ideas carries more weight than their source, and where participation and shared objectives are valued more than executive order. **- Edson Spencer**

Changes in corporate strategy often require changes in the way an organization is structured for **two major reasons**.

First	Second
○ Structure largely dictates how operational objectives and policies will be established to achieve the strategic objectives. ○ Objectives and policies are stated largely in terms of products in an organization whose structure is based on product groups. ○ The structural format for developing objectives and policies can significantly impact all other strategy-implementation activities.	○ Structure dictates how resources will be allocated to achieve strategic objectives. ○ If an organization's structure is based on customer groups, then resources will be allocated in that manner. ○ Similarly, if an organization's structure is set up along functional business lines, then resources are allocated by functional areas.

Chandler, changes in strategy lead to changes in organizational structure. Chandler found a particular structure sequence to be often repeated as organizations grow and change strategy over time. There is no one optimal organizational design or structure for a given strategy.

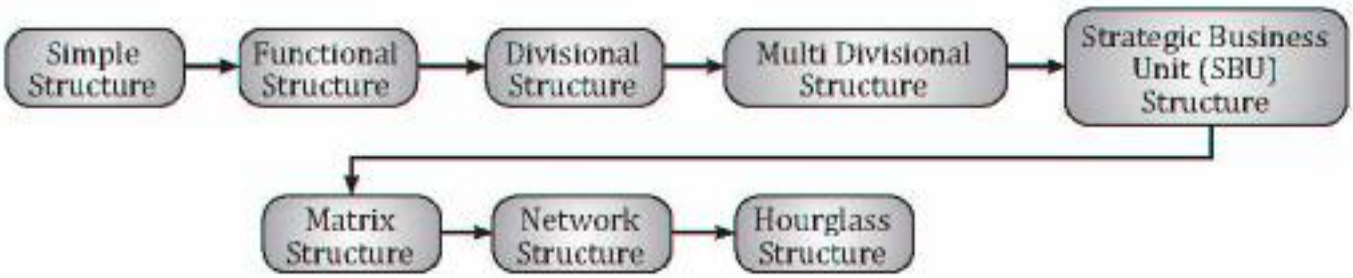
- Small firms tend to be functionally structured (centralized).
- Medium-size firms tend to be divisionally structured (decentralized).
- Large firms tend to use an SBU (strategic business unit) or matrix structure.



- Every firm is influenced by numerous external and internal forces. But no firm can change its structure in response to each of these forces, because to do so would lead to chaos. However, when a firm changes its strategy, the existing organizational structure may become ineffective.
- Structure can also influence strategy.
- The following basic types of organizational structure: functional, divisional by geographic area, divisional by product, divisional by customer, divisional process, strategic business unit (SBU), and matrix.

Types of Organization Structure

- Organizational structure is the company's formal configuration of its intended roles, procedures, governance mechanisms, authority, and decision-making processes.
- The most important issue is that the company's structure must be congruent with or fit with the company's strategy.



A. Simple structure

Simple organizational structure is most appropriate for companies that follow a single-business strategy and offer a line of products in a single geographic market.

Appropriate for companies implementing focused cost leadership or focused differentiation strategies.

A simple organizational structure may result in competitive advantages for some small companies relative to their larger counterparts. These potential competitive advantages include a broad-based openness to innovation, greater structural flexibility, and an ability to respond more rapidly to environmental changes. However, if they are successful, small companies grow larger.

Generally, there are significant increases in the amount of competitively relevant information that requires processing. More extensive and complicated information-processing requirements place significant pressures on owner-managers (often due to a lack of organizational skills or experience or simply due to lack of time).

Thus, it is incumbent on the company's managers to recognise the inadequacies or inefficiencies of the simple structure and change it to one that is more consistent with company's strategy.

B. Functional Structure

A widely used structure in business organisations is functional type because of its simplicity and low cost.

A functional structure also promotes specialization of labour, encourages efficiency, minimizes the need for an elaborate control system, and allows rapid decision making.

The functional structure consists of a chief executive officer or a managing director and supported by corporate staff with functional line managers in dominant functions such as production, financial accounting, marketing, R&D, engineering, and human resources.

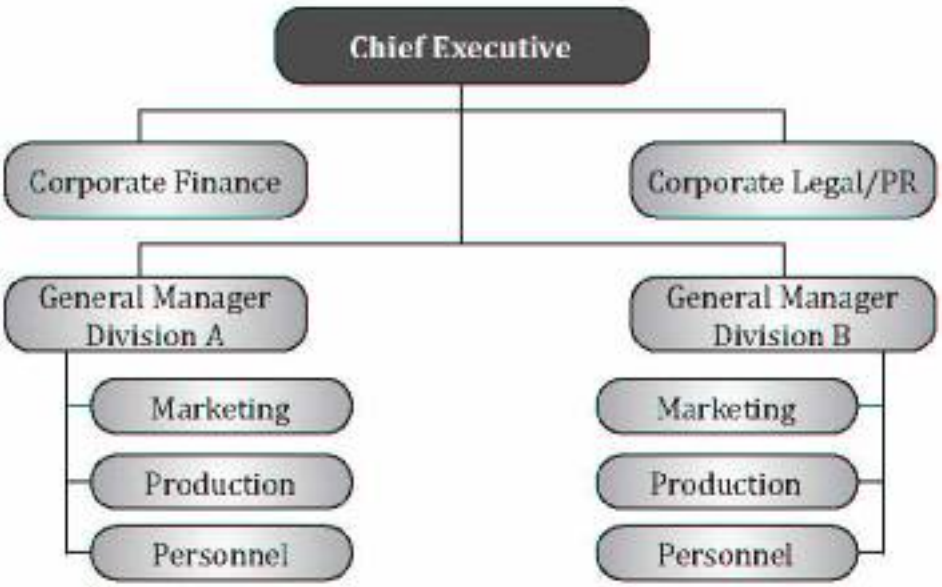
The functional structure enables the company to overcome the growth-related constraints of the simple structure, enabling or facilitating communication and coordination.

However, compared to the simple structure, there also are some potential problems. Differences in functional specialization and orientation may impede communications and coordination.

Functional specialists often may develop a myopic (or narrow) perspective, losing sight of the company's strategic vision and mission. When this happens, this problem can be overcome by implementing the multidivisional structure.

C. Divisional Structure

The divisional structure can be organized in one of the four ways: **by geographic area, by product or service, by customer, or by process.**



A divisional structure has **some clear advantages.**

First	Accountability is clear. That is, divisional managers can be held responsible for sales and profit levels. Employee morale is generally higher in a divisional structure than it is in centralized structure.
Second	The divisional design are that it creates career development opportunities for managers, allows local control of local situations, leads to a competitive climate within an organization, and allows new businesses and products in be added easily.

The divisional design is not without some limitations.

Perhaps the most important limitation is that a divisional structure is costly, for a number of reasons.

1. Each division requires functional specialists who must be paid.

2. There exists some duplication of staff services, facilities, and personnel; for instance, functional specialists are also needed centrally (at headquarters) to coordinate divisional activities.

3. Managers must be well qualified because the divisional design forces delegation of authority better-qualified individuals requires higher salaries.
   A divisional structure can also be costly because it requires an elaborate, headquarters-driven control system.

4. Certain regions, products, or customers may sometimes receive special treatment, and it may be difficult to maintain consistent, companywide practices.

A divisional structure by geographic area allows local participation in decision making and improved coordination within a region.

The divisional structure by product (or services) is most effective for implementing strategies when specific products or services need special emphasis. The divisional structure allows strict control over and attention to product lines, but it may also require a more skilled management force and reduced top management control.

E.g:- General Motors, DuPont, and Procter & Gamble use a divisional structure by product to implement strategies.

This structure allows an organization to cater effectively to the requirements of clearly defined customer groups.

E.g.:- Book-publishing companies often organize their activities around customer groups such as colleges, secondary schools, and private commercial schools. Some airline companies have two major customer divisions: passengers and freight or cargo services. Bulks are often organised in divisions such as personal banking corporate banking, etc.

A divisional structure by process is similar to a functional structure, because activities are organized according to the way work is actually performed. However, a key difference between these two designs is that functional departments are not accountable for profits or revenues, whereas divisional process departments are evaluated on these criteria.

D. Multi Divisional Structure

Multidivisional (M-form) structure is composed of operating divisions where each division represents a separate business to which the top corporate officer delegates responsibility for day-to-day operations and business unit strategy to division managers.

The corporate office is responsible for formulating and implementing overall corporate strategy and manages divisions through strategic and financial controls.

Multidivisional or M-form structure was developed in the **1920s**, in response to coordination and control-related problems in large firms. Costs were not allocated to individual products, so it was not possible to assess an individual product's profit contribution.

Loss of control meant that optimal allocation of firm resources between products was difficult (if not impossible). Top managers became over- involved in solving short-run problems (such as coordination, communications, conflict resolution) and neglected long-term strategic issues.

Multidivisional structure calls for:

- Creating separate divisions, each representing a distinct business
- Each division would house its functional hierarchy,
- Division managers would be given responsibility for managing day-to-day operations;
- A small corporate office that would determine the long-term strategic direction of the firm and exercise overall financial control over the semi- autonomous divisions.

Strategic control refers to the operational understanding by corporate officers of the strategies being implemented within the firm's separate business units.

An increase in diversification strains corporate officers' abilities to understand the operations of all of its business units and divisions are then managed by financial controls, which enable corporate officers to manage the cash flow of the divisions through budgets and an emphasis on profits from distinct businesses.

E. Strategic Business Unit (SBU) Structure

SBU concept is relevant for multiproduct, multi –business enterprise. It is a scientific grouping of related businesses/ divisions which can be planned independently. A strategic business unit (SBU) structure consists of at least three levels, with a

(*a*) corporate headquarters at the top,

(*b*) SBU groups at the second level, and

(*c*) divisions grouped by relatedness within each SBU at the third level.

When number of products become huge, it is not practical to provide separate strategic treatment to each product.

It is necessary to group product/businesses into manageable number of strategically related businesses.

The three most important characteristics of a SBU are:

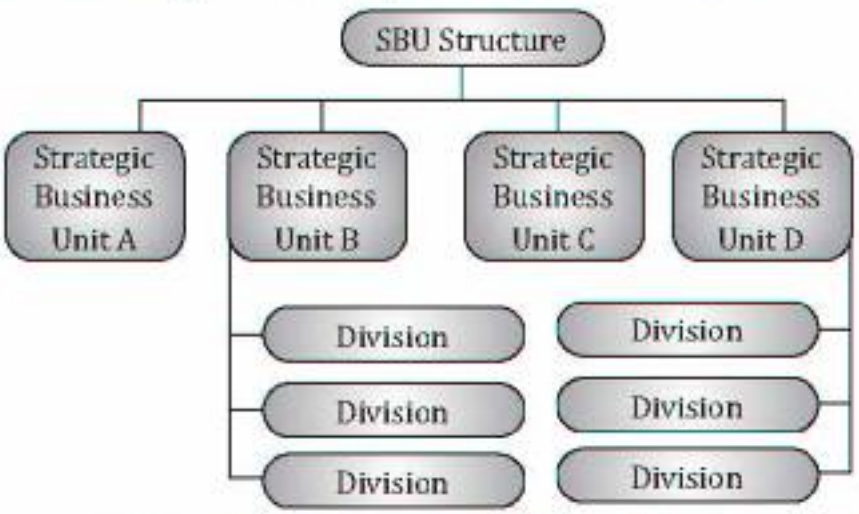
- It is a single business or a collection of related businesses which offer scope for independent planning and which might feasibly standalone from the rest of the organization.
- It has its own set of competitors.
- It has a manager who has responsibility for strategic planning and profit performance, and who has control of profit-influencing factors.

When strategic planning was carried out treating territories as the units for planning, it gave rise to two kinds of difficulties:

(i) Since a number of territorial units handled the same product, the same product was getting varied strategic planning treatments; and

(ii) Since a given territorial planning unit carried different and unrelated products, products with dissimilar characteristics were getting identical strategic planning treatment.

The SBU structure groups similar products into strategic business units and delegates authority and responsibility for each unit to a senior executive who reports directly to the chief executive officer. This change in structure can facilitate strategy implementation by improving coordination between similar divisions and channelling accountability to distinct business units.



A strategic business unit (SBU) structure consists of at least three levels, with a corporate headquarters at the top, SBU groups at the second level, and divisions grouped by relatedness within each SBU at the third level. Within each SBU, divisions are related to each other, as also that SBU groups are unrelated to each other. Within each SBU, divisions producing similar products and/or using similar technologies can be organised to achieve synergy.

E.g:- Sony has been restructuring to match the SBU structure with its ten internal companies as organised into four strategic business units. Because it has been pushing the company to make better use of software products and content (e.g., Sony's music, films and games) in its televisions and audio gear to increase Sony's profitability. By its strategy, Sony is one of the few companies that have the opportunity to integrate software and content across a broad range of consumer electronics products.

The principle underlying the grouping is that all related products-related from the standpoint of "function"-should fall under one SBU. The concept provides the right direction to strategic planning by removing the vagueness and confusion often experienced in such multi-business enterprises in the matter of grouping of the businesses.

F. Matrix Structure

Matrix structure is an O.S. where functional and projects/ products are combined simultaneously. It aims at combining advantages of vertical and horizontal flow of authority and communication.

In matrix structure, there are functional departments with permanent employees who are assigned to work in different projects.

So, employees have two superiors i.e., a product/ project manager and functional manager. The "home" department - that is, engineering, manufacturing, or marketing - is usually functional & is reasonably permanent. People from these functional units are assigned temporarily to one or more product units or projects.

Matrix structure is the most complex structure since there is both vertical & horizontal flow of authority.

It is appropriate when management concludes that other forms of Organisation Structure is not right for implementation of strategy.

It is often found in an organization or within an SBU when the following three conditions exist:

(i) ideas need to be cross fertilized across projects or products,

(ii) resources are scarce, and

(iii) abilities to process information and to make decision needs to be improved.

It is widely used in many industries, including construction, healthcare, research and defence.

The matrix structure is often found in an organization or within an SBU when the following three conditions exists:

(1) Ideas need to be cross-fertilised across projects or products,

(2) Resources are scarce and

(3) Abilities to process information and to make decisions need to be improved.

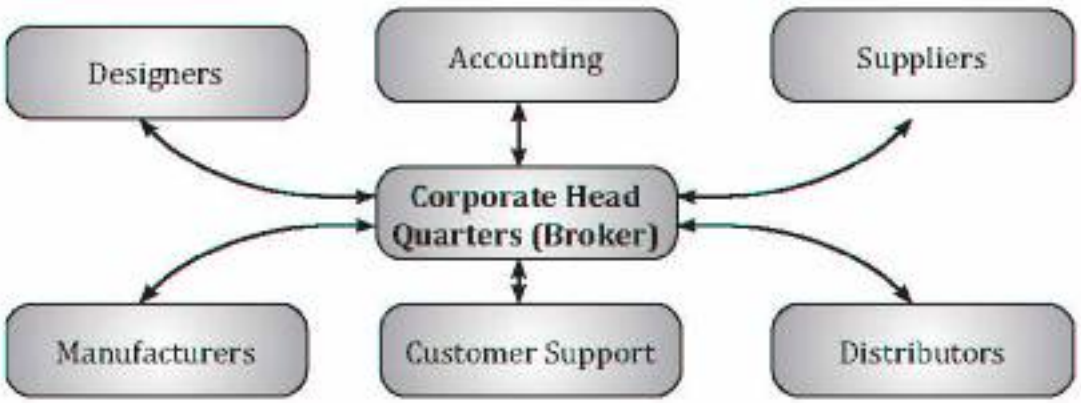
For development of matrix structure Davis and Lawrence, have proposed three distinct phases:

1. **Cross-functional task forces:** Temporary cross-functional task forces are initially used when a new product line is being introduced. A project manager is in charge as the key horizontal link.
2. **Product/brand management:** If the cross-functional task forces become more permanent, the project manager becomes a product or brand manager and a second phase begins. In this arrangement, function is still the primary organizational structure, but product or brand managers act as the integrators of semi-permanent products or brands.

3. **Mature matrix:** The third and final phase of matrix development involves a true dual-authority structure. Both the functional and product structures are permanent. All employees are connected to both a vertical functional superior and a horizontal product manager. Functional and product managers have equal authority and must work well together to resolve disagreements over resources and priorities.

However, the matrix structure is not very popular because of difficulties in implementation and trouble in managing.

G. Network Structure



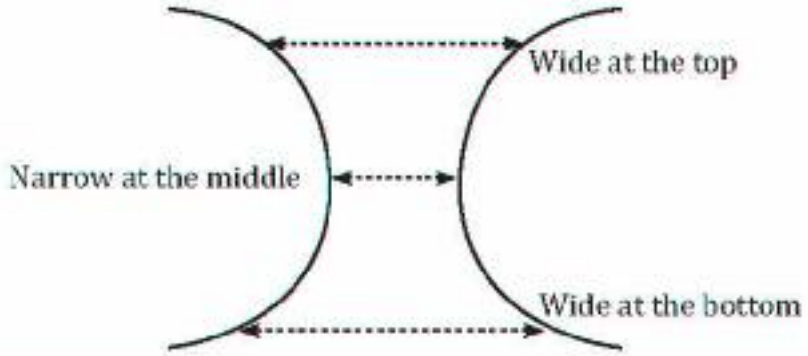
- A corporation organized in this manner is often called a virtual organization because it is composed of a series of project groups or collaborations linked by constantly changing non-hierarchical, cobweblike networks.
- The network structure becomes most useful when the environment of a firm is unstable and is expected to remain so.
- The organization is, in effect, only a shell, with a small headquarters acting as a "broker", electronically connected to some completely owned divisions, partially owned subsidiaries, and other independent organisation. In its ultimate form, the network organization is a series of independent firms or business units linked together by a common system that designs, produces, and markets a product or service.

Advantages	Disadvantages
○ Allows a company to concentrate on its own competencies & outsourcing of other functions to experts in their field. ○ It provides more flexibility and adaptability to meet/face rapid change in technology, taste and preferences. ○ Most useful when environment of a Firm is unstable.	○ Availability of numerous partners can be a source of trouble. ○ Outsourcing of functions may keep the Firm away from discovering any synergies. ○ If a Firm overspecializes in only few functions, there is a risk of choosing the wrong function and thus becoming non- competitive. ○ Low employee morale.

H. Hourglass Structure

- The role played by middle management is diminishing as the tasks performed by them are increasingly being replaced by the technological tools. Hourglass organization structure consists of three layers with constricted middle layer. The structure has a short and narrow middle-management level.

- Information technology links the top and bottom levels in the organization taking away many tasks that are performed by the middle level managers. A shrunken middle layer coordinates diverse lower-level activities. Contrary to traditional middle level managers who are often specialist, the managers in the hourglass structure are generalists and perform wide variety of tasks.



Advantages	Disadvantages
○ Reduced cost due to reduction of middle level management posts. ○ Enhanced responsiveness by simplifying decision making. ○ Decision making authority is close to source of information, so it's faster.	(a) Since size of middle management is reduced, promotion opportunity for lower-level managers is also reduced. (b) Lower employee morale at lower level due to monotony.

■ ORGANIZATION CULTURE

Every organisation has **a unique organizational culture.** It has its own philosophy and principles, its own history, values, and rituals, its own ways of approaching problems and making decisions, its own work climate.

Corporate culture refers to a company's values, beliefs, business principles, traditions, ways of operating, and internal work environment.

Where Does Corporate Culture Come From?

It is reflected or manifested comes from

All the above sociological factors combine to form corporate culture.

Culture: ally or obstacle to strategy execution?

An organization's culture is either an important contributor or an obstacle to successful strategy execution. The beliefs, vision, objectives, and business approaches and practices underpinning a company's strategy may or may not be compatible with its culture.

■ ROLE OF CULTURE IN STRATEGY EXECUTION

- Strong culture promotes good strategy execution when there's fit and impedes execution when there's negligible fit.
- Every company has a culture that has powerful influence on behaviour of managers. Culture dictates not only the way managers behave within the organization but also decisions they take.

E.g:- A culture where frugality and thrift are values strongly shared by organizational members is very conducive to successful execution of a low-cost leadership strategy.

  - A culture built around such business principles as
  - listening to customers,
  - encouraging employees to take pride in their work, and
  - giving employees a high degree of decision-making authority is very conducive
  - to successful execution of a strategy of delivering superior customer value.

- A strong strategy-supportive culture nurtures and motivates people to do their jobs in ways conducive to effective strategy execution; it provides structure, standards, and a value system in which to operate; and it promotes strong employee identification with the company's vision, performance targets, and strategy.
- Employees are motivated to take challenging work to realize company's vision & do their work competently.

Perils of Strategy-Culture Conflict	Creating a strong fit between strategy and culture
The culture has to be changed as rapidly as can be managed this, of course, presumes that it is one or more aspects of the culture that are out of whack rather than the strategy. Correcting a strategy-culture conflict can occasionally mean revamping strategy to produce cultural fit, more usually it means revamping the mismatched cultural features to produce strategy fit. A sizable and prolonged strategy-culture conflict weakens and may even defeat managerial efforts to make the strategy work.	The strategy maker's responsibility to select a strategy compatible with the "sacred" or unchangeable parts of prevailing corporate culture. Strategy implementer's task, once strategy is chosen, to change whatever facets of the corporate culture hinder effective execution.

Changing a problem culture:

Changing a problem culture is **very difficult** because of the heavy anchor of deeply held values and habits-people cling emotionally to the old and familiar.

It takes combined management efforts over a point of time to replace unhealthy culture with healthy culture or remove unwanted aspects of problem culture and in still those which are more supportive.

First Step Diagnose which facets of the present culture are strategy supportive and which are not.

Second Step Managers have to talk openly and forthrightly to all concerned about those aspects of the culture that have to be changed.

Third Step The talk has to be followed swiftly by visible aggressive action to identify and modify the culture to create right strategy-culture fit.

- The culture-changing actions includes
  - Revising policies and procedures;
  - Altering incentive compensation (to reward the desired cultural behaviour);
  - Visibly praising and recognizing people who display the new cultural traits, Recruiting and hiring new managers and employees;
  - Replacing key executives who are strongly associated with the old culture, &
  - Communicate the need and benefits to employees.

STRATEGIC LEADERSHIP

A leader is best when people barely know he exists, when his work is done, his aim fulfilled, they will say: we did it ourselves. **-Lao Tzu**

Strategic leadership sets the **firms direction** by

- Developing and communicating vision of future,
- Formulate strategies in the light of internal and external environment,
- Brings about changes required to implement strategies and
- Inspire the staff to contribute to strategy execution.

Leadership roles to play:

A strategic leader is a change agent to initiates strategic changes in the organisations and ensure that the changes successfully implemented.

Five leadership roles to play in pushing for good strategy execution:

Strategic leader is a change agent who ensure that the changes are successfully implemented.

- Staying on top of what is happening, closely monitoring progress, solving out issues, and learning what obstacles lie in the path of good execution.
- Promoting a culture of esprit de corps that mobilizes and energizes organizational members to execute strategy in a competent fashion and perform at a high level.
- Keeping the Organization responsive to changing situation.
- Exercising ethical leadership and insisting that the company conduct its affairs like a model corporate citizen.
- Pushing corrective actions to improve strategy execution and performance.

E.g:- 1. N. R. Narayan Murthy, is known as a celebrated business leader because of the values he had institutionalised over his tenure as CEO of Infosys. One of the great legacies he left with Infosys is a strong management development program that builds management talent and strategic leader with ethical values.

2. Dhirubhai Ambani, pioneer of Reliance Group, was an icon in himself because of his ability to conceptualize and create sweeping strategies, to reach corporate goals, and proficiency in implementing his strategic vision.

Leadership role in implementation: The strategic leaders must be able to use the strategic management process effectively by guiding the company in ways that result in the formation of strategic intent and strategic mission, facilitating the development and implementation of appropriate strategic plans and providing guidance to the employees for achieving strategic goals.

Strategic leadership entails the ability to anticipate, envision, maintain flexibility, and empower others to create strategic change as necessitated by external environment.

Shapes the formulation of _____

Competitive landscape, strategic leaders are challenged to adapt their frames of reference so that they can deal with rapid, complex changes.

A manager's frame of reference is the foundation on which a manager's mindset is built. The importance of a manager's frame of reference can be seen if we perceive those competitive battles are not between companies or products but between mindsets or managerial frames.

Effective strategic leaders must be able to deal with the diverse and cognitively complex competitive situations that are characteristic of today's competitive landscape.

A Strategic leader has several responsibilities, including the following:

Making strategic decisions.	Formulating policies and action plans to implement strategic decision.
Ensuring effective communication in the organisation.	Managing human capital (perhaps the most critical of the strategic leader's skills).
Managing change in the organisation.	Creating and sustaining strong corporate culture,
Sustaining high performance over time.	

The strategic leadership skills of a company's managers represent resources that affect company performance.

Strategic leadership sets the firm's direction by developing and communicating a vision of future and inspire organization members to move in that direction.

Two basic approaches to leadership

Transformational leadership style	Transactional leadership style
It uses charisma and enthusiasm to inspire people to work for good of Organization. **It is appropriate** ○ In turbulent/ unsafe environment or ○ In industries at start or end of PLC or ○ In poorly performing organization. These leaders inspire employees by offering excitement, vision, intellectual stimulation and personal satisfaction. They involve followers in mission and give them vision of higher purpose so as to get more dramatic changes in organization.	It uses the authority of its office to exchange rewards such as pay, status symbols etc. **It is more appropriate** ○ In static environment, or ○ In mature industry; or ○ In organizations that are performing well. They prefer a more formalized approach to motivation, setting clear goals with explicit rewards or penalties for achievement and non-achievement. These leaders try to build on existing culture and enhance current practices.

Strategic Control

Controlling is one of the important functions of management and is often regarded as the core of the management process.

It involves monitoring the activity, measuring results against predefined standards, analysing & correcting deviation as necessary & adapting the system.

It is a function intended to regulate & check and ensure that performance of planned activities achieve pre-determined goals.

The process of control has the following elements:

(*a*) Objectives of the business system which could be operationalized into **measurable and controllable standards.**

(*b*) A mechanism for monitoring and measuring the performance of the system.

(*c*) A mechanism,

(i) for comparing the actual results with reference to the standards

(ii) for detecting deviations from standards and

(iii) for learning new insights on standards, themselves.

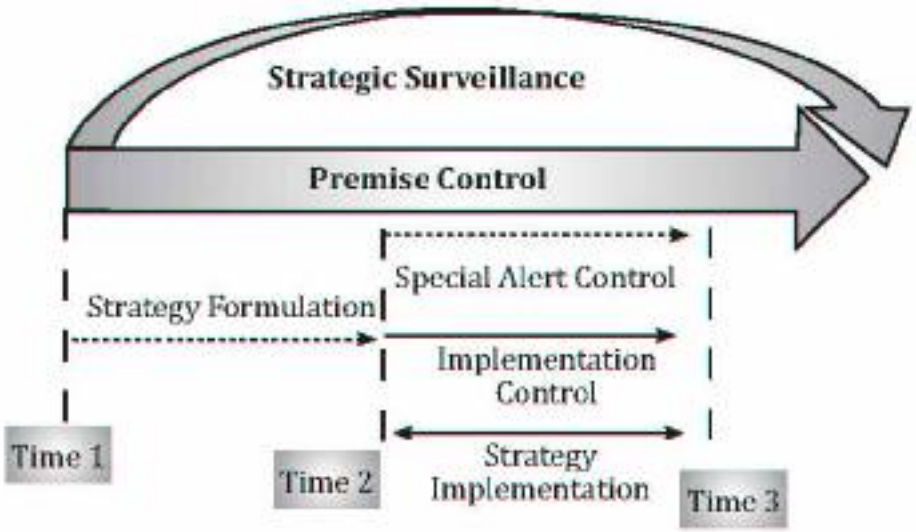
(*d*) A mechanism for feeding back information for taking corrective actions in order to ensure the strategy is relevant & goals are achieved.

Primarily there are three types of organizational control, viz., operational control, management control and strategic control.

Operational Control	It is concerned with individual task or transaction as against total management functions. One of the ways to identify operational control area is there should be clear cut & measurable relationship between input & output. It ensures that processes are regulated within certain 'tolerances' limit. **E.g:-** Stock control (maintaining stocks between set limits), Production control (manufacturing to set programmes), Quality control (keeping product quality between agreed limits), Cost control (maintaining expenditure as per standards), Budgetary control (keeping performance to budget).
Management Control	It is concerned with integrated activities of a complete department, division or even organization. It is more aggregative & inclusive than operational control. It is a process by which management ensure that resources obtained are used effectively and efficiently to achieve objectives. **E.g:-** Inventory management
Strategic Control	According to **Schendel and Hofer** "Strategic control focuses on the dual questions of whether: (1) the strategy is being implemented as planned; and (2) the results produced by the strategy are those intended." It is directed towards identifying problems and changes in premises and making necessary adjustments.

Types of Strategic Control:

Premise Control	Strategies are based on certain assumptions & premises with related to environment in which they operate. Such premises may not remain valid over a period of time. Premise control is a tool for systematic and continuous monitoring of the environment to verify the validity and accuracy of the premises on which the strategy has been built. **It primarily involves monitoring two types of factors:** (i) Environmental factors such as economic (inflation, liquidity, interest rates), technology, social and legal-regulatory. (ii) Industry factors such as competitors, suppliers, substitutes. verify the validity & accuracy of the premise based on which strategy was formed. It is neither feasible nor desirable to control all types of premises in same manner.
Strategic Surveillance	It is unfocussed and involves general monitoring of environment & various sources of information like financial newspaper business magazines etc. to uncover unanticipated information which may affect the strategy. Known as loose form of strategic control. Strategic surveillance may be loose form of strategic control but is capable of uncovering information relevant to the strategy.
Special Alert Control	Unexpected events like natural calamity, terrorist attack, change in government & other such events may force an organization to review & reconsider their strategy. To cope up with such crisis, organizations form a crisis team to handle the situation.
Implementation Control	It assesses need for change in overall strategy as per unfolding events & results of strategy It is not replacement of operational controls. Strategic implementation control is not a replacement to operational control. Unlike operational control, it continuously monitors the basic direction of the strategy. **The two basic forms of implementation control are:** **(i) Monitoring strategic thrusts:** Monitoring strategic thrusts helps managers to determine whether the overall strategy is progressing as desired or whether there is need for readjustments. **(ii) Milestone Reviews:** All key activities necessary to implement strategy are segregated in terms of time, events or major resource allocation. It normally involves a complete reassessment of the strategy. It also assesses the need to continue or refocus the direction of an organization.



These four strategic controls steer the organisation and its different sub-systems to the right track. They help the organisation to negotiate through the turbulent and complex environment.

STRATEGIC PERFORMANCE MEASURES

SPM is a method that increases line executives' understanding of an organization's strategic goals and offers a continuous system for tracking progress towards these objectives using clear-cut performance measurements.

SPM helps to eliminate silos by establishing a common language among all divisions of the organisation so they may communicate openly and productively.

Strategic performance measures are key indicators that organizations use to track the effectiveness of their strategies and make informed decisions about resource allocation.

Key performance measures and indicators must be created, selected, combined into reports and acted upon so that strategy implementation can have tangible outcomes.

Firstly
There needs to be a clear cause and effect relationship between the indicators and strategic outcomes.

→

Secondly
KPIs need to be carefully chosen because they will influence the behaviour of people within the organisation.

However, managers should be aware of paralysis by over analysis.

Managing the political aspects of implementing a strategy

People involved in the planning process for the implementation of a strategy may be affected by two sets of forces.

The "rational" forces of openness, communication, and self-analysis can exist on the one hand.

Other hand, there could be political forces concerned with preserving empires and fostering internal rivalry that urge knowledge retention, selective communication, and caution.

When these two techniques conflict, the politically acceptable aspects may end up in the explicit strategy while the sensitive elements may form an unspoken plan that contains the implicit strategy.

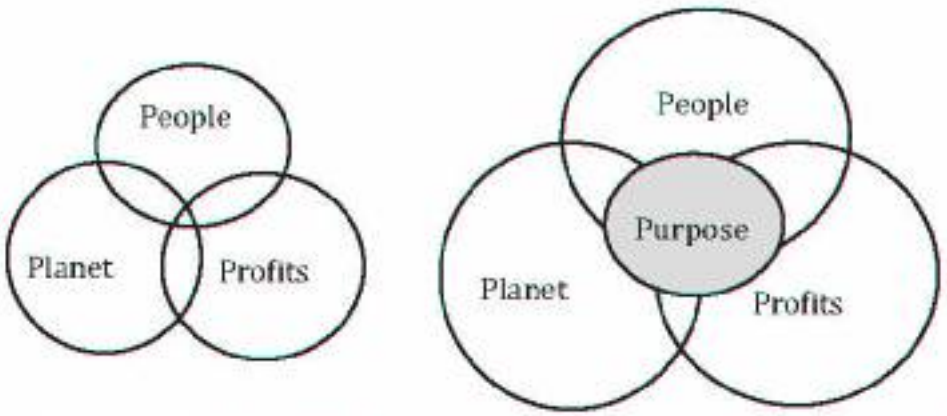
Types of Strategic Performance Measures

There are various types of strategic performance measures, including:

Financial Measures	Financial measures, such as revenue growth, return on investment (ROI), and profit margins, provide an understanding of the organization's financial performance and its ability to generate profit.
Customer Satisfaction Measures	Customer measures, such as customer satisfaction, customer retention, and customer loyalty, provide insight into the organization's ability to meet customer needs and provide high-quality products and services.
Market Measures	Market measures, such as market share, customer acquisition, and customer referrals, provide information about the organization's competitiveness in the marketplace and its ability to attract and retain customers.
Employee Measures	Employee measures, such as employee satisfaction, turnover rate, and employee engagement, provide insight into the organization's ability to attract and retain talented employees and create a positive work environment.
Innovation Measures	Innovation measures, such as research and development (R&D) spending, patent applications, and new product launches, provide insight into the organization's ability to innovate and create new products and services that meet customer needs.
Environmental Measures	Environmental measures, such as energy consumption, waste reduction, and carbon emissions, provide insight into the organization's impact on the environment and its efforts to operate in a sustainable manner.

Toward More Holistic Measures of Strategic Performance

Development of management thought and practice has persistently pushed the frontier of strategic performance beyond financial metrics. Thus, the Triple Bottom Line framework (TBL) emphasises People and Planetary Concerns besides profitability or Economic Prosperity alone. The Quadruple Bottomline adds the 4th P to add a spiritual dimension named 'Purpose'.



The Importance of Strategic Performance Measures Strategic performance measures are essential for organizations for several reasons:

Goal Alignment	Strategic performance measures help organizations align their strategies with their goals and objectives, ensuring that they are on track to achieve their desired outcomes.
Resource Allocation	Strategic performance measures provide organizations with the information they need to make informed decisions about resource allocation, enabling them to prioritize their efforts and allocate resources to the areas that will have the greatest impact on their performance.
Continuous Improvement	Strategic performance measures provide organizations with a framework for continuous improvement, enabling them to track their progress and make adjustments to improve their performance over time.
External Accountability	Strategic performance measures help organizations demonstrate accountability to stakeholders, including shareholders, customers, and regulatory bodies, by providing a clear and transparent picture of their performance.

Choosing the Right Strategic Performance Measures

Organizations should choose strategic performance measures that are aligned with their goals and objectives and that provide relevant and actionable information. In selecting the right measures, organizations should consider the following factors:

Relevance	The measure should be relevant to the organization's goals and objectives and provide information that is actionable and meaningful.
Data Availability	The measure should be based on data that is readily available and can be collected and analysed in a timely manner.
Data Quality	The measure should be based on high-quality data that is accurate and reliable.
Data Timeliness	The measure should be based on data that is current and up-to-date, enabling organizations to make informed decisions in a timely manner. These measures provide a way for organizations to assess the success of their strategies, identify areas for improvement, and make informed decisions about how to allocate resources and adjust their strategies to achieve their desired outcomes.

TEST YOUR KNOWLEDGE – MCQS

1. _____ leadership style may be appropriate in turbulent environment.

(*a*) Transactional
(*b*) Transformational
(*c*) Autocratic
(*d*) None of the these

2. An organizational structure with constricted middle level is:

(*a*) Divisional structure
(*b*) Network structure
(*c*) Hour Glass structure
(*d*) Matrix structure

3. **You are the head of operations of a company. When you focus on total or aggregate management functions in the sense of embracing the integrated activities of a complete department at all, you are practicing:**

(*a*) Strategic Control (*b*) Management Control

(*c*) Administrative Control (*d*) Operations Control

4. **Which of the following would be chosen by the core strategist to implement operational control:**

(*a*) Premise control (*b*) Special Alert control

(*c*) Implementation control (*d*) Budgetary control

5. **Compliance, Identification and Internalization are the three processes involved in:**

(*a*) Refreezing (*b*) Defreezing

(*c*) Changing behaviour patterns (*d*) Breaking down old attitudes

6. **Which one is NOT a type of strategic control?**

(*a*) Operational control (*b*) Strategic surveillance

(*c*) Special alert control (*d*) Premise control

ANSWER KEY

1.	(b)	2.	(c)	3.	(b)	4.	(d)	5.	(c)	6.	(a)

TEST YOUR KNOWLEDGE – CASE STUDIES

1. **Ramesh, is owner of a popular brand of Breads. Yashpal, his son after completing Chartered Accountancy started assisting his father in running of business. The approaches followed by father and son in management were very different. While Ramesh preferred to use authority and having a formal system of defining goals and motivation with explicitly rewards and punishments, Yashpal believed in involving employees and generating enthusiasm to inspire people to deliver in the organization. Discuss the difference in leadership style of father and son. (SM)**

Ans. Ramesh is a follower of transactional leadership style that focuses on designing systems and controlling the organization's activities. Such a leader believes in using authority of its office to exchange rewards, such as pay and status. They prefer a more formalized approach to motivation, setting clear goals with explicit rewards or penalties for achievement or non-achievement. Transactional leaders try to build on the existing culture and enhance current practices. The style is better suited in persuading people to work efficiently and run operations smoothly.

On the other hand, Yashpal is follower of transformational leadership style. The style uses charisma and enthusiasm to inspire people to exert them from the good of the organization. Transformational leaders offer excitement, vision, intellectual stimulation and personal satisfaction. They inspire involvement in a mission, giving followers a 'dream' or 'vision' of a higher calling so as to elicit more dramatic changes in organizational performance. Such a leadership motivates followers to do more than originally affected to do by stretching their abilities and increasing their self-confidence, and also promote innovation throughout the organization.

2. Suresh Sinha has been recently appointed as the head o fa strategic business unit of a large multiproduct company. Advise Mr. Sinha about the leadership role to be played by him in execution of strategy. (SM)

Ans. Leading change has to start with diagnosing the situation and then deciding which of several ways to handle it. Managers have five leadership roles to play in pushing for good strategy execution:

(*a*) Staying on top of what is happening, closely monitoring progress, solving out issues, and learning what obstacles lie in the path of good execution.

(*b*) Promoting a culture of esprit de corps that mobilized and energizes organizational members to execute strategy in a competent fashion and perform at a high level.

(*c*) Keeping the organization responsive to changing conditions, alert for new opportunities, bubbling with innovative ideas, and ahead of rivals in developing competitively valuable competencies and capabilities.

(*d*) Exercising ethical leadership and insisting that the company conduct its affairs like a model corporate citizen.

(*e*) Pushing corrective actions to improve strategy execution and overall strategic performance.

3. KaAthens Ltd., a diversified business entity having business operations across the globe. The company leadership has just changed as Mr. D Bandopadhyay handed over the pedals to his son Aditya Bandhopadhyay, due to his poor health. Aditya is a highly educated with an engineering degree from IIT, Delhi. However, being very young he is not clear about his role and responsibilities. In your view, what are the responsibilities of Aditya Bandopadhyay as CEO of the company.

Ans. Aditya Bandopadhyay, an effective strategic leader of KaAthens Ltd. must be able to deal with the diverse and cognitively complex competitive situations that are characterisitic of today's competitive landscape.

A strategic leader has several responsibilities, including the following:

- Making strategic decisions.
- Formulating policies and action plans to implement strategic decision.
- Ensuring effective communication in the organization.
- Managing human capital (perhaps the most critical of the strategic leader's skills).
- Managing change in the organization.
- Creating and sustaining strong corporate culture.
- Sustaining high performance over time.

4. Manoj started his telecom business in 2010. Over next five years, he gradually hired fifty people for various activities such as to keep his accounts, administration, sell his products in the market, create more customers, provide after sales service, coordinate with vendors. Draw the organization structure Manoj implement in his organization and name it.

Ans. Manoj has started a telecom business. Accounts, Administration, Marketing (customer creation, after sales service, vendor coordination) are the functional areas that are desired in the organisational structure. Further there is inherent need to have a department for the management of telecom services/ operations.

Thus, the functional structure in the telecom business of Manoj can be as follows:

5. Moonlight Private Limited deals in multi-products and multi-businesses. It has its own set of competitors. It seems impractical for the company to provide separate strategic planning treatment to each one of its product or businesses. As a strategic manager, suggest the type of structure best suitable for Moonlight Private Limited and state its benefits.

Ans. It is advisable for Moonlight Private Limited to follow the strategic business unit (SBU) structure. Moonlight Private Limited has a multi-product and multi-business structure where, each of these businesses has its own set of competitors. In the given case, Strategic Business Unit (SBU) structure would best suit the interest of the company.

SBU is a part of a large business organization that is treated separately for strategic management purposes. It is separate part of large business serving product markets with readily identifiable competitors. It is created by adding another level of management in a divisional structure after the divisions have been grouped under a divisional top management authority based on the common strategic interest.

Very large organizations, particularly those running into several products, or operating at distant geographical locations that are extremely diverse in terms of environmental factors, can be better managed by creating strategic business units, just as is the case for Moonlight Private Limited. SBU structure becomes imperative in an organization with increase in number, size and diversify.

Benefits of SBUs:

(*a*) Establishing coordination between divisions having common strategic interest.

(*b*) Facilitate strategic management and control.

(*c*) Determine accountability at the level of distinct business units.

(*d*) Allow strategic planning to be done at the most relevant level within the total enterprise.

(*e*) Make the task of strategic review by top executives more objective and more effective.

(*f*) Help to allocate resources to areas with better opportunities.

Thus, an SBU structure with tis set of advantages would be most suitable for the company with the given diverse business having separate identifiable competitors, but a common organizational goal.

6. **Sanya Private Limited is an automobile company. For the past few years, it has been observed that the progress of the company has become stagnant. When scrutinized, it was found that the planning department was performing fairly well but the plans could not be implemented due to improper use of resources, undesirable tendencies of workers and non-conformance to norms and standards. You are hired as a Strategic Manager. Suggest the elements of process of control to overcome the problem.**

Ans. Sanya Private Limited deteriorating performance due to poor implementation of plans that is improper use of resources, undesirable tendencies of the workers, and non-conformance to norms and standards, all point towards weak controls in the organization. Implementation of plans cannot assure results unless strong and sufficient controls are put in place. The management of the company should focus diligently on developing controls especially in the identified problem areas.

The process of control has the following elements:

(*a*) Objective of the business system which could be operationalized into measurable and controllable standards.

(*b*) A mechanism for monitoring and measuring the performance of the system.

(*c*) A mechanism (i) for comparing the actual results with reference to the standards (ii) for detecting deviations from standards and (iii) for learning new insights on standards themselves.

(*d*) A mechanism for feeding back corrective and adaptive information and instructions to the system, for effecting the desired changes to set right the system to keep it on course.

Above elements of control would ensure a proper check on improper use of resources, undesirable tendencies of the workers, and non-conformance to norms and standard and ensure a result oriented implementation of plans.

7. **A Chennai based fast moving consumer goods (FMCG) major CDE Ltd. recently announced restructuring its business. The company indicated that the business would be split into mainly four different streams-FMCG, E-commerce, Retail, and Research & Development. The company management has decided that these four units will operate as separate businesses. The top corporate officer shall delegate responsibility for day-to-day operations and business unit strategy to the concerned managers. Identify the organization structure that CDE Ltd. has planned to implement. Discuss any four attributes and the benefits the firm may derive by using this organization structure.** **(Dec 2021)**

Ans. CDE Ltd. has planned to implement a Strategic Business Unit (SBU) structure. Very large organizations, particularly those running into several products, or operating at distant geographical locations that are extremely diverse in terms of environmental factors, can be better managed by creating strategic business units. SBU structure becomes imperative in an organization with increase in number, size and

The attributes of an SBU and the benefits a firm may derive by using the SBU Structure are as follows:

- A scientific method of grouping the businesses of a multi-business corporation which helps the firm in strategic planning.

- An improvement over the territorial grouping of businesses and strategic planning based on territorial units.
- Strategic planning for SBU is distinct from the rest of businesses. Products/businesses within an SBU receive the same strategic planning treatment and priorities.
- Each SBU will have its own distinct set of competitors and its own distinct strategy.
- The CEO of SBU will be responsible for strategic planning for SBU and its profit performance.
- Products/businesses that are related from the standpoint of function are assembled together as a distinct SBU.
- Unrelated products/businesses in any group are separated into separate SBUs.
- Grouping the businesses on SBU lines helps in strategic planning by removing the vagueness and confusion.

8. XYZ Ltd. is an automobile company that offers diversified products for all customer segments. Due to COVID-19, the changes that took place in the economy forced the company to change its strategy. Being the CEO of the company, what stages will you follow for developing and executing the new strategy? (May 2022)

OR

Changes in environmental forces often require businesses to make modifications in their existing strategies. In view of the same explain the areas to be focused while considering concept of strategic change. Also explain the steps to initiate strategic change process. (May 2023)

Ans. Today, India has become the outsourcing hub for many of the global automobile manufacturers. The auto industry comprises four segments which are passenger vehicles, commercial vehicles, three wheelers and two wheelers. XYZ Ltd. is an automobile company that offers diversified products for all customer segments. The company is already in existence, so it has its own vision, mission and a strategy to execute for achieving its vision.

While developing and executing the strategy, XYZ Ltd. might have followed the five-stage managerial process as given below:

1. Developing a strategic vision.
2. Environmental and organizational analysis.
3. Formulation of strategy.
4. Implementing and executing the strategy.
5. Strategic evaluation and control.

But due to COVID-19, the automobile industry has faced the lockdown situation. Changes in the economy forced the XYZ Ltd. to change its existing strategy and prepare the new strategy. The changes in the environmental forces due to COVID-19 requires XYZ Ltd. to make modifications in their existing strategies and bring out new strategies.

For initiating strategic change, three steps can be followed by the CEO of the company which are as under:

(i) Recognize the need for change: This is the first step to diagnose facets of the corporate culture that are strategy supportive or not. This has already been identified by XYZ Ltd.

(ii) Create a shared vision to manage change: Objectives and vision of both individuals and organization should coincide. The CEO of XYZ Ltd. needs to constantly and consistently communicate the vision not only to inform but also to overcome resistance.

(iii) **Institutionalize the change:** Creating and sustaining a different attitude towards change is essential to ensure that the XYZ Ltd. does not slip back into old ways of thinking or doing things. All these changes should be set up as a practice to be followed by the company and be able to transfer from one level to another as a well settled practice.

9. Due to recurrence of various variants of Coronavirus, LMN Ltd. is facing an unstable environment and it has started unbundling and disintegrating its activities. It also started relying on outside vendors for performing these activities. Identify the organization structure LMN Ltd. is shifting to. Under what circumstances this structure becomes useful? (May 2022)

Ans. LMN Ltd. is shifting into network structure. It is a newer and somewhat more radical organizational design. The network structure could be termed a "non-structure" as it virtually eliminates in-house business functions and outsources many of them. An organization organized in this manner is often called a virtual organization because it is composed of a series of project groups or collaborations linked by constantly changing non-hierarchical, cobweb-like networks. The network structure becomes most useful when the environment of a firm is unstable and is expected to remain so. Under such conditions, there is usually a strong need for innovation and quick response.

Instead of having salaried employees, it may contract with people for a specific project or length of time. Long-term contracts with suppliers and distributors replace services that the company could provide for itself through vertical integration. The network structure provides organizations with increased flexibility and adaptability to cope with rapid technological change and shifting patterns of international trade and competition.

TEST YOUR KNOWLEDGE – DESCRIPTIVE QUESTIONS

1. Define strategic management. Also discuss the limitations of strategic management? (May 2018) (Nov 2022)

Ans. The term 'strategic management' refers to the managerial process of developing a strategic vision, setting objectives, crafting a strategy, implementing and evaluating the strategy, and initiating corrective adjustments where deemed appropriate. The presence of strategic management cannot counter all hindrances and always achieve success as there are limitations attached to strategic management.

These can be explained in the following lines:

- **Environment is highly complex and turbulent.** It is difficult to understand the complex environment and exactly pinpoint how it will shape-up in future. The organizational estimate about its future shape may awfully go wrong and jeopardize all strategic plans. The environment affects as the organization has to deal with suppliers, customers, governments and other external factors.
- **Strategic management is a time-consuming process.** Organizations spend a lot of time in preparing, communicating the strategies that may impede daily operations and negatively impact the routine business.
- **Strategic management is a costly process.** Strategic management adds a lot of expenses to an organization. Expert strategic planners need to be engaged, efforts are made for analysis of external and internal environments, devise strategies and properly implement. These can be really costly for organizations with limited resources particularly when small and medium organizations create strategies to compete.

- **Competition is unpredictable.** In a competitive scenario, where all organizations are trying to move strategically, it is difficult to clearly estimate the competitive responses to the strategies.

2. Explain different types of strategic control in brief. **(May 2018)**

OR

"Strategic control focuses on implementation and results produced by the strategy". Explain strategic control along with its different types. **(May 2023)**

Ans. Strategic Control focuses on the dual questions of whether:

(1) the strategy is being implemented as planned; and

(2) the results produced by the strategy are those intended.

There are four types of strategic control:

(a) Premise control: A strategy is formed on the basis of certain assumptions or premises about the environment. Premise control is a tool for systematic and continuous monitoring of the environment to verify the validity and accuracy of the premises on which the strategy has been built.

(b) Strategic surveillance: Strategic surveillance is unfocussed. It involves general monitoring of various sources of information to uncover unanticipated information having a bearing on the organizational strategy.

(c) Special alert control: At times, unexpected events may force organizations to reconsider their strategy. Sudden changes in government, natural calamities, unexpected merger/ acquisition by competitors, industrial disasters and other such events may trigger an immediate and intense review of strategy.

(d) Implementation control: Managers implement strategy by converting major plans into concrete, sequential actions that form incremental steps. Implementation control is directed towards assessing the need for changes in the overall strategy in light of unfolding events and results.

3. Write a short note on strategic change and explain the process of strategic change. **(Nov 2018)**

Ans. The changes in the environmental forces often require businesses to make modifications in their existing strategies and bring out new strategies. Strategic change is a complex process that involves a corporate strategy focused on new markets, products, services and new ways of doing business.

Three steps for initiating strategic change are:

(i) Recognise the need for change: The first step is to diagnose which facets of the present corporate culture are strategy supportive and which are not.

(ii) Create a shared vision to manage change: Objectives of both individuals and organizations should coincide. There should be no conflict between them. This is possible only if the management and the organization members follow a shared vision.

(iii) Institutionalize the change: This is an action stage which requires the implementation of the changed strategy. Creating and sustaining a different attitude towards change is essential to ensure that the firm does not slip back into old ways of doing things.

Kurt Lewin proposed three stages of the change process for moving the organization from the present to the future.

(i) **Unfreezing the situation:** The process of unfreezing makes the individuals or organizations aware of the necessity for change and prepares them for it. The change should not come as a surprise to the members of the organization. Sudden and unannounced change would be socially destructive and morale lowering,

(ii) **Changing to a new situation:** Once unfreezing is complete and members of the organization recognize the need for change, then their behaviour patterns need to be redefined as:

(a) **Compliance:** Enforcing reward and punishment strategy for good or bad behaviour

(b) **Identification:** Members are psychologically impressed to identify themselves with some given role models whose behaviour they would like to adopt.

(c) **Internalization:** Involves some internal changing of the individual's thought process. They are given the freedom to learn and adopt new behaviour.

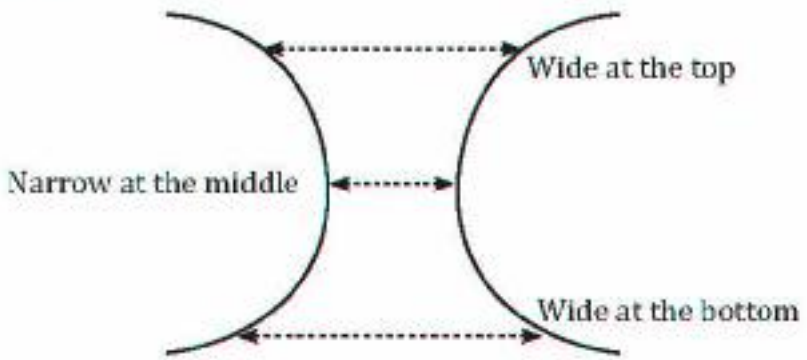
(iii) **Refreezing:** Occurs when the new behaviour becomes a normal way of life. The new behaviour must replace the former behaviour completely for successful and permanent change. This can be achieved by continuously reinforcing the newly acquired behaviour. Change process is not a one-time application but a continuous process due to dynamism and an ever-changing environment.

4. What is an 'hourglass structure'? How can this structure benefit an organization? (May 2019)

Ans. In recent years information technology and communications have significantly altered the functioning of organizations. The role played by middle management is diminishing as the tasks performed by them are increasingly being replaced by technological tools. Hourglass organization structure consists of three layers in an organization structure with a constricted middle layer. The structure has a short and narrow middle management level.

Information technology links the top and bottom levels in the organization taking away many tasks that are performed by the middle level managers. A shrunken middle layer coordinates diverse lower-level activities. Hourglass Organization Structure Hourglass structure has obvious benefits of reduced costs. It also helps in enhancing responsiveness by simplifying decision making.

Decision making authority is shifted close to the source of information so that it is faster. However, with the reduced size of middle management, the promotion opportunities for the lower levels diminish significantly.



5. Discuss the leadership role played by the managers in pushing for good strategy execution. (May 2019)

Ans. A strategy manager has many different leadership roles to play: visionary, chief entrepreneur and strategist, chief administrator, culture builder, resource acquirer and allocator, capabilities builder, process integrator, crisis solver, spokesperson, negotiator, motivator, arbitrator, policy maker, policy enforcer, and head cheerleader.

Managers have five leadership roles to play in pushing for good strategy execution:

1. Staying on top of what is happening, closely monitoring progress, working through issues and obstacles.
2. Promoting a culture that mobilizes and energizes organizational members to execute strategy and perform at a high level.
3. Keeping the organization responsive to changing conditions, alert for new opportunities and remain ahead of rivals in developing competitively valuable competencies and capabilities.
4. Ethical leadership and insisting that the organization conduct its affairs like a model corporate citizen.
5. Pushing corrective actions to improve strategy execution and overall strategic performance.

6. What is strategic control? Kindly explain the statement that "premise control is a tool for systematic and continuous monitoring of the environment". (Nov 2020)

Ans. Strategic Control

Strategic control is the process of evaluating formulated and implemented strategy. It is directed towards identifying changes in the internal and external environments of the organization and making necessary adjustments accordingly.

Strategic Control focuses on the dual questions of whether:

(1) the strategy is being implemented as planned; and

(2) the results produced by the strategy are those intended.

Yes, Premise control is a tool for systematic and continuous monitoring of the environment to verify the validity and accuracy of the premises on which the strategy has been built.

It primarily involves monitoring two types of factors:

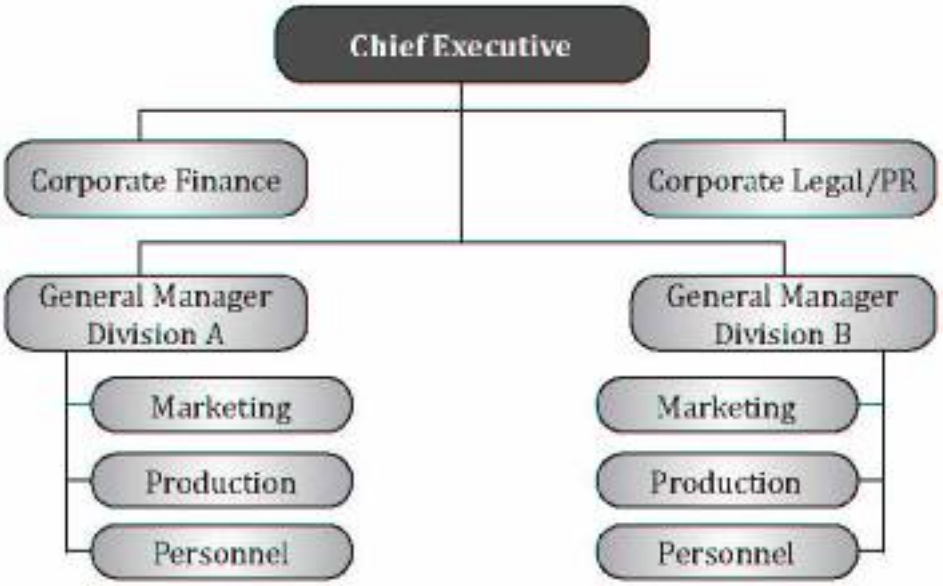
(i) Environmental factors such as economic (inflation, liquidity, interest rates), technology, social and legal-regulatory.

(ii) Industry factors such as competitors, suppliers, substitutes. It is neither feasible nor desirable to control all types of premises in the same manner. Different premises may require different amounts of control.

Thus, managers are required to select those premises that are likely to change and would severely impact the functioning of the organization and its strategy.

7. Draw 'Divisional Structure' with the help of a diagram. Also, give advantages and disadvantages of this structure in brief. (Nov 2020)

Ans. Divisional structure is that organizational structure which is based on extensive delegation of authority and built on a division basis. The divisional structure can be organized in one of the four ways: by geographic area, by product or service, by customer, or by process. With a divisional structure, functional activities are performed both centrally and, in each division, separately.



Advantages of Divisional Structure

- **Accountability is clear:** Divisional managers can be held responsible for sales and profit levels. Because a divisional structure is based on extensive delegation of authority, managers and employees can easily see the results of their good or bad performances and thus their morale is high.
- **Other advantages:** It creates career development opportunities for managers, allows local control of local situations, leads to a competitive climate within an organization, and allows new businesses and products to be added easily.

Disadvantages of Divisional Structure

- **Higher cost: Owing to following reasons:** (i). requires qualified functional specialists at different divisions and needed centrally (at headquarters); (ii). It requires an elaborate, headquarters –driven control system.
- **Conflicts between divisional managers:** Certain regions, products, or customers may sometimes receive special treatment, and it may be difficult to maintain consistent, company-wide practices.

8. Strategy execution is an operations-oriented activity which involves a good fit between strategy and organisational capabilities, structure, climate & culture. Enumerate the principal aspects of the strategy execution process which are used in most of the situations. (Jan 2021)

Ans. Implementation and execution are an operations-oriented activity aimed at shaping the performance of core business activities in a strategy-supportive manner. To convert strategic plans into actions and results, a manager must be able to direct organisational change, motivate people, build and strengthen company's competencies and competitive capabilities, create a strategy -supportive work culture, and meet or beat performance targets. Good strategy execution involves creating strong "fits" between strategy and organisational capabilities, structure, climate & culture.

In most situations, strategy-execution process includes the following principal aspects:

1. Developing budgets that steer ample resources into those activities critical to strategic success.

2. Staffing the organisation with the needed skills and expertise, consciously building and strengthening strategy-supportive competencies and competitive capabilities and organising the work effort.
3. Ensuring that policies and operating procedures facilitate rather than impede effective execution.
4. Using the best-known practices to perform core business activities and pushing for continuous improvement.
5. Installing information and operating systems that enable company personnel to better carry out their strategic roles day in and day out.
6. Motivating people to pursue the target objectives energetically.
7. Creating a company culture and work climate conducive to successful strategy implementation and execution.
8. Exerting the internal leadership needed to drive implementation forward and keep improving strategy execution.

When the organisation encounters stumbling blocks or weaknesses, management has to see that they are addressed and rectified quickly.

9. "Strategic decisions are different in nature than all other decisions." In the light of this statement explain major dimensions of strategic decisions. (July 2021)

Ans. Strategic decisions are different in nature than all other operational decisions. The dimensions of strategic decisions are not similar to that of other decisions which are taken at various levels of the organisation during day-to-day working.

The following major dimensions of strategic decisions make them different from operational decisions:

1. Strategic decisions require top-management decisions. Strategic decisions involve thinking in totality of the organisations and there is also a lot of risk involved in that.
2. Strategic decisions involve the allocation of large amounts of company resources-financial, technical, human etc.
3. Strategic decisions are likely to have a significant impact on the long-term prosperity of the firm.
4. Strategic decisions are future oriented.
5. Strategic decisions usually have major multifunctional or multi-business consequences.
6. Strategic decisions necessitate consideration of factors in the firm's external environment.

10. What are the important aspects of the process of implementation of strategy? (Dec 2021)

Ans. Implementation and execution are an operations-oriented activity aimed at shaping the performance of core business activities in a strategy-supportive manner.

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11. Strategy formulation and strategy implementation are intertwined and linked with each other." Elucidate this statement with suitable arguments. (May 2022)

Ans. The strategy formulation and strategy implementation are intertwined and linked with each other. Two types of linkages exist between these two phases of strategic management. The forward linkages deal with the impact of strategy formulation on strategy implementation while the backward linkages are concerned with the impact in the opposite direction.

Forward Linkages: The different elements in strategy formulation starting with objective setting through environmental and organisational appraisal, strategic alternatives and choice to the strategic plan determine the course that an organisation adopts for itself. With the formulation of new strategies, or reformulation of existing strategies, many changes have to be affected within the organisation. For instance, the organisational structure has to undergo a change in the light of the requirements of the modified or new strategy. The style of leadership has to be adapted to the needs of the modified or new strategies. In this way, the formulation of strategies has forward linkages with their implementation.

Backward Linkages: Just as implementation is determined by the formulation of strategies, the formulation process is also affected by factors related with implementation. While dealing with strategic choice, remember that past strategic actions also determine the choice of strategy. Organisations tend to adopt those strategies which can be implemented with the help of the present structure of resources combined with some additional efforts. Such incremental changes, over a period of time, take the organisation from where it is to where it wishes to be. It is to be noted that while strategy formulation is primarily an entrepreneurial activity, based on strategic decision- making, the implementation of strategy is mainly an administrative task based on strategic as well as operational decision-making.

12. What do you understand by diversification? Distinguish between concentric and conglomerate diversification. (May 2022)

Ans. Diversification is defined as entry into new products or product lines, new services or new markets, involving substantially different skills, technology and knowledge. Diversification endeavours can be related or unrelated to existing businesses of the firm.

Following are the differences between the concentric diversification and conglomerate diversifications:

Concentric Diversification	Conglomerate Diversification
Meaning: It occurs when a firm adds related products or markets.	**Meaning:** It occurs when a firm diversifies into areas that are unrelated to its current line of business.
Linkage: The new business is linked to the existing businesses through process, technology or marketing.	**Linkage:** Here no such linkages exist; the new business/product is disjointed from the existing businesses/products.
Reasons for pursuing: The most common reason for pursuing a concentric diversification is that opportunities in a firm's existing line of business are available.	**Reasons for pursuing:** The common reason for pursuing a conglomerate growth strategy is that opportunities in a firm's current line of business are limited or opportunities outside are highly lucrative.

13. Write short note on Strategic Business Unit (SBU). (Nov 2022)

Ans. SBU is a part of a large business organization that is treated separately for strategic management purposes. It is separate part of large business serving product markets with readily identifiable competitors. It is created by adding another level of management in a divisional structure after the divisions have been grouped under a divisional top management authority based on the common strategic interests.

Very large organizations, particularly those running into several products, or operating at distant geographical locations that are extremely diverse in terms of environmental factors, can be better managed by creating strategic business units. SBU structure becomes imperative in an organization with increase in number, size and diversity.

The three most important characteristics of a SBU are:

- It is a single business or a collection of related businesses which offer scope for independent planning and which might feasibly standalone from the rest of the organization.
- It has its own set of competitors.
- It has a manager who has responsibility for strategic planning and profit performance, and who has control of profit-influencing factors.

Benefits of SBUs:

1. Establishing coordination between divisions having common strategic interest.
2. Facilitate strategic management and control.
3. Determine accountability at the level of distinct business units.
4. Allow strategic planning to be done at the most relevant level within the total enterprise.
5. Make the task of strategic review by top executives more objective and more effective.
6. Help to allocate resources to areas with better opportunities.

Thus, an SBU structure with its set of advantages would be most suitable for the company with the given diverse businesses having separate identifiable competitors, but a common organizational goal.

14. "The TOWS Matrix is a tool for generating strategic options/choices". Do you agree with this statement? How it can help a strategist in decision making? (Nov 2022)

Ans. Yes, TOWS Matrix is a relatively simple tool for generating strategic options. Through TOWS matrix four distinct alternative kinds of strategic choices can be identified.

SO (Maxi-Maxi): Aggressive strategy - SO is a position that any firm would like to achieve. The strengths can be used to capitalize or build upon existing or emerging opportunities.

ST (Maxi-Mini): Conservative strategy - ST is a position in which a firm strives to minimize existing or emerging threats through its strengths.

WO (Mini-Maxi): Competitive strategy - The strategies developed need to overcome organizational weaknesses if existing or emerging opportunities are to be exploited to maximum.

WT (Mini-Mini): Defensive strategy - WT is a position that any firm will try to avoid. An organization facing external threats and internal weaknesses may have to struggle for its survival.

The matrix is outlined below:

Internal External	Strengths – S List Strengths	Weaknesses – W List Weaknesses
Opportunities – O List Opportunities	So, Strategies Use strengths to take advantage of opportunities	WO Strategies Overcoming weaknesses by taking advantage of opportunities
Threats – T List Threats	ST Strategies Use strengths to avoid threats	WT Strategies Minimize weaknesses and avoid threats

By using TOWS Matrix, a strategist can look intelligently at how he can best take advantage of the opportunities opens to him, at the same time that he can minimize the impact of weaknesses and protect himself against threats. Used after detailed analysis of threats, opportunities, strength and weaknesses, it helps the strategist to consider how to use the external environment to his strategic advantage, and so he can identify some of the strategic options available to him.

15. You have been appointed as head of the Strategic Business Unit (SBU) of a large multiproduct company. Explain the leadership roles, you have to play as a manager in pushing for good strategy execution. (May 2023)

Ans. A head of the strategic business unit (SBU) has many different leadership roles to play: visionary, chief entrepreneur and strategist, chief administrator, culture builder, resource acquirer and allocator, capabilities builder, process integrator, crisis solver, spokesperson, negotiator, motivator, arbitrator, policy maker, policy enforcer, and head cheerleader. Managers have five leadership roles to play in pushing for good strategy execution:

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5. Pushing corrective actions to improve strategy execution and overall strategic performance.

16. How can you differentiate between transformational and transactional leaders? (SM)

Ans. Refer to notes above.

17. What is strategic change? Explain the change process proposed by Kurt Lewin that can be useful in implementing strategies? (SM)

Ans. Refer to notes above.

18. What are differences between operational control and management control? (SM)

Ans. Refer to notes above.

19. What is implementation control? Discuss its basic forms. (SM)

Ans. Refer to notes above.

About The Author

CA Sunil Keswani, currently a faculty at PW, is a fellow member of ICAI, qualified in 2010, and holds a Master's degree as Chartered Financial Analyst. With experience as a Regional Credit Manager at ICICI Bank and a distinguished speaker at CAG, he has excelled as a Financial Planner for 9 years. With 13 years of teaching experience, specializing in Cost Accounts, Management Accounting, and Financial Management, he is recognized as the best faculty by NIRC-ICAI. Sir Sunil Keswani's impact is evident through 70 students achieving All India Ranks in the CA Examination, along with 150 students securing perfect scores in their graduation-level subjects

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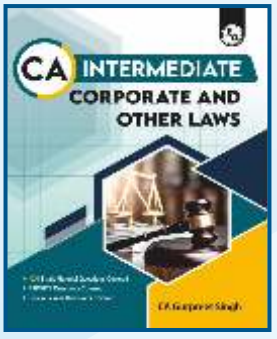

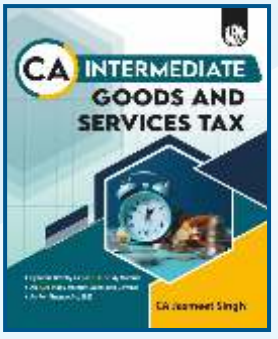

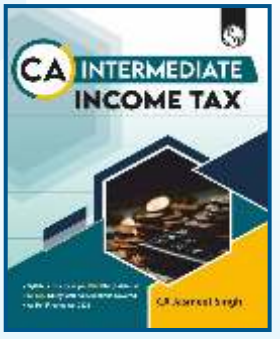

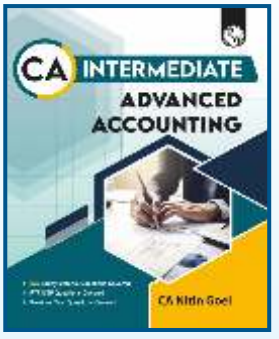

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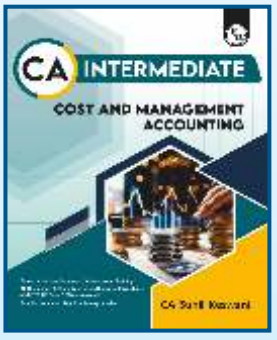

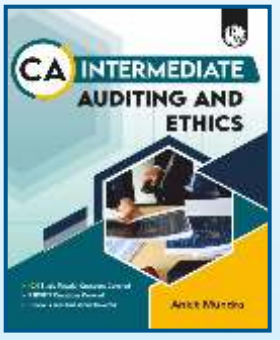

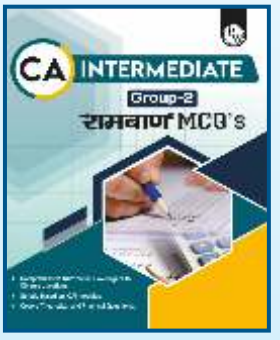

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