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Practical Questions Answer

Question 4
XYZ Ltd., with a turnover of ₹ 50 crores during previous year and borrowings of ₹ 1 crore during any time in the previous year, wants to avail the exemptions available in adoption of Accounting Standards applicable to companies for the year ended 31.3.20X1. Advise the management on the exemptions that are available as per the Companies (Accounting Standards) Rules, 2021.

Answer 4
The question deals with the issue of Applicability of Accounting Standards for corporate entities. The companies can be classified under two categories viz SMCs and Non SMCs under the Companies (Accounting Standards) Rules, 2021.
As per the Companies (Accounting Standards) Rules, 2021, criteria for above classification as SMCs, are:
"Small and Medium Sized Company" (SMC) means, a company-

- whose equity or debt securities are not listed or are not in the process of listing on any stock exchange, whether in India or outside India;
- which is not a bank, financial institution or an insurance company;
- whose turnover (excluding other income) does not exceed rupees two- fifty crores in the immediately preceding accounting year;
- which does not have borrowings (including public deposits) in excess of rupees fifty crores at any time during the immediately preceding accounting year; and
- which is not a holding or subsidiary company of a company which is not a small and medium-sized company.

Since, XYZ Ltd.'s turnover was ₹ 50 crores which does not exceed ₹ 250 crores and borrowings of ₹ 1 crore are less than ₹ 50 crores, it is a small and medium sized company (SMC).

Question 5
A company was classified as Non-SMC in 20X1-X2. In 20X2-X3, it has been classified as SMC. The management desires to avail the exemptions or relaxations available for SMCs in 20X2-X3. However, the accountant of the company does not agree with the same.
Comment.

Answer 5
As per Companies (Accounting Standards) Rules, 2021, an existing company, which was previously not a SMC and subsequently becomes a SMC, should not be qualified for exemption or relaxation in respect of accounting standards available to a SMC until the company remains a SMC for two consecutive accounting periods. Therefore, the management of the company cannot avail the exemptions/ relaxations available to the SMCs for the FY 20X2-X3.

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SMCs, are:
"Small and Medium Sized Company" (SMC) means, a company-

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- which is not a bank, financial institution or an insurance company;
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Chapter 1

Scope and Objectives of Financial Management

4

Question 1 Answer (Illustration)

Profit maximization does not consider risk or uncertainty, whereas wealth maximization considers both risk and uncertainty. Suppose there are two products, X and Y and their projected earnings over the next 5 years are as shown below:

Year	Product X (₹)	Product Y (₹)
1.	10,000	11,000
2.	10,000	11,000
3.	10,000	11,000
4.	10,000	11,000
5.	10,000	11,000
	50,000	55,000

A profit maximization approach would favour product Y over product X. However, if product Y is more risky than product X, then the decision is not as straightforward as the figures seem to indicate. It is important to realize that a trade-off exists between risk and return. Stockholders expect greater returns from investments of higher risk and vice-versa. To choose product Y, stockholders would demand a sufficiently large return to compensate for the comparatively greater level of risk.

Test Your Knowledge

Multiple Choice Questions

1. Focus of financial management is mainly concerned with the decision related to:

- (a) Financing
- (b) Investing
- (c) Dividend
- (d) All of above.

Ans: (d)

2. The main objective of financial management is to:

- (a) Secure profitability
- (b) Maximise shareholder wealth
- (c) Enhancing the cost of debt
- (d) None of above.

Ans: (b)

3. The shareholder value maximisation model holds that the primary goal of the firm is to maximise its:

- (a) Accounting profit

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- (b) Liquidity
- (c) Market value
- (d) Working capital.

Ans: (c)

4. Wealth maximization approach is based on the concept of:

- (a) Cost benefit analysis
- (b) Cash flow approach
- (c) Time value of money
- (d) All of the above.

Ans: (d)

5. Management of all matters related to an organization's finances is called:

- (a) Cash inflows and outflows
- (b) Allocation of resources
- (c) Financial management
- (d) Finance.

Ans: (c)

6. Which of the following is the disadvantage of having shareholder's wealth maximization goals?

- (a) Emphasizes the short-term gains.
- (b) Ignores the timing of returns.
- (c) Requires immediate resources.
- (d) Offers no clear relationship between financial decisions and share price.

Ans: (d)

7. The most important goal of financial management is:

- (a) Profit maximisation
- (b) Matching income and expenditure
- (c) Using business assets effectively
- (d) Wealth maximisation.

Ans: (d)

8. To achieve wealth maximization, the finance manager has to take careful decision in respect of:

- (a) Investment
- (b) Financing
- (c) Dividend
- (d) All the above.

Ans: (d)

9. Early in the history of finance, an important issue was:

- (a) Liquidity
- (b) Technology
- (c) Capital structure
- (d) Financing options.

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Ans: (a)

10. Which of the following are microeconomic variables that help define and explain the discipline of finance?

- (a) Risk and return
- (b) Capital structure
- (c) Inflation
- (d) All of the above.

Ans: (d)

11. Financial Management is mainly concerned with the-

- (a) Acquiring and developing assets to forfeit its overall benefit.
- (b) Acquiring, financing and managing assets to accomplish the overall goal of a business enterprise.
- (c) Efficient management of the business.
- (d) Sole objective of profit maximisation.

Ans: (b)

12. Which of the following need not be followed by the finance manager for measuring and maximising shareholders' wealth?

- (a) Accounting profit analysis.
- (b) Cash Flow approach.
- (c) Cost benefit analysis.
- (d) Application of time value of money.

Ans: (a)

Theoretical Questions Answers

Question 1

POINT OUT the difference between Financial Management & Financial Accounting?

Answer 1

The relationship between financial management and accounting are closely related to the extent that accounting is an important input in financial decision making. In other words, accounting is a necessary input into the financial management function.

Financial accounting generates information relating to operations of the organization. The outcome of accounting is the financial statements such as balance sheet, income statement, and the statement of changes in financial position. The information contained in these statements and reports helps the financial managers in gauging the past performance and future directions of the organization.

Though financial management and accounting are closely related, still they differ in the treatment of funds and also with regards to decision making. Some of the differences are: -

Treatment of Funds

In accounting, the measurement of funds is based on the accrual principle i.e. revenue is recognized at the point of sale and not when collected and expenses are recognized when they are incurred rather than when actually paid. The accrual-based accounting data do not reflect fully the financial conditions of the organization. An organization which has earned profit (sales less expenses) may

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said to be profitable in the accounting sense but it may not be able to meet its current obligations due to shortage of liquidity as a result of say, uncollectible receivables. Such an organization will not survive regardless of its levels of profits. Whereas, the treatment of funds in financial management is based on cash flows. The revenues are recognized only when cash is actually received (i.e. cash inflow) and expenses are recognized on actual payment (i.e. cash outflow). This is so because the finance manager is concerned with maintaining solvency of the organization by providing the cash flows necessary to satisfy its obligations and acquiring and financing the assets needed to achieve the goals of the organization. Thus, cash flow-based returns help financial managers to avoid insolvency and achieve desired financial goals.

Decision – making

The purpose of accounting is to collect and present financial data of the past, present and future operations of the organization. The financial manager uses these data for financial decision making. It is not that the financial managers cannot collect data or accountants cannot make decisions, but the chief focus of an accountant is to collect data and present the data while the financial manager's primary responsibility relates to financial planning, controlling and decision making. Thus, in a way it can be stated that financial management begins where accounting ends.

Question 2

Financial management is concerned with acquisition & financing of short term & long-term credit".

ELABORATE.

Answer 2

Financial management is concerned with **efficient acquisition (financing) and allocation** (investment in assets, working capital etc.) of funds with an objective to make profit (dividend) for owners. In other words, focus of financial management is to address three major financial decision areas namely, **investment, financing and dividend decisions.**

For the purpose of starting any new business/venture, an entrepreneur goes through the following stages of decision making:-

Stage 1	Stage 2	Stage 3	Stage 4
Decide which Assets (premises, machinery, equipment etc.) to buy.	Determining what is total investment (Since assets cost money) required for buying assets.	Apart from buying Assets the entrepreneur would also need to determine how much cash he would need to run the daily operations (payment for raw material, salaries, wages etc.). In other words this is also defined as Working Capital requirement.	The next stage is to decide what all sources, does the entrepreneur need to tap to finance the total investment (assets and working capital). The sources could be Share Capital (Including Entrepreneur's own funds) or Borrowing from Banks or Investment from Financial Institutions etc.

Question 3

DISCUSS the two main aspects of the finance function?

Answer 3

The finance functions are divided into long term and short-term functions/decisions.

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Long term Finance Function Decisions.

- (a) **Investment decisions (I):** These decisions relate to the **selection of assets in which funds will be invested by a firm**. Funds procured from different sources have to be invested in various kinds of assets. Long term funds are used in a project for various fixed assets and also for current assets. The investment of funds in a project has to be made after careful assessment of the various projects through capital budgeting. A part of long-term funds is also to be kept for financing the working capital requirements. Asset management policies are to be laid down regarding various items of current assets. The inventory policy would be determined by the production manager and the finance manager keeping in view the requirement of production and the future price estimates of raw materials and the availability of funds.
- (b) **Financing decisions (F):** These decisions relate to **acquiring the optimum finance** to meet financial objectives and seeing that fixed and working capital are effectively managed. The financial manager needs to possess a good knowledge of the sources of available funds and their respective costs and needs to ensure that the company has a sound capital structure, i.e. a proper balance between equity capital and debt. Such managers also need to have a very clear understanding as to the difference between profit and cash flow, bearing in mind that profit is of little avail unless the organization is adequately supported by cash to pay for assets and sustain the working capital cycle. Financing decisions also call for a good knowledge of evaluation of risk, e.g. excessive debt carried high risk for an organization's equity because of the priority rights of the lenders. A major area for risk-related decisions is in overseas trading, where an organization is vulnerable to currency fluctuations, and the manager must be well aware of the various protective procedures such as hedging (it is a strategy designed to minimize, reduce or cancel out the risk in another investment) available to him. For example, someone who has a shop, takes care of the risk of the goods being destroyed by fire by hedging it via a fire insurance contract.
- (c) **Dividend decisions (D):** These decisions relate to the **determination as to how much and how frequently cash can be paid out of the profits** of an organization as income for its owners/shareholders. The owner of any profit-making organization looks for reward for his investment in two ways, the growth of the capital invested and the cash paid out as income; for a sole trader this income would be termed as drawings and for a limited liability company the term is dividends. The dividend decision thus has two elements – the amount to be paid out and the amount to be retained to support the growth of the organization, the latter being also a financing decision; the level and regular growth of dividends represent a significant factor in determining a profit-making company's market value, i.e. the value placed on its shares by the stock market. All three types of decisions are interrelated, the first two pertaining to any kind of organization while the third relates only to profit-making organizations, thus it can be seen that financial management is of vital importance at every level of business activity, from a sole trader to the largest multinational corporation.

Short- term Finance Decisions/Function.

Working capital Management (WCM): Generally short- term decision are reduced to management of current asset and current liability (i.e., working capital Management)

Questions 4

DISCUSS three main considerations in procuring funds?

Answer 4

Since funds can be obtained from different sources therefore their procurement is always considered as a complex problem by business concerns. In a global competitive scenario, it is not enough to

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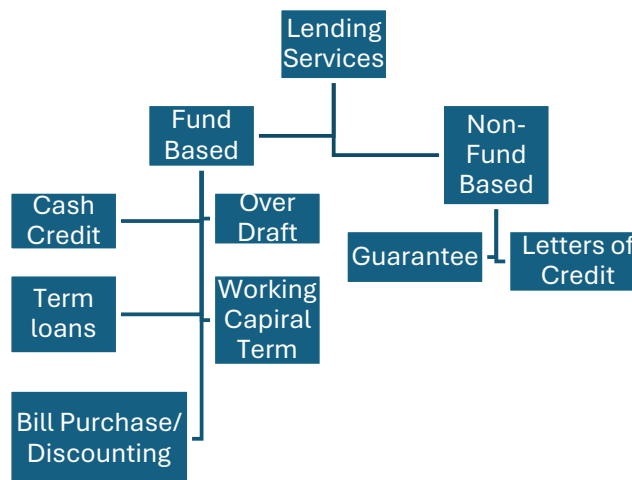
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depend on the available waysof raising finance but resource mobilization has to be undertaken through innovative ways on financial products which may meet the needs of investors. We are constantly seeing new and creative sources of funds which are helping the modern businesses to grow faster. For example: trading in Carbon Credits is turning out to be another source of funding. Funds procured from different sources have different characteristics in terms of risk, cost and control. The cost of funds should be at the minimum level for that a proper balancing of risk and control factors must be carried out.

Another key consideration in choosing the source of new business finance is to strike a balance between equity and debt to ensure the funding structure suits the business.

Let us discuss some of the sources of funds (discussed in detail in later chapters):

- (a) **Equity:** The funds raised by the issue of equity shares are the best from the riskpoint of view for the firm, since there is no question of repayment of equity capital except when the firm is under liquidation. From the cost point of view, however, equity capital is usually the most expensive source of funds. This is because the dividend expectations of shareholders are normally higher than prevalent interest rate and also because dividends are an appropriation of profit, not allowed as an expense under the Income Tax Act. Also the issue of new shares to public may dilute the control of the existing shareholders.
- (b) **Debentures:** Debentures as a source of funds are comparatively cheaper than the shares because of their tax advantage. The interest the company pays on a debenture is free of tax, unlike a dividend payment which is made from the taxed profits. However, even when times are hard, interest on debenture loans must be paid whereas dividends need not be. However, debentures entail a high degree of risk since they have to be repaid as per the terms of agreement. Also, the interest payment has to be made whether or not the company makes profits.
- (c) **Funding from Banks:** Commercial Banks play an important role in funding of the business enterprises. Apart from supporting businesses in their routine activities (deposits, payments etc.) they play an important role in meeting the long term and short-term needs of a business enterprise. Different lending services provided by Commercial Banks are depicted as follows: -



- (d) **International Funding:** Funding today is not limited to domestic market. With liberalization and globalization a business enterprise has options to raise capital from International markets also. Foreign

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Direct Investment (FDI) and Foreign Institutional Investors (FII) are two major routes for raising funds from foreign sources besides ADR's (American depository receipts) and GDR's (Global depository receipts). Obviously, the mechanism of procurement of funds has to be modified in the light of the requirements of foreign investors.

- (e) **Angel Financing:** Angel Financing is a form of an equity-financing where an angel investor is a wealthy individual who provides capital for start-up or expansion, in exchange for an ownership/equity in the company. Angel investors have idle cash available and are looking for a higher rate of return than what is given by traditional investments. Typically, angels, as they are known as, will invest around 25 to 60 per cent to help a company get started. This source of finance sometimes is the last option for startups which doesn't qualify for bank funding and are too small for venture capital financing.

Question 5

EXPLAIN "Wealth maximisation" and "Profit maximisation" objectives of financial management.

Answer 5

Profit Maximization

It has traditionally been argued that the primary objective of a company is to earn profit; hence the objective of financial management is also profit maximization. This implies that the finance manager has to make his decisions in a manner so that the profits of the concern are maximized. Each alternative, therefore, is to be seen as to whether or not it gives maximum profit. However, profit maximization cannot be the sole objective of a company. It is at best a limited objective. If profit is given undue importance, a number of problems can arise. Some of these have been discussed below:

- (i) **The term profit is vague. It does not clarify what exactly it means.** It conveys a different meaning to different people. For example, profit may be in short term or long-term period; it may be total profit or rate of profit etc.
- (ii) **Profit maximization has to be attempted with a realization of risks involved.** There is a direct relationship between risk and profit. Many risky propositions yield high profit. Higher the risk, higher is the possibility of profits. If profit maximization is the only goal, then risk factor is altogether ignored. This implies that finance manager will accept highly risky proposals also, if they give high profits. In practice, however, risk is very important consideration and has to be balanced with the profit objective.
- (iii) **Profit maximization as an objective does not take into account the time pattern of returns.** Proposal A may give a higher amount of profits as compared to proposal B, yet if the returns of proposal A begin to flow say 10 years later, proposal B may be preferred which may have lower overall profit but the returns flow is more early and quick.
- (iv) **Profit maximization as an objective is too narrow.** It fails to take into account the social considerations as also the obligations to various interests of workers, consumers, society, as well as ethical trade practices. If these factors are ignored, a company cannot survive for long. Profit maximization at the cost of social and moral obligations is a short sighted policy.

Wealth Maximization

We will first like to define what is Wealth / Value Maximization Model. Shareholders wealth are the result of cost benefit analysis adjusted with their timing and risk i.e. time value of money.

So,

Wealth = Present value of benefits – Present Value of Costs

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It is important that benefits measured by the finance manager are in terms of cash flow. Finance manager should emphasis on Cash flow for investment or financing decisions not on accounting profit. The shareholder value maximization model holds that the primary goal of the firm is 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. So for measuring and maximizing shareholders wealth finance manager should follow:

- ◆ **Cash Flow approach not Accounting Profit**
- ◆ **Cost benefit analysis**
- ◆ **Application of time value of money.**

Question 6

DISCUSS the role of a chief financial officer.

Answer 6

The finance executive of an organization plays an important role in the company's goals, policies, and financial success. His responsibilities include:

- (a) **Financial analysis and planning:** Determining the proper amount of funds to employ in the firm, i.e. designating the size of the firm and its rate of growth.
- (b) **Investment decisions:** The efficient allocation of funds to specific assets.
- (c) **Financing and capital structure decisions:** Raising funds on favourable terms as possible i.e. determining the composition of liabilities.
- (d) **Management of financial resources** (such as working capital).
- (e) **Risk management:** Protecting assets.

Today, the role of chief financial officer, or CFO, is no longer confined to accounting, financial reporting and risk management. It's about being a strategic business partner of the chief executive officer, or CEO. Some of the key differences that highlight the changing role of a CFO are as follows: -

What a CFO used to do?	What a CFO now does?
Budgeting	Budgeting
Forecasting	Forecasting
Accounting	Managing M&As
Treasury (cash management)	Profitability analysis (for example, by customer or product)
Preparing internal financial reports for management.	Pricing analysis
Preparing quarterly, annual filings for investors.	Decisions about outsourcing
Tax filing	Overseeing the IT function.
Tracking accounts payable and accounts receivable.	Overseeing the HR function.
Travel and entertainment expense management.	Strategic planning (sometimes overseeing this function). Regulatory compliance. Risk management.

Question 7

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In recent years, there have been a number of environmental, pollution and other regulations imposed on businesses. In view of these changes, is maximisation of shareholder wealth still a realistic objective? EXPLAIN.

Answer 7

In any company, the management is the decision taking authority. As a normal tendency the management may pursue its own personal goals (profit maximization). But in an organization where there is a significant outside participation (shareholding, lenders etc.), the management may not be able to exclusively pursue its personal goals due to the constant supervision of the various stakeholders of the company-employees, creditors, customers, government, etc.

Every entity associated with the company will evaluate the performance of the management from the fulfilment of its own objective. The survival of the management will be threatened if the objective of any of the entities remains unfulfilled.

The wealth maximization objective is generally in accord with the interests of the various groups such as owners, employees, creditors and society, and thus, it maybe consistent with the management objective of survival.

Owing to limitation (timing, social consideration etc.) in profit maximization, in today's real world situations which is uncertain and multi-period in nature, wealth maximization is a better objective. Where the time period is short and degree of uncertainty is not great, wealth maximization and profit maximization amount to essentially the same.

The table below highlights some of the advantages and disadvantages of both profit maximization and wealth maximization goals: -

Goal	Objective	Advantages	Disadvantages
Profit Maximization	Large amount of profits	(i) Easy to calculate profits (ii) Easy to determine the link between financial decisions and profits.	(i) Emphasizes the short term gains (ii) Ignores risk or uncertainty (iii) Ignores the timing of returns (iv) Requires immediate resources.
Shareholders Wealth Maximization	Highest market value of shares.	(i) Emphasizes the long term gains (ii) Recognizes risk or uncertainty (iii) Recognizes the timing of returns (iv) Considers shareholders' return.	(i) Offers no clear relationship between financial decisions and share price. (ii) Can lead to management anxiety and frustration.

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Chapter 2

Types of Financing

13

Test Your Knowledge

Multiple Choice Questions

1. Equity shares:

- (a) Have an unlimited life, and voting rights and receive dividends
- (b) Have a limited life, with no voting rights but receive dividends
- (c) Have a limited life, and voting rights and receive dividends
- (d) Have an unlimited life, and voting rights but receive no dividends

Ans: (a)

2. External sources of finance do not include:

- (a) Debentures
- (b) Retained earnings
- (c) Overdrafts
- (d) Leasing

Ans: (b)

3. Internal sources of finance do not include:

- (a) Better management of working capital
- (b) Ordinary shares
- (c) Retained earnings
- (d) Reserve and Surplus

Ans: (b)

4. In preference shares:

- (a) Dividends are not available
- (b) Limited voting rights are available
- (c) Are not part of a company's share capital?
- (d) Interest can be received

Ans: (b)

5. A debenture:

- (a) Is a long-term loan
- (b) Does not require security
- (c) Is a short-term loan
- (d) Receives dividend payments

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Ans: (a)

6. Debt capital refers to:

- (a) Money raised through the sale of shares.
- (b) Funds raised by borrowing that must be repaid.
- (c) Factoring accounts receivable.
- (d) Inventory loans.

Ans: (b)

7. The most popular source of short-term funding is:

- (a) Factoring.
- (b) Trade credit.
- (c) Family and friends.
- (d) Commercial banks.

Ans: (b)

8. Marketable securities are primarily:

- (a) short-term debt instruments.
- (b) short-term equity securities.
- (c) long-term debt instruments.
- (d) long-term equity securities.

Ans: (a)

9. Which of the following marketable securities is the obligation of a commercial bank?

- (a) Commercial paper
- (b) Negotiable certificate of deposit
- (c) Repurchase agreement
- (d) T-bills

Ans: (b)

10. Reserves & Surplus are which form of financing?

- (a) Security Financing
- (b) Internal Financing
- (c) Loans Financing
- (d) International Financing

Ans: (b)

11. With reference to 'IFC Masala Bonds', which of the statements given below is/are correct?

1. The International Finance Corporation, which offered these bonds, is an arm of the World Bank.
 2. They are rupee-denominated bonds and are a source of debt financing for the public and private sector.
- (a) 1 only
 - (b) 2 only
 - (c) Both 1 and 2
 - (d) Neither 1 nor 2

Ans: (c)

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12. External Commercial Borrowings can be accessed through

- (a) only automatic route
- (b) only approval route
- (c) both automatic and approval route
- (d) neither automatic nor approval route

Ans: (c)

Theoretical Questions Answers

Question 1

DESCRIBE the different types of Packing Credit.

Answer 1

Types of Packing Credit

- (a) **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. It is a clean type of export advance. Each proposal is weighed according to particular requirements of the trade and credit worthiness of the exporter. A suitable margin has to be maintained. Also, Export Credit Guarantee Corporation (ECGC) cover should be obtained by the bank.
- (b) **Packing credit against hypothecation of goods:** Export finance is made available on certain terms and conditions where the exporter has pledged able interest and the goods are hypothecated to the bank as security with stipulated margin. At the time of utilising the advance, the exporter is required to submit, along with the firm export order or letter of credit relative stock statements and thereafter continue submitting them every fortnight and/or whenever there is any movement in stocks.
- (c) **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.
- (d) **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.
- (e) **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 exchange contact with the bank, thereby avoiding risk involved in a possible change in the rate of exchange.

Question 2

Discuss the advantages of raising funds by issue of equity shares.

Answer 2

Advantages of raising funds by issue of equity shares are:

- (i) It is a permanent source of finance. Since such shares are not redeemable, the company has no liability for cash outflows associated with its redemption. In other words, once the company has issued equity shares, they are tradable i.e. they can be purchased and sold. So, a company is in no way responsible for any cash outflows of investors by which they become the shareholders of the company by purchasing the shares of existing shareholders.
- (ii) Equity capital increases the company's financial base and thus helps to further the borrowing powers

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of the company. In other words, by issuing equity shares, a company manages to raise some money for its capital expenditures and this helps it to raise more funds with the help of debt. This is because; debt will enable the company to increase its earnings per share and consequently, its share prices.

- (iii) A 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.
- (iv) A company can make further increase its share capital by initiating a right issue.

Question 3

EXPLAIN in brief the features of Commercial Paper.

Answer 3

A Commercial Paper is an unsecured money market instrument issued in the form of a promissory note. The Reserve Bank of India introduced the commercial paper scheme in the year 1989 with a view to enabling highly rated corporate borrowers to diversify their sources of short-term borrowings and to provide an additional instrument to investors. Subsequently, in addition to the Corporate, Primary Dealers and All India Financial Institutions have also been allowed to issue Commercial Papers. Commercial papers are issued in denominations of ₹5 lakhs or multiples thereof and the interest rate is generally linked to the yield on the one-year government bond. All eligible issuers are required to get the credit rating from Credit Rating Information Services of India Ltd, (CRISIL), or the Investment Information and Credit Rating Agency of India Ltd (ICRA) or the Credit Analysis and Research Ltd (CARE) or the FITCH Ratings India Pvt. Ltd or any such other credit rating agency as is specified by the Reserve Bank of India.

Question 4

DISCUSS the features of Secured Premium Notes (SPNs).

Answer 4

Secured Premium Notes: Secured Premium Notes is issued along with a detachable warrant and is redeemable after a notified period of say 4 to 7 years. The conversion of detachable warrant into equity shares will have to be done within time period notified by the company.

Question 5

DISCUSS ADRs and GDRs.

Answer 5

Indian companies are permitted to raise foreign currency resources through issue of ordinary equity shares through Global Depository Receipts (GDRs)/ American Depository Receipts (ADRs) and / or issue of Foreign Currency Convertible Bonds (FCCB) to foreign investors i.e. institutional investors or individuals (including NRIs) residing abroad. Such investment is treated as Foreign Direct Investment (FDI). The government guidelines on these issues are covered under the Foreign Currency Convertible Bonds and Ordinary Shares (through depository receipt mechanism) Scheme, 1993 and notifications issued after the implementation of the said scheme.

- (a) **American Depository Receipts (ADRs):** These are securities offered by **non-US companies who want to list on any of the US exchange**. Each ADR represents a certain number of a company's regular shares. ADRs allow US investors to buy shares of these companies without the cost of investing directly in a foreign stock exchange.

The Indian companies have preferred the GDRs to ADRs because the US market exposes them to a

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higher level of responsibility than a European listing in the areas of disclosure, costs, liabilities and timing. The regulations are somewhat more stringent and onerous, even for companies already listed and held by retail investors in their home country. The most onerous aspect of a US listing for the companies is to provide full, half yearly and quarterly accounts in accordance with, or at least reconciled with US GAAPs.

- (b) **Global Depository Receipts (GDRs):** These are negotiable certificates held in the bank of one country representing a **specific number of shares of a stock traded on the exchange of another country**. These financial instruments are used by companies to raise capital in either dollars or Euros. These are mainly traded in European countries and particularly in London.

ADRs/GDRs and the Indian Scenario: Indian companies are shedding their reluctance to tap the US markets. Infosys Technologies was the first Indian company to be listed on Nasdaq in 1999. However, the first Indian firm to issue sponsored GDR or ADR was Reliance Industries Limited. Beside these two companies there are several other Indian firms which are also listed in the overseas bourses. These are Wipro, MTNL, State Bank of India, Tata Motors, Dr. Reddy's Lab, etc.

Question 6

DISTINGUISH between Preference Shares and Debentures

Answer 6

Difference between Preference Shares and Debentures:

Basis of difference	Preference shares	Debentures
Ownership	Preference Share Capital is a special kind of share	Debenture is a type of loan which can be raised from the public
Payment of Dividend/ Interest	The preference shareholders enjoy priority both as regard to the payment of a fixed amount of dividend and also towards repayment of capital in case of winding up of a company	It carries fixed percentage of interest.
Nature	Preference shares are a hybrid form of financing with some characteristic of equity shares and some attributes of Debt Capital.	Debentures are instrument for raising long term capital with a fixed period of maturity.

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Financial Analysis and Planning Ratio Analysis

ILLUSTRATION

Question 1 (Illustration)

In a meeting held at Solan towards the end of 2021-22, the Directors of HPCL Ltd. have taken a decision to diversify. At present HPCL Ltd. sells all finished goods from its own warehouse. The company issued debentures on 01.04.2022 and purchased fixed assets on the same day. The purchase prices have remained stable during the concerned period. Following information is provided to you:

INCOME STATEMENT

Particulars	2021-22 (₹)		2022-23 (₹)	
Cash Sales	30,000		32,000	
Credit Sales	2,70,000	3,00,000	3,42,000	3,74,000
Less: Cost of goods sold		2,36,000		2,98,000
Gross profit		64,000		76,000
Less: Operating Expenses:				
Warehousing	13,000		14,000	
Transport	6,000		10,000	
Administrative	19,000		19,000	
Selling	11,000	49,000	14,000	57,000
Net Profit		15,000		19,000

BALANCE SHEET

Assets & Liabilities	2021-22 (₹)		2022-23 (₹)	
Fixed Assets (Net Block)	-	30,000	-	40,000
Receivables	50,000		82,000	
Cash at Bank	10,000		7,000	
Stock	60,000		94,000	
Total Current Assets (CA)	1,20,000		1,83,000	
Payables	50,000		76,000	
Total Current Liabilities (CL)	50,000		76,000	
Working Capital (CA - CL)		70,000		1,07,000
Net Assets		1,00,000		1,47,000
Represented by:				
Share Capital		75,000		75,000
Reserve and Surplus		25,000		42,000
Debentures		-		30,000

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		1,00,000		1,47,000

You are required to CALCULATE the following ratios for the years 2021-22 and 2022-23:

- (i) Gross Profit Ratio
- (ii) Operating Expenses to Sales Ratio
- (iii) Operating Profit Ratio
- (iv) Capital Turnover Ratio
- (v) Stock Turnover Ratio
- (vi) Net Profit to Net Worth Ratio
- (vii) Receivables 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 2021-22. Ignore Taxation

Answer 1

Computation of Ratios		
Ratio	2021-22 (₹)	2022-23 (₹)
1. Gross Profit ratio (Gross profit/sales)	$\frac{64,000 \times 100}{3,00,000} = 21.3\%$	$\frac{76,000 \times 100}{3,74,000} = 20.3\%$
2. Operating expense to sales ratio (Operating exp/ Total sales)	$\frac{49,000 \times 100}{3,00,000} = 16.3\%$	$\frac{57,000 \times 100}{3,74,000} = 15.2\%$
3. Operating profit ratio (Operating profit / Total sales)	$\frac{15,000 \times 100}{3,00,000} = 5\%$	$\frac{19,000 \times 100}{3,74,000} = 5.08\%$
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)	$\frac{15,000 \times 100}{1,00,000} = 15\%$	$\frac{19,000 \times 100}{1,17,000} = 16.24\%$
7. Receivables collection period (Average receivables / Average daily credit sales) (Refer to W.N. 2)	$\frac{50,000}{739.73} = 67.6 \text{ days}$	$\frac{82,000}{936.99} = 87.5 \text{ days}$
Working notes (W.N.):		
1. Average Stock = (opening stock + closing stock)/2	$\frac{(40,000 + 60,000)}{2} = 50,000$	$\frac{(60,000 + 94,000)}{2} = 77,000$
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.

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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.

Question 2 (Illustration)

Following is the abridged Balance Sheet of Alpha Ltd.:

Liabilities	₹	Assets	₹	₹
Share Capital	1,00,000	Land and Buildings		80,000
Profit and Loss Account	17,000	Plant and Machineries	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
Total	1,57,000	Total		1,57,000

With the help of the additional information furnished below, you are required to PREPARE Trading and Profit & Loss Account and Balance Sheet as at 31st March, 2023:

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

Share capital	50%
Other Shareholders' funds	15%
5% Debentures	10%
Current Liabilities	25%

Debentures were issued on 1st April, interest being paid annually on 31st March.

- (ii) 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.)
- (iii) Working capital ratio was 8 : 5.
- (iv) Quick assets ratio was 1 : 1.
- (v) The receivables (four-fifth of the quick assets) to sales ratio revealed a credit period of 2 months. There were no cash sales.
- (vi) Return on net worth was 10%.
- (vii) Gross profit was at the rate of 15% of selling price.
- (viii) Stock turnover was eight times for the year.
- Ignore Taxation.

Answer 2

Particulars	%	(₹)
Share capital (given to be same)	50%	1,00,000

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Other shareholders funds	15%	30,000
5% Debentures	10%	20,000
Current Liabilities	25%	50,000
Total (1,00,000 / 50%)	100%	2,00,000

Calculation of Assets

Total liabilities	=	Total Assets
₹2,00,000	=	Total Assets
Fixed Assets	=	60% of total fixed assets and current assets
	=	₹2,00,000 × 60/100 = ₹1,20,000
Current Assets	=	Total Assets – Fixed Assets
	=	₹2,00,000 – ₹1,20,000 = ₹80,000

Calculation of additions to Plant & Machinery

	₹
Total fixed assets	1,20,000
Less: Land & Buildings	80,000
Plant and Machinery (after providing depreciation)	40,000
Less: Existing Plant & Machinery (after extra depreciation of ₹ 5,000) i.e. 50,000 – 20,000	30,000
Addition to the Plant & Machinery	10,000

Calculation of stock

$$\text{Quick ratio:} = \frac{\text{Current assets} - \text{stock}}{\text{Current liabilities}} = 1 = \frac{₹80,000 - \text{stock}}{₹50,000} = 1$$

$$\text{₹50,000} = ₹80,000 - \text{stock}$$

$$\text{Stock} = ₹80,000 - ₹50,000$$

$$= ₹30,000$$

$$\text{Receivables} = 4/5^{\text{th}} \text{ of quick assets}$$

$$= (₹80,000 - ₹30,000) \times 4/5$$

$$= ₹40,000$$

$$\text{Receivable turnover} = \frac{\text{Receivable}}{\text{credits}} \times 12 \text{ Months} = 2 \text{ months}$$

$$= \frac{40,000 \times 12}{\text{credit sales}} = 2 \text{ month}$$

$$2 \times \text{credit sales} = 4,80,000$$

$$\text{Credit sales} = 4,80,000 / 2$$

$$= ₹2,40,000 = \text{Total Sales (As there were no cash sales)}$$

$$\text{Gross profit} = 15\% \text{ of sales} = ₹2,40,000 \times 15/100 = ₹36,000$$

Return on net worth (net profit)

$$\text{Net worth} = ₹1,00,000 + ₹30,000$$

$$= ₹1,30,000$$

$$\text{Net profit} = ₹1,30,000 \times 10/100 = ₹13,000$$

$$\text{Debenture interest} = ₹20,000 \times 5/100 = ₹1,000$$

Projected profit and loss account for the year ended 31st March, 2023

Particulars	₹	Particulars	₹
To cost of goods sold	2,04,000	By Sales	2,40,000

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To gross profit	36,000		
	2,40,000		2,40,000
To Debenture Interest	1,000	By Gross Profit	36,000
To administration and other expenses (bal.fig.)	22,000		
To net profit	13,000		
	36,000		36,000

Projected Balance Sheet as at 31st March, 2023

Liabilities	₹	Assets		₹
Share Capital	1,00,000	Fixed Assets		
Profit and Loss A/c (17,000 +13,000)	30,000	Land and Buildings		80,000
5% Debentures	20,000	Plant and Machinery	60,000	
Current Liabilities	50,000	Less: Depreciation	20,000	40,000
		Current Assets		
		Stock	30,000	
		Receivables	40,000	
		Bank	10,000	80,000
	2,00,000			2,00,000

Question 3 (illustration)

X Co. has made plans for the next year. It is estimated that the company will employ total assets of ₹ 8,00,000; 50 per cent of the assets being financed by borrowed capital at an interest cost of 8 per cent 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 per cent of the direct costs. Tax rate is assumed to be 50 per cent.

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) asset turnover and (v) return on owners' equity.

Answer 3

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 charges (8% of ₹ 4,00,000)	(32,000)
Profit before taxes	1,28,000
Taxes (@ 50%)	(64,000)
Net profit after taxes	64,000

- i. Operating profit margin = $\frac{EBIT}{Sales} = \frac{₹1,60,000}{₹7,20,000} = 0.2222$ or 22.22%
- ii. Net profit margin = $\frac{Net\ profit\ after\ taxes}{sales} = \frac{₹64,000}{₹7,20,000} = 0.89$ or 8.9%

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- iii. Return on assets $= \frac{EBIT(1-T)}{\text{sales}} = \frac{₹1,60,000(1-0.5)}{8,00,000} = 0.10 \text{ or } 10\%$
- iv. Asset turnover $= \frac{\text{sales}}{\text{Assets}} = \frac{₹7,20,000}{₹8,00,000} = 0.9 \text{ times}$
- v. Return on equity $= \frac{\text{Net Profit after taxes}}{\text{Owners' equity}} = \frac{₹64,000}{50\% \text{ of } ₹8,00,000} = \frac{₹64,000}{₹4,00,000} = 0.16 \text{ or } 16\%$

Question 4 (illustration)

From the following ratios and information given below, PREPARE Trading Account, Profit and Loss Account and Balance Sheet of Aeebe Company:

Fixed Assets	40,00,000
Closing Stock	4,00,000
Stock turnover ratio	10
Gross profit ratio	25 percent
Net profit ratio	20 percent
Net profit to capital	1/5
Capital to total liabilities	1/2
Fixed assets to capital	5/4
Fixed assets/Total current assets	5/7

Answer 4
Workings:

- (i) $\frac{\text{Fixed Assets}}{\text{Total Current Assets}} = \frac{5}{7}$
 Or, Total Current Assets $= \frac{₹40,00,000 \times 7}{5} = ₹56,00,000$
- (ii) $\frac{\text{Fixed Assets}}{\text{capital}} = \frac{5}{4}$
 Or, Capital $= \frac{₹40,00,000 \times 4}{5} = ₹32,00,000$
- (iii) $\frac{\text{capital}}{\text{Total liabilities*}} = \frac{1}{2}$
 Or, Total liabilities = ₹32,00,000 × 2 = ₹64,00,000
 *It is assumed that total liabilities do not include capital.
- (iv) $\frac{\text{Net Profit}}{\text{capital}} = \frac{1}{5}$
 Or, Net Profit = ₹32,00,000 × 1/5 = ₹6,40,000
- (v) $\frac{\text{Net Profit}}{\text{sales}} = \frac{1}{5}$
 Or, Sales = ₹6,40,000 × 5 = ₹32,00,000
- (vi) Gross Profit = 25% of ₹32,00,000 = ₹8,00,000
- (vii) Stock Turnover $= \frac{\text{cost of goods sold (i.e sales - gross profit)}}{\text{Average Stock}} = 10 = \frac{₹32,00,000 - ₹8,00,000}{\text{Average Stock}} = 10$
 Or, Average Stock = ₹2,40,000
 $\frac{\text{Opening Stock} + ₹4,00,000}{2} = ₹2,40,000$
 Or, Opening Stock = ₹80,000

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Trading Account

Particulars	(₹)	Particulars	(₹)
To Opening Stock	80,000	By Sales	32,00,000
To Manufacturing exp./Purchase (Balancing figure)	27,20,000		
To Gross Profit b/d	8,00,000	By Closing Stock	4,00,000
	36,00,000		36,00,000

Profit and Loss Account

Particulars	(₹)	Particulars	(₹)
To Operating Expenses (Balancing figure)	1,60,000	By Gross Profit c/d	8,00,000
To Net Profit	6,40,000		
	8,00,000		8,00,000

Balance Sheet

Capital and Liabilities	(₹)	Assets	(₹)
Capital	32,00,000	Fixed Assets	40,00,000
Liabilities	64,00,000	Current Assets:	
		Closing Stock	4,00,000
		Other Current Assets (Bal. figure)	52,00,000
	96,00,000		96,00,000

Question 5 (Illustration)

ABC Company sells plumbing fixtures on terms of 2/10, net 30. Its financial statements over the last 3 years are as follows:

Particulars	2020-21	2021-22	2022-23
	₹	₹	₹
Cash	30,000	20,000	5,000
Accounts receivable	2,00,000	2,60,000	2,90,000
Inventory	4,00,000	4,80,000	6,00,000
	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
	₹	₹	₹

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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 Receivable and Inventory as 2,00,000 and 4,00,000 respectively as on 01.04.2018, ANALYSE the company's financial condition and performance over the last 3 years. Are there any problems?

Answer 5

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

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Return on assets (Net profit / Total Assets)	0.21 $\left[\frac{₹3,00,000}{₹14,30,000} \right]$	0.13 $\left[\frac{₹2,00,000}{₹15,60,000} \right]$	0.06 $\left[\frac{₹1,00,000}{₹16,95,000} \right]$
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.

Question 6 (illustration)

Following information are available for Navya Ltd. along with various ratios relevant to the particular industry it belongs to. APPRAISE your comments on strength and weakness of Navya Ltd. comparing its ratios with the given industry norms.

Navya Ltd. Balance Sheet as at 31.3.2023

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		-
Total	77,00,000	Total	77,00,000

Statement of Profitability For the year ending 31.3.2023

Particulars	Amount (₹)	Amount (₹)
Sales		1,10,00,000

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Less: Cost of goods sold:		
Material	41,80,000	
Wages	26,40,000	
Factory Overhead	12,98,000	81,18,000
Gross Profit		28,82,000
Less: Selling and 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
Earning 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 (on EBIT)	7.0%
Return on Net worth (Based on Net profit)	10.5%
Total Debt/Total Assets	60.0%

Answer 6

Ratios	Navya Ltd.	Industry Norms
1. Current Ratio = $\frac{\text{Current Assets}}{\text{Current Liabilities}}$	$\frac{₹52,80,000}{₹19,80,000} = 2.67$	2.50
2. Receivable Turnover Ratio = $\frac{\text{sales}}{\text{debtors}}$	$\frac{₹1,10,00,000}{₹11,00,000} = 10.0$	8.00
3. Inventory turnover ratio = $\frac{\text{sales}}{\text{stock}}$	$\frac{₹1,10,00,000}{₹33,00,000} = 3.33$	9.00
4. Total Asset Turnover ratio = $\frac{\text{sales}}{\text{total assets}}$	$\frac{₹1,10,00,000}{₹77,00,000} = 1.43$	2.00
5. Net Profit Ratio = $\frac{\text{Net profit}}{\text{sales}}$	$\frac{₹2,31,000}{₹1,10,00,000} = 2.10\%$	3.50%
6. Return on Total Asset = $\frac{\text{EBIT}}{\text{total assets}}$	$\frac{₹5,54,000}{₹77,00,000} = 7.19\%$	7%
7. Return on Net worth = $\frac{\text{Net profit}}{\text{Net worth}}$	$\frac{₹2,31,000}{₹48,00,000} = 4.81\%$	10.5%
8. $\frac{\text{Total debit}}{\text{Total assets}}$	$\frac{₹29,00,000}{₹77,00,000} = 37.66\%$	60%

Comments:

- The position of Navya Ltd. is better than the industry norm with respect to Current Ratio and

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Receivables Turnover Ratio.

2. However, the Inventory turnover ratio and Total Asset Turnover ratio is poor comparing to industry norm indicating that company is inefficient to utilize its inventory and assets.
3. The firm also has its net profit ratio and return on net worth ratio much lower than the industry norm.
4. Total debt to total assets ratio is lower than the industry standard which suggests that the firm is less levered by debt and more by equity resulting in less risky company.

Test Your Knowledge

Multiple Choice Questions

1. Ratio of Net sales to Net working capital is a:

- (a) Profitability ratio
- (b) Liquidity ratio
- (c) Current ratio
- (d) Working capital turnover ratio

Ans: (d)

2. Long-term solvency is indicated by:

- (a) Debt/equity ratio
- (b) Current Ratio
- (c) Operating ratio
- (d) Net profit ratio

Ans: (a)

3. Ratio of net profit before interest and tax to sales is:

- (a) Gross profit ratio
- (b) Net profit ratio
- (c) Operating profit ratio
- (d) Interest coverage ratio.

Ans: (c)

4. Observing changes in the financial variables across the years is:

- (a) Vertical analysis
- (b) Horizontal Analysis
- (c) Peer-firm Analysis
- (d) Industry Analysis.

Ans: (b)

5. The Receivable-Turnover ratio helps management to:

- (a) Managing resources
- (b) Managing inventory
- (c) Managing customer relationship
- (d) Managing working capital

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Ans: (d)

6. Which of the following is a liquidity ratio?

- (a) Equity ratio
- (b) Proprietary ratio
- (c) Net Working Capital
- (d) Capital Gearing ratio

Ans: (c)

7. Which of the following is not a part of Quick Assets?

- (a) Disposable investments
- (b) Receivables
- (c) Cash and Cash equivalents
- (d) Prepaid expenses

Ans: (d)

8. Capital Gearing ratio is the fraction of:

- (a) Preference Share Capital and Debentures to Equity Share Capital and Reserve & Surplus.
- (b) Equity Share Capital and Reserve & Surplus to Preference Share Capital and Debentures.
- (c) Equity Share Capital to Total Assets.
- (d) Total Assets to Equity Share Capital.

Ans: (a)

9. From the following information, calculate P/E ratio:

Equity share capital of ₹ 10 each	₹ 8,00,000
9% Preference share capital of ₹ 10 each	₹ 3,00,000
Profit (after 35% tax)	₹ 2,67,000
Depreciation	₹ 67,000
Market price of equity share	₹ 48

- (a) 15 times
- (b) 16 times
- (c) 17 times
- (d) 18 times

Ans: (b)

10. Equity multiplier allows the investor to see:

- (a) What portion of interest on debt can be covered from earnings available to equity shareholders?
- (b) How many times preference share interest be paid from earnings available to equity shareholders?
- (c) What portion of return on equity is the result of debt?
- (d) How many times equity is multiplied to get the value of debt?

Ans: (c)

11. A company has average accounts receivable of ₹ 10,00,000 and annual credit sales of ₹ 60,00,000. Its average collection period would be:

- (a) 60.83 days
- (b) 6.00 days

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- (c) 1.67 days
 (d) 0.67 days

Ans: (a)

12. A company has net profit margin of 5%, total assets of ₹ 90,00,000 and return on assets of 9%. Its total asset turnover ratio would be:

- (a) 1.6
 (b) 1.7
 (c) 1.8
 (d) 1.9

Ans:(c)

13. What does Q ratio measures?

- (a) Relationship between market value and book value per equity share.
 (b) Proportion of profit available per equity share.
 (c) Overall earnings on average total assets.
 (d) Market value of equity as well as debt in comparison to all assets at their replacement cost.

Ans: (d)

14. Calculate operating expenses from the information given below:

Sales	₹ 75,00,000
Rate of income tax	50%
Net profit to sales	5%
Cost of goods sold	₹ 32,90,000
Interest on debentures	₹ 60,000

- (a) ₹ 41,00,000
 (b) ₹ 8,10,000
 (c) ₹ 34,00,000
 (d) ₹ 33,90,000

Ans: (c)

15. Which of the following is not a profitability ratio?

- (a) P/E ratio
 (b) Return on capital employed (ROCE)
 (c) Q Ratio
 (d) Preference Dividend Coverage Ratio

Ans: (d)

Theoretical Questions

Question 1

DISCUSS any three ratios computed for investment analysis.

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Answer 1

Return on Investment (ROI): ROI is the most important ratio of all. It is the **percentage of return on funds invested in the business by its owners**. In short, this ratio tells the owner whether or not all the effort put into the business has been worthwhile. It compares earnings/ returns/ profit with the investment in the company.

- a) **Return on Assets (ROA):** The profitability ratio is measured in terms of relationship between **net profits and assets employed** to earn that profit. This ratio measures the profitability of the firm in terms of assets employed in the firm. Based on various concepts of net profit (return) and assets, the ROA may be measured as follows

$$ROA = \frac{\text{Net Profit After Taxes}}{\text{Average Total Assets}} \text{ or } = \frac{\text{Net Profit After Taxes}}{\text{Average Tangible Assets}} \text{ or } = \frac{\text{Net Profit After Taxes}}{\text{Average Fixed Assets}}$$

Here, net profit is exclusive of interest. As Assets are also financed by lenders, hence ROA can be calculated as:

$$\frac{\text{Net Profit After Taxes} + \text{Interest}}{\text{Average Total or Tangible or Intangible Assets}}$$

- b) **Return on Capital Employed (ROCE):** It is another variation of ROI. The ROCE is calculated as follows:

$$ROCE \text{ (Pre-Tax)} = \frac{\text{Earnings before Interest \& Tax (EBIT)}}{\text{Capital Employed}} \times 100$$

$$ROCE \text{ (Post-Tax)} = \frac{\text{EBIT} (1-t)}{\text{Capital Employed}} \times 100$$

Sometimes, it is also calculated as:

$$= \frac{\text{Net Profit After Taxes (PAT or EAT) + Interest}}{\text{Capital Employed}} \times 100$$

Where,

$$\begin{aligned} \text{Capital Employed} &= \text{Total Assets} - \text{Current Liabilities} \\ &\text{Or} \\ &= \text{Fixed Assets} + \text{Working Capital} \\ &\text{Or} \\ &= \text{Equity} + \text{Long Term Debt} \end{aligned}$$

- c) **Return on Equity (ROE):** Return on Equity measures the **profitability of equity funds invested in the firm**. This ratio reveals how profitably of the owners' funds have been utilized by the firm. It also measures the percentage return generated to equity shareholders. This ratio is computed as:

$$ROE = \frac{\text{Net Profit After Taxes} - \text{Preference Dividend if any}}{\text{Net Worth or Equity Shareholders Funds}} \times 100$$

Return on equity is one of the most important indicators of a firm's profitability and potential growth. Companies that boast a high return on equity with little or no debt are able to grow without large capital expenditures, allowing the owners of the business to withdraw cash and reinvest it elsewhere. Many investors fail to realize, however, that two companies can have the same return on equity, yet one can be a much better business. If return on total shareholders (i.e. equity and preference shareholder) is calculated, then Net Profit after taxes (before preference dividend) shall be divided by total shareholders' fund including preference share capital.

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Question 2

DISCUSS the financial ratios for evaluating company performance on operating efficiency and liquidity position aspects.

Answer 2

These ratios are employed to **evaluate the efficiency with which the firm manages and utilises its assets**. For this reason, they are often called as 'Asset management ratios'. These ratios usually indicate the frequency of sales with respect to its assets. These assets may be capital assets or working capital or average inventory.

Activity Ratios/ Efficiency Ratios/ Performance Ratios/ Turnover Ratios:

- a. Total Assets Turnover Ratio
- b. Fixed Assets Turnover Ratio
- c. Capital Turnover Ratio/ Net Assets Turnover Ratio
- d. Current Assets Turnover Ratio
- e. Working Capital Turnover Ratio
 - i) Inventory/ Stock Turnover Ratio
 - ii) Receivables (Debtors) Turnover Ratio
 - iii) Payables (Creditors) Turnover Ratio

These ratios are usually calculated with reference to **sales/cost of goods sold** and are expressed in terms of rate or times.

- (a) Total Asset Turnover Ratio:** This ratio measures the efficiency with which the firm uses its total assets. Higher the ratio, better it is. This ratio is computed as:

$$\text{Total Assets Turnover Ratio} = \frac{\text{Sales/Cost of Good Sold}}{\text{Total Assets}}$$

Interpretation

A high total assets turnover ratio indicates the efficient utilisation of total assets in generation of sales. Similarly, a low asset turnover ratio indicates total assets are not efficiently used to generate sales.

- (b) Fixed Assets Turnover Ratio:** It measures the efficiency with which the firm uses its fixed assets.

$$\text{Fixed Assets Turnover Ratio} = \frac{\text{Sales/Cost of Good Sold}}{\text{Fixed Assets}}$$

Interpretation

Interpretation

A high fixed assets turnover ratio indicates efficient utilisation of fixed assets in generating sales. A firm whose plant and machinery are old may show a higher fixed assets turnover ratio than the firm which has purchased them recently.

- (c) Capital Turnover Ratio/ Net Asset Turnover Ratio:**

$$\text{Capital Turnover Ratio} = \frac{\text{Sales/Cost of Good Sold}}{\text{Net Assets}}$$

Interpretation

Since Net Assets equals to capital employed it is also known as Capital Turnover Ratio. This ratio indicates the firm's ability of generating sales/ Cost of Goods Sold per rupee of long-term investment. The higher the ratio, the more efficient is the utilisation of owner's and long-term creditors' funds.

- (d) Current Assets Turnover Ratio:** It measures the efficiency of using the current assets by the firm.

$$\text{Current Assets Turnover Ratio} = \frac{\text{Sales/Cost of Good Sold}}{\text{Current Assets}}$$

Interpretation

Higher the ratio, the more efficient is the utilisation of working capital in generating sales. However, a very high working capital turnover ratio indicates that the company needs to raise additional working

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capital for future needs.

Working Capital Turnover is further segregated into Inventory Turnover, Debtors Turnover, and Creditors Turnover.

Note: Average of Total Assets/ Fixed Assets/ Current Assets/ Net Assets/ Working Capital also can be taken in the denominator for the above ratios.

- (e) **Working Capital Turnover Ratio:** It measures how effective a company is at generating sales for every rupee of working capital put to use.

$$\text{Working Capital Turnover Ratio} = \frac{\text{Sales/Cost of Goods Sold}}{\text{Working Capital}}$$

Interpretation

Higher the ratio, the more efficient is the utilisation of working capital in generating sales. However, a very high working capital turnover ratio indicates that the company needs to raise additional working capital for future needs.

Working Capital Turnover is further segregated into Inventory Turnover, Debtors Turnover, and Creditors Turnover.

Note: Average of Total Assets/ Fixed Assets/ Current Assets/ Net Assets/ Working Capital also can be taken in the denominator for the above ratios.

- (i) **Inventory/ Stock Turnover Ratio:** This ratio also known as **stock turnover ratio** establishes the relationship between the cost of goods sold during the year and average inventory held during the year. It measures the efficiency with which a firm utilizes or manages its inventory. It is calculated as follows:

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

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

In the case of inventory of raw material, the inventory turnover ratio is calculated using the following formula :

$$\text{Raw Material Inventory Turnover Ratio} = \frac{\text{Raw Material Consumed}}{\text{Average Raw Material Stock}}$$

Interpretation

This ratio indicates that how fast inventory is used or sold. A high ratio is good from the view point of liquidity and vice versa. A low ratio would indicate that inventory is not used/ sold/ lost and stays in a shelf or in the warehouse for a long time.

- (ii) **Receivables (Debtors) Turnover Ratio:** In case firm sells goods on credit, the realization of sales revenue is delayed and the receivables are created. The cash is realised from these receivables later on.

The speed with which these receivables are collected affects the liquidity position of the firm. The debtor's turnover ratio throws light on the collection and credit policies of the firm. It measures the efficiency with which management is managing its accounts receivables. It is calculated as follows:

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

A low debtors' turnover ratio reflects liberal credit terms granted to customers, while a high ratio shows that collections are made rapidly.

Receivables (Debtors) Velocity/Average Collection Period: Debtor's turnover ratio indicates the average collection period. However, the average collection period can be directly calculated as follows:

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$$\frac{\text{Average Accounts receivables}}{\text{Average Daily Credit Sales}} = \frac{\text{Credit Sales}}{\text{No. of days in the year (360)}}$$

Interpretation

The average collection period measures the average number of days it takes to collect an account receivable. This ratio is also referred to as the number of days of receivable and the number of day's sales in receivables. In determining the credit policy, debtor's turnover and average collection period provide a unique guidance.

(iii) Payables Turnover Ratio: This ratio is calculated on the same lines as receivable turnover ratio is calculated. It measures how fast a company makes payment to its creditors. It shows the velocity of payables payment by the firm. It is calculated as follows:

$$\text{Payables Turnover Ratio} = \frac{\text{Annual Net Credit Purchases}}{\text{Average Accounts Payable}}$$

A low creditor's turnover ratio reflects liberal credit terms granted by suppliers, while a high ratio shows that accounts are settled rapidly.

Payable Velocity/ Average payment period can be calculated using:

$$= \frac{\text{Average Accounts Payable}}{\text{Average Daily Credit Purchases}}$$

Interpretation

The firm can compare what credit period it receives from the suppliers and what it offers to the customers. Also, it can compare the average credit period offered to the customers in the industry to which it belongs.

Question 3

DISCUSS Stock Turnover ratio and Gearing ratio?

Answer 3

Capital Gearing Ratio: In addition to debt-equity ratio, sometimes capital gearing ratio is also calculated to show the proportion of fixed interest (dividend) bearing capital to funds belonging to equity shareholders i.e. equity funds or net worth. Again, higher ratio may indicate more risk.

$$\text{Capital Gearing ratio} = \frac{\text{Preference Share Capital} + \text{Debentures} + \text{Other Borrowed funds}}{\text{Equity Share Capital} + \text{Reserves \& Surplus} - \text{Losses}}$$

Inventory/ Stock Turnover Ratio: This ratio also known as **stock turnover ratio** establishes the relationship between the cost of goods sold during the year and average inventory held during the year. It measures the efficiency with which a firm utilizes or manages its inventory. It is calculated as follows:

$$\text{Inventory Turnover Ratio} = \frac{\text{Cost of Goods Sold/ Sales}}{\frac{\text{Average Inventory}}{\frac{\text{Opening Stock} + \text{Closing Stock}}{2}}}$$

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

In the case of inventory of raw material, the inventory turnover ratio is calculated using the following formula:

$$\text{Raw Material Inventory Turnover Ratio} = \frac{\text{Raw Material Consumed}}{\text{Average Raw Material Stock}}$$

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Question 4

DISCUSS the composition of Return on Equity (ROE) using the DuPont model.

Answer 4
Return on Equity using the Du Pont Model:

A finance executive at E.I. Du Pont de Nemours and Co., of Wilmington, Delaware, created the DuPont system of financial analysis in 1919. That system is used around the world today and serves as the basis of components that make up return on equity.

There are various components in the calculation of return on equity using the traditional DuPont model- the net profit margin, asset turnover, and 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. The components are as follows:

- (i) **Profitability/Net Profit Margin: The net profit margin is simply the after-tax profit a company generates for each rupee of revenue.** Net profit margin varies across industries, making it important to compare a potential investment against its competitors. Although the general rule-of-thumb is that a higher net profit margin is preferable, it is not uncommon for management to purposely lower the net profit margin in a bid to attract higher sales.

$$\text{Profitability/ Net Profit margin} = \frac{\text{Profit or Net Income}}{\text{Sales or Revenue}}$$

Net profit margin is a safety cushion; the lower the margin, the less room for an error. A business with 1% margin has no room for flawed execution. Small miscalculations on management's part could lead to tremendous losses with little or no warning.

- (ii) **Investment Turnover/ Asset Turnover/ Capital Turnover:** The asset turnover ratio is a measure of how effectively a company converts its assets into sales. It is calculated as follows

$$\text{Investment Turnover/ Asset Turnover/ Capital Turnover:} = \frac{\text{Sales or Revenue}}{\text{Investment or Asset or Capital}}$$

The asset turnover ratio tends to be inversely related to the net profit margin i.e. higher the net profit margin, lower the asset turnover and vice versa. The result is that the investor can compare companies using different models (low-profit, high-volume vs. high-profit, low-volume) and determine which one is the more attractive business.

- (iii) **Equity Multiplier:** It is possible for a company with terrible sales and margins to take on excessive debt and artificially increase its return on equity. The equity multiplier, a measure of financial leverage, allows the investor to see what portion of the return on equity is the result of debt. The equity multiplier is calculated as follows:

$$\text{Equity Multiplier} = \frac{\text{Investment or Asset or Capital}}{\text{Shareholders Equity}}$$

Calculation of Return on Equity

To calculate the return on equity using the DuPont model, simply multiply the three components (net profit margin, asset turnover, and equity multiplier.)

$$\text{Return on Equity} = (\text{Profitability/ Net profit margin}) \times (\text{Investment Turnover/Asset Turnover / Capital Turnover}) \times \text{Equity Multiplier}$$

To calculate the return on equity using the DuPont model, simply multiply the three components (net profit margin, asset turnover, and equity multiplier.)

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Question 5

EXPLAIN briefly the limitations of Financial ratios.

Answer 5

The limitations of financial ratios are listed below:

- (i) **Diversified product lines:** Many businesses operate a large number of divisions in quite different industries. In such cases ratios calculated on the basis of aggregate data cannot be used for inter-firm comparisons.
- (ii) **Financial data are badly distorted by inflation:** Historical cost values may be substantially different from true values. Such distortions of financial data are also carried in the financial ratios.
- (iii) **Seasonal factors:** It may also influence financial data.
Example: A company deals in cotton garments. It keeps a high inventory during October - January every year. For the rest of the year its inventory level becomes just 1/4th of the seasonal inventory level.
 So, the liquidity ratios and inventory ratios will produce biased picture. Year end picture may not be the average picture of the business. Sometimes it is suggested to take monthly average inventory data instead of year end data to eliminate seasonal factors. But for external users it is difficult to get monthly inventory figures. (Even in some cases monthly inventory figures may not be available).
- (iv) **To give a good shape to the popularly used financial ratios (like current ratio, debt-equity ratios, etc.):** The business may make some year-end adjustments. Such window dressing can change the character of financial ratios which would be different had there been no such change.
- (v) **Differences in accounting policies and accounting period:** It can make the accounting data of two firms non-comparable as also the accounting ratios.
- (vi) **No standard set of ratios against which a firm's ratios can be compared:** Sometimes a firm's ratios are compared with the industry average. But if a firm desires to be above the average, then industry average becomes a low standard. On the other hand, for a below average firm, industry averages become too high a standard to achieve.
- (vii) **Difficulty to generalise whether a particular ratio is good or bad:** For example, a low current ratio may be said 'bad' from the point of view of low liquidity, but a high current ratio may not be 'good' as this may result from inefficient working capital management.
- (viii) **Financial ratios are inter-related, not independent:** Viewed in isolation one ratio may highlight efficiency. But when considered as a set of ratios they may speak differently. Such interdependence among the ratios can be taken care of through multivariate analysis (analyzing the relationship between several variables simultaneously).

Financial ratios provide clues but not conclusions. These are tools only in the hands of experts because there is no standard ready-made interpretation of financial ratios.

Question 6

DISCUSS DuPont Model.

Answer 6

Return on Equity using the Du Pont Model:

A finance executive at E.I. Du Pont de Nemours and Co., of Wilmington, Delaware, created the DuPont system of financial analysis in 1919. That system is used around the world today and serves as the basis of components that make up return on equity.

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Calculation of Return on Equity

To calculate the return on equity using the DuPont model, simply multiply the three components (net profit margin, asset turnover, and equity multiplier.)

$$\text{Return on Equity} = (\text{Profitability/ Net profit margin}) \times (\text{Investment Turnover/Asset Turnover / Capital Turnover}) \times \text{Equity Multiplier}$$

Practical Problems

Question 1

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

- (a) DETERMINE the average inventory to be carried by the firm, if an inventory turnover of 5 times is expected? (Assume 360 days a year).
- (b) DETERMINE the average collection period if the opening balance of debtors is intended to be of ₹ 80,000? (Assume 360 days a year).

Answer 1

$$\text{a) Inventory turnover} = \frac{\text{cost of goods}}{\text{Average inventory}}$$

Since gross profit margin is 15 per cent, the cost of goods sold should be 85 per

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cent of the sales.

Cost of goods sold = $0.85 \times ₹ 6,40,000 = ₹ 5,44,000$

Thus, $\frac{₹ 5,44,000}{\text{Average inventory}} = 5$

Average inventory = $\frac{₹ 5,44,000}{5} = ₹ 1,08,800$

b) Average collection period = $\frac{\text{Average Receivable}}{\frac{\text{Credits Sales}}{(\text{Opening Receivables} + \text{Closing Receivables})}} \times 360 \text{ days}$

Average Receivables = $\frac{(\text{Opening Receivables} + \text{Closing Receivables})}{2}$

Closing balance of receivables is found as follows

	₹	₹
Current assets (2.5 of current liabilities)		2,40,000
Less: Inventories	48,000	
Cash	16,000	64,000
∴ Receivables		1,76,000

Average Receivables = $\frac{(\text{₹}1,76,000 + \text{₹}80,000)}{2} = ₹ 1,28,000$

So, Average collection period = $\frac{\text{Rs.}1,28,000}{\text{Rs.}6,40,000} \times 360 = 72 \text{ days}$

Question 2

The capital structure of Beta Limited is as follows:

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 per cent) ₹ 2,70,000; Depreciation ₹ 60,000; Equity dividend paid 20 per cent; Market price of equity shares ₹ 40.

You are required to COMPUTE the following, showing the necessary workings:

- Dividend yield on the equity shares
- Cover for the preference and equity dividends
- Earnings per shares
- Price-earnings ratio

Answer 2

a) Dividend yield on the equity shares

$$= \frac{\text{Dividend per share}}{\text{Market price per share}} \times 100 = \frac{₹ 2 \text{ (i.e. } 0.20 \times ₹ 10)}{\text{Rs.}40} \times 100 = 5\%$$

b) Dividend coverage ratio

i. Preference

$$= \frac{\text{Profit after taxes}}{\text{Dividend payable to preference shareholders}} = \frac{₹ 2,70,000}{₹ 27,000 \text{ (i.e. } 0.09 \times ₹ 3,00,000)} = 10 \text{ times}$$

ii. Equity

$$= \frac{\text{Profit after taxes} - \text{Preference share dividend}}{\text{Dividend payable to equity shareholders at current rate of ₹ 2 per share}} = \frac{₹ 2,70,000 - ₹ 27,000}{₹ 1,60,000 \text{ (i.e. } 80,000 \text{ shares} \times ₹ 2)} = 1.52 \text{ times}$$

c) Earnings per equity share

$$= \frac{\text{Earnings available to equity shareholders}}{\text{Number of equity shares outstanding}} = \frac{₹ 2,43,000}{80,000} = ₹ 3.04 \text{ per share}$$

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d) Price-earning (P/E) ratio $= \frac{\text{Profit after taxes} - \text{Preference share dividend}}{\text{Dividend payable to equity shareholders at current rate of ₹ 2 per share}}$

$= \frac{\text{market price per share} = ₹ 40}{\text{Earnings per share} = ₹ 3.04} = 13.2 \text{ times}$

Question 3

The following accounting information and financial ratios of PQR Ltd. relates to the year ended 31st March, 2023:

I	Accounting Information:	
	Gross Profit	15% of Sales
	Net profit	8% of sales
	Raw materials consumed	20% of works cost
	Direct wages	10% of works cost
	Stock of raw materials	3 months' usage
	Stock of finished goods	6% of works cost
	Debt collection period	60 days
	(All sales are on credit)	
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
	Share Capital to Reserves and Surplus	1 : 4

If value of Fixed Assets as on 31st March, 2022 amounted to ₹ 26 lakhs, PREPARE a summarised Profit and Loss Account of the company for the year ended 31st March, 2023 and also the Balance Sheet as on 31st March, 2023.

Answer 3

a) Working Notes:

- Calculation of Sales $= \frac{\text{Fixed Assets}}{\text{Sales}} = \frac{1}{3}$
 $\therefore \frac{26,00,000}{\text{Sales}} = \frac{1}{3} \Rightarrow \text{Sales} = ₹ 78,00,000$
- Calculation of Current Assets $= \frac{\text{Fixed Assets}}{\text{Current Assets}} = \frac{13}{11}$
 $\therefore \frac{26,00,000}{\text{Current Assets}} = \frac{13}{11} \Rightarrow \text{Sales} = ₹ 22,00,000$
- Calculation of Raw Material Consumption and Direct Wages

	₹
Sales	78,00,000
Less: Gross Profit @ 15%	11,70,000
Works Cost	66,30,000

Raw Material Consumption (20% of Works Cost) = ₹ 13,26,000
 Direct Wages (10% of Works Cost) = ₹ 6,63,000
- Calculation of Stock of Raw Materials (= 3 months usage)
 $= 13,26,000 \times \frac{13}{12} = ₹ 3,31,500$
- Calculation of Stock of Finished Goods (= 6% of Works Cost)

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$$= 66,30,000 \times \frac{6}{100} = ₹ 3,97,800$$

vi. Calculation of Current Liabilities

$$= \frac{\text{Current Assets}}{\text{Current Liabilities}} = 2$$

$$\therefore \frac{22,00,000}{\text{Current Liabilities}} = 2 \Rightarrow \text{Current Liabilities} = ₹ 11,00,000$$

vii. Calculation of Receivables

$$\begin{aligned} \text{Average collection period} &= \frac{\text{Receivables}}{\text{Credit Sales}} \times 365 \\ &= \frac{\text{Receivables}}{78,00,000} \times 365 = 60 \end{aligned}$$

$$\text{Receivables} = ₹ 12,82,191.78 \text{ or } ₹ 12,82,192$$

viii. Calculation of Long term Loan

$$\frac{\text{Long term Loan}}{\text{Current Liabilities}} = \frac{2}{1} = \frac{\text{Long term Loan}}{11,00,000} \Rightarrow \text{Long term loan} = ₹ 22,00,000.$$

ix. Calculation of Cash Balance

	₹
Current assets	22,00,000
Less: Receivables	12,82,192
Raw materials stock	3,31,500
Finished goods stock	3,97,800
Cash balance	1,88,508

x. Calculation of Net worth

Fixed Assets	26,00,000
Current Assets	22,00,000
Total Assets	48,00,000
Less: Long term Loan	22,00,000
Current Liabilities	11,00,000
Net worth	15,00,000

$$\text{Net worth} = \text{Share capital} + \text{Reserves} = 15,00,000$$

$$\text{Also, } \frac{1}{4} = \frac{\text{share capital}}{\text{Reserves and Surplus}}$$

$$\text{So, Share capital} = 15,00,000 \times \frac{1}{5} = ₹ 3,00,000$$

$$\text{Reserves and Surplus} = 15,00,000 \times \frac{4}{5} = ₹ 12,00,000$$

Profit and Loss Account of PQR Ltd. for the year ended 31st March, 2023

	Particulars	₹	Particulars	₹
To	Direct Materials	13,26,000	By Sales	78,00,000
To	Direct Wages	6,63,000		

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To	Works(Overhead) (Balancing figure)	46,41,000		
To	Gross Profit c/d	11,70,000		
		78,00,000		78,00,000
To	Selling and Distribution Expenses(Balancing figure)	5,46,000	By Gross Profit b/d	11,70,000
To	Net Profit (8% of Sales)	6,24,000		
		11,70,000		11,70,000

Balance Sheet of PQR Ltd. as at 31st March, 2023

Liabilities	₹	Assets	₹
Share Capital	3,00,000	Fixed Assets	26,00,000
Reserves and Surplus	12,00,000	Current Assets:	
Long term loans	22,00,000	Stock of Raw Material	3,31,500
Current liabilities	11,00,000	Stock of Finished Goods	3,97,800
		Receivables	12,82,192
		Cash	1,88,508
	48,00,000		48,00,000

Question 4

Ganpati Limited has furnished the following ratios and information relating to the year ended 31st March, 2023:

Sales	₹ 60,00,000
Return on net worth	25%
Rate of income tax	50%
Share capital to reserves	7:3
Current ratio	2
Net profit to sales	6.25%
Inventory turnover (based on cost of goods sold)	12
Cost of goods sold	₹ 18,00,000
Interest on debentures	₹ 60,000
Receivables	₹ 2,00,000
Payables	₹ 2,00,000

You are required to:

- CALCULATE the operating expenses for the year ended 31st March, 2023.
- PREPARE a Balance Sheet as on 31st March, 2023 in the following format:

Balance Sheet as on 31st March, 2023

Liabilities	₹	Assets	₹
Share Capital		Fixed Assets	
Reserve and Surplus		Current Assets	

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15% Debentures		Stock	
Payables		Receivables	
		Cash	

Answer 4
a) Calculation of Operating Expenses for the year ended 31st March, 2023

		(₹)
Net Profit [@ 6.25% of Sales]		3,75,000
Add: Income Tax (@ 50%)		3,75,000
Profit Before Tax (PBT)		7,50,000
Add: Debenture Interest		60,000
Profit before interest and tax (PBIT)		8,10,000
Sales		60,00,000
Less: Cost of goods sold	18,00,000	
PBIT	8,10,000	26,10,000
Operating Expenses		33,90,000

b) Balance Sheet as on 31st March, 2023

Liabilities	₹	Assets	₹
Share Capital	10,50,000	Fixed Assets	17,00,000
Reserve and Surplus	4,50,000	Current Assets:	
15% Debentures	4,00,000	Stock	1,50,000
Payables	2,00,000	Receivables	2,00,000
		Cash	50,000
	21,00,000		21,00,000

Working Notes:
(i) Share Capital and Reserves and Surplus

The return on net worth is 25%. Therefore, the profit after tax of ₹ 3,75,000 should be equivalent to 25% of the net worth.

$$\text{Net worth} \times \frac{25}{100} = ₹ 3,75,000$$

$$\therefore \text{Net worth} = \frac{₹ 3,75,000 \times 100}{25} = ₹ 15,00,000$$

The ratio of share capital to reserves is 7:3

$$\text{Share Capital} = 15,00,000 \times \frac{7}{10} = ₹ 10,50,000$$

$$\text{Reserves and Surplus} = 15,00,000 \times \frac{3}{10} = ₹ 4,50,000$$

(ii) Debentures

Interest on Debentures @ 15% = ₹ 60,000

$$\therefore \text{Debentures} = \frac{60,000 \times 100}{15} = ₹ 4,00,000$$

(iii) Current Assets

Current Ratio = 2

Payables = ₹ 2,00,000

$$\therefore \text{Current Assets} = 2 \times \text{Current Liabilities} = 2 \times 2,00,000 = ₹ 4,00,000$$

(iv) Fixed Assets

	₹

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Share capital	10,50,000
Reserves and Surplus	4,50,000
Debentures	4,00,000
Payables	2,00,000
	21,00,000
Less: Current Assets	4,00,000
Fixed Assets	17,00,000

(v) Composition of Current Assets

Inventory Turnover = 12

$$\frac{\text{Cost of goods sold}}{\text{Closing stock}} = 12$$

$$\text{Closing stock} = \frac{₹ 18,00,000}{12} = ₹1,50,000$$

Composition	₹
Stock	1,50,000
Receivables	2,00,000
Cash (balancing figure)	50,000
Total Current Assets	4,00,000

Question 5

Using the following information, PREPARE the balance sheet:

Long-term debt to net worth	0.5
Total asset 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 and equipment	?	Retained earnings	1,00,000
Total assets	?	Total liabilities and equity	?

Answer 5

Working Notes:

(i) Long term Debt

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

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

(ii) Total assets

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

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

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∴ Total assets = Total liabilities and Equity = ₹4,00,000

(iii) Sales and Cost of Goods sold

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

∴ Sales = ₹ 10,00,000

Cost of goods sold = (100% - Gross Profit margin) × Sales
 = (100% - 10%) × ₹ 10,00,000 = ₹ 9,00,000.

(iv) Current Assets

$$\text{Inventory turnover} = 9 = \frac{\text{cost of good sold}}{\text{inventory}} = \frac{₹9,00,000}{\text{inventory}}$$

∴ Inventory = ₹1,00,000

Average collection period = 18

$$\frac{\text{Receivables} \times 360}{\text{Sales}} = \frac{\text{Receivables} \times 360}{10,00,000}$$

∴ Accounts receivables = ₹ 50,000

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

∴ 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

Question 6

Following information has been provided from the books of Laxmi Pvt. Ltd. for the year ending on 31st March, 2023:

Net Working Capital	₹ 4,80,000
Bank overdraft	₹ 80,000
Fixed Assets to Proprietary ratio	0.75
Reserves 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, 2023 assuming that there is no long term debt.

Answer 6

Working notes:

(i) Computation of Current Assets and Current Liabilities]

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

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Current assets = 2.5 Current liabilities
 Now, Working capital = Current assets - Current liabilities
 ₹ 4,80,000 = 2.5 Current liability - Current liability
 Or, 1.5 Current liability = ₹ 4,80,000
 $\therefore$ Current Liabilities = ₹ 3,20,000
 So, Current Assets = ₹ 3,20,000 $\times$ 2.5 = ₹ 8,00,000

(ii) Computation of Inventories

$$\text{Liquid ratio} = \frac{\text{Liquid assets}}{\text{Current liabilities}}$$

$$1.5 = \frac{\text{current assets} - \text{inventories}}{\text{Rs. 3,20,000}}$$

$$= 1.5 \times \text{₹ 3,20,000} = \text{₹ 8,00,000} - \text{Inventories}$$

$$\text{Inventories} = \text{₹ 8,00,000} - \text{₹ 4,80,000} = \text{₹ 3,20,000}$$

(iii) Computation of Proprietary fund; Fixed assets; Capital and Sundry creditors

$$\text{Fixed Asset to Proprietary ratio} = \frac{\text{fixed assets}}{\text{Proprietary fund}} = 0.75$$

$$\therefore \text{Fixed Assets} = 0.75 \text{ Proprietary fund}$$

$$\text{Proprietary fund} = \text{Fixed Assets} + \text{Net Working Capital} - \text{Long Term Debt}$$

$$= 0.75 \text{ Proprietary fund} + \text{₹ 4,80,000} - 0$$

$$\therefore \text{Proprietary fund} = \text{₹ 19,20,000}$$

$$\text{and Fixed Assets} = 0.75 \text{ proprietary fund}$$

$$= 0.75 \times \text{₹ 19,20,000} = \text{₹ 14,40,000}$$

$$\text{Capital} = \text{Proprietary fund} - \text{Reserves \& Surplus}$$

$$= \text{₹ 19,20,000} - \text{₹ 3,20,000} = \text{₹ 16,00,000}$$

$$\text{Sundry Creditors} = \text{Current liabilities} - \text{Bank overdraft}$$

$$= \text{₹ 3,20,000} - \text{₹ 80,000} = \text{₹ 2,40,000}$$

Balance Sheet as at 31st March, 2023

Liabilities	₹	Assets	₹
Capital	16,00,000	Fixed Assets	14,40,000
Reserves & Surplus	3,20,000	Inventories	3,20,000
Bank overdraft	80,000	Other Current Assets	4,80,000
Sundry creditors	2,40,000	(Balancing figure)	
	22,40,000		22,40,000

Question 7

Manan Pvt. Ltd. gives you the following information relating to the year ending 31st March, 2023:

(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

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(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:

- Quick Ratio
- Fixed Assets Turnover Ratio
- Proprietary Ratio
- Earnings per Share

Answer 7

Workings Notes:

i. Computation of Current Assets & Current Liabilities & Total Assets

$$\begin{aligned}
 \text{Net Working Capital} &= \text{Current Assets} - \text{Current Liabilities} \\
 &= 2.5 - 1 = 1.5 \\
 \text{Thus, Current Assets} &= \frac{\text{Net Working Capital} \times 2.5}{1.5} = \frac{₹13,50,000 \times 2.5}{1.5} = ₹ 22,50,000 \\
 \text{Current Liabilities (CL)} &= ₹ 22,50,000 - ₹ 13,50,000 = ₹ 9,00,000 \\
 \text{Total Assets} &= \text{Current Assets} + \text{Fixed Assets} \\
 &= ₹ 22,50,000 + ₹ 30,00,000 = ₹ 52,50,000
 \end{aligned}$$

ii. Computation of Sales & Cost of Goods Sold

$$\begin{aligned}
 \text{Sales} &= \text{Total Assets Turnover} \times \text{Total Assets} \\
 &= 2 \times (\text{Fixed Assets} + \text{Current Assets}) \\
 &= 2 \times (₹ 30,00,000 + ₹ 22,50,000) \\
 &= ₹ 1,05,00,000 \\
 \text{Cost of Goods Sold} &= (100\% - 20\%) \text{ of Sales} = 80\% \text{ of Sales} \\
 &= 80\% \times ₹ 1,05,00,000 = ₹ 84,00,000
 \end{aligned}$$

iii. Computation of Stock & Quick Assets

$$\begin{aligned}
 \text{Cost of Good Sold} &= ₹ 84,00,000 \\
 \text{Stock Turnover Ratio} &= \frac{\text{Cost of Good Sold}}{\text{Average Stock}} = 7 \\
 &= ₹ 12,00,000 \\
 \text{Closing Stock} &= (\text{Average Stock} \times 2) - \text{Opening Stock} \\
 &= (₹ 12,00,000 \times 2) - ₹ 11,40,000 \\
 &= ₹ 12,60,000
 \end{aligned}$$

$$\begin{aligned}
 \text{Quick Assets} &= \text{Current Assets} - \text{Closing Stock} \\
 &= ₹ 22,50,000 - ₹ 12,60,000 = ₹ 9,90,000
 \end{aligned}$$

iv. Computation of Proprietary Fund

$$\begin{aligned}
 \text{Debt-Equity Ratio} &= \frac{\text{debts}}{\text{Equity}} = 1.5 \\
 \text{Or, Equity} &= 1.5 \text{ Debt} \\
 \text{Total Assets} &= \text{Equity} + \text{Preference capital} + \text{Debt} + \text{CL} \\
 ₹ 52,50,000 &= 1.5 \text{ Debt} + ₹ 6,00,000 + \text{Debt} + ₹ 9,00,000 \\
 \text{Thus, Debt} &= \frac{₹ 37,50,000}{2.5} = ₹ 15,00,000 \\
 \text{Equity} &= ₹ 15,00,000 \times 1.5 = ₹ 22,50,000 \\
 \text{So, Proprietary Fund} &= \text{Equity} + \text{Preference Capital}
 \end{aligned}$$

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$$= ₹ 22,50,000 + ₹ 6,00,000 = ₹ 28,50,000$$

v. Computation of Profit after tax (PAT)

$$= \text{Total Assets} \times \text{Return on Total Assets}$$

$$= ₹ 52,50,000 \times 15\% = ₹ 7,87,500$$

a) Quick Ratio

$$\text{Quick Ratio} = \frac{\text{Quick Assets}}{\text{Current Liabilities}} = \frac{₹ 9,90,000}{₹ 9,00,000} = 1.1$$

b) Fixed Assets Turnover Ratio

$$\text{Fixed Assets Turnover Ratio} = \frac{\text{Sales}}{\text{Fixed Assets}} = \frac{₹ 1,05,00,000}{₹ 30,00,000} = 3.5$$

c) Proprietary Ratio

$$\text{Proprietary Ratio} = \frac{\text{Proprietary Ratio}}{\text{Total Assets}} = \frac{₹ 28,50,000}{₹ 52,50,000} = 0.54$$

d) Earnings per Equity Share (EPS)

$$\begin{aligned} \text{Earnings per Equity Share} &= \frac{\text{PAT} - \text{Preference Share Dividend}}{\text{Number of Equity Share}} \\ &= \frac{₹ 7,87,500 - ₹ 54,000 \text{ (9\% of ₹ 6,00,000)}}{1,80,000} \\ &= ₹ 4.075 \text{ per share} \end{aligned}$$

Question 8

Gig Ltd. has furnished the following information relating to the year ended 31st March, 2022 and 31st March, 2023:

	31 st March, 2022 (₹)	31 st March, 2023 (₹)
Share Capital	40,00,000	40,00,000
Reserve and 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, 2023 in the following format:

Liabilities	(₹)	Assets	(₹)
Share Capital	-	Fixed Assets	-
Reserve and Surplus	-	Sundry Debtors	-
Long-term loan	-	Closing Stock	-
Sundry Creditors	-	Cash in hand	-

Answer 8

- i. Change in Reserve & Surplus = ₹ 25,00,000 – ₹ 20,00,000 = ₹ 5,00,000 So, Net profit = ₹ 5,00,000
 Net Profit Ratio = 8%
 $\therefore \text{Sales} = \frac{5,00,000}{8\%} = ₹ 62,50,000$

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- ii. Cost of Goods sold
 = Sales – Gross profit Margin
 = ₹ 62,50,000 – 20% of ₹ 62,50,000
 = ₹ 50,00,000
- iii. Fixed Assets = $\frac{\text{Cost of Goods Sold}}{40\%} = \frac{50,00,000}{40\%} = ₹ 75,00,000$
- iv. Stock = $\frac{\text{Cost of Goods Sold}}{\text{Stock Turnover ratio}} = \frac{50,00,000}{4} = ₹ 12,50,000$
- v. Debtors = $\frac{62,50,000}{360} \times 90 = ₹ 15,62,500$
- vi. 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

Question 9

Following information relates to Temer Ltd.:

Debtors Velocity	3 months
Creditors Velocity	2 months
Stock Turnover Ratio	1.5
Gross Profit Ratio	25%
Bills Receivables	₹ 25,000
Bills Payables	₹ 10,000
Gross Profit	₹ 4,00,000
Fixed Assets turnover Ratio	4

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

- Sales and cost of goods sold
- Sundry Debtors
- Sundry Creditors
- Closing Stock
- Fixed Assets

Answer 9

- (i) Determination of Sales and Cost of goods sold:

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

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

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

$$\text{Cost of Goods Sold} = \text{Sales} - \text{Gross Profit}$$

$$= ₹ 16,00,000 - ₹ 4,00,000 = ₹ 12,00,000$$

- (ii) Determination of Sundry Debtors:

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

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

$$\begin{aligned} \text{Debtors' turnover ratio} &= \frac{\text{credit sales}}{\text{Average Accounts receivable}} \\ &= \frac{₹ 16,00,000}{\text{Bills Receivable} + \text{Sundry Debtors}} = 4 \end{aligned}$$

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.

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

$$\begin{aligned} \text{Creditors turnover ratio} &= \frac{\text{credit purchases}}{\text{Average Accounts payable}} \\ &= \frac{₹ 12,10,000}{\text{Sundry Debtors} + \text{bills payable}} = 6 \end{aligned}$$

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

$$\begin{aligned} \text{Stock Turnover Ratio} &= \frac{\text{cost of goods sold}}{\text{average stock}} = \frac{₹ 12,00,000}{\text{average stock}} = 1.5 \\ \text{So, Average Stock} &= ₹ 8,00,000 \\ \text{Now Average Stock} &= \frac{\text{Opening Stock} + \text{Closing Stock}}{2} \text{ OR } \frac{\text{Opening Stock} + (\text{Opening Stock} + ₹ 10,000)}{2} = ₹ 8,00,000 \end{aligned}$$

Or, Opening Stock = ₹ 7,95,000

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

(v) Determination of Fixed Assets

$$\text{Fixed Assets Turnover Ratio} = \frac{\text{cost of goods sold}}{\text{fixed assets}} = 4$$

$$\text{Or, } \frac{₹ 12,00,000}{\text{fixed assets}} = 4$$

Or, Fixed Asset = ₹ 3,00,000

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.

Question 10

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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 Ganguly & Co -

Average Stock	₹10lakh
Current Ratio	3:1
Acid Test Ratio	1:1
PBIT to PBT	2.2:1
Average Collection period (Assume 360 days in a year)	30days
Stock Turnover Ratio (Use sales as turnover)	5 times
Fixed assets turnover ratio	0.8times
Working Capital	₹10 lakh
Net profit Ratio	10%
Gross profit Ratio	40%
Operating expenses (excluding interest)	₹9 lakh
Long term loan interest	12%
Tax	Nil

Answer 10

- 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 x 5,00,000
 CA = ₹15,00,000
- Acid Test Ratio = CA – Stock / CL = 1:1
 $= \frac{15,00,000 - \text{Stock}}{5,00,000}$
 15,00,000 – stock = 5,00,000
 Stock = ₹10,00,000
- Stock Turnover ratio (on sales) = 5
 $\frac{\text{Sales}}{\text{Average Stocks}} = 5$
 $\frac{\text{Sales}}{10,00,000} = 5$
 Sales = ₹50,00,000
- Gross Profit = 50,00,000 x 40% = ₹20,00,000
 Net profit (PBT) = 50,00,000 x 10% = ₹5,00,000
- PBIT/PBT = 2.2
 PBIT = 2.2 x 5,00,000
 PBIT = 11,00,000

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

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

6. Average collection period 30days

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
	77,50,000		15,00,000
			77,50,000

Question 11

From the following information, you are required PREPARE a summarised Balance Sheet for Rudra Ltd. for the year ended 31st March, 2023:

Debt Equity Ratio	1:1
Current Ratio	3:1
Fixed Asset Turnover (on the basis of sales)	4
Stock Turnover (on the basis of sales)	6
Cash in hand	₹5,00,000
Stock to Debtor	1:1
Sales to Net Worth	4
Capital to Reserve	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%.

Answer 11

Balance Sheet of Rudra Ltd.

Liabilities	(₹)	Assets	(₹)
Capital	10,00,000	Fixed Assets	30,00,000

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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 Current Liability (OtherSTCL)	2,00,000		
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
Current liabilities:		Cash	5,00,000
Creditors	x/12		
Other Short-term Current Liability			
Outstanding Interest			
Total Current Liabilities	x/9+5,00,000/3		
Total		Total	

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

$$\text{Fixed Assets} = \frac{X}{4}$$

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

$$\text{Stock} = \frac{X}{6}$$

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

$$\text{Net worth} = \frac{X}{4}$$

$$4. \text{ Debt: Equity} = 1:1$$

$$\frac{\text{Long Term Loan}}{\text{Net worth}} = \frac{1}{1}$$

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

$$5. \text{ Gross Profit to cost} = 20\%$$

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

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

$$\text{GP} = 0.2 X - 0.2 \text{ GP}$$

$$1.2 \text{ GP} = 0.2 X$$

$$\text{GP} = \frac{0.2 X}{1.2}$$

$$\text{GP} = \frac{X}{6}$$

$$6. \text{ Cost of Goods Sold} = X - \frac{X}{6} = \frac{5}{6} X$$

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COGS to Creditors = 10:1

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

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

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

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

$$\text{Debtor} = \text{Stock} = \frac{X}{6}$$

8. Current Ratio = 3:1

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

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

$$\frac{\frac{X}{3} + 5,00,000}{3} = \text{CL}$$

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

9. $\text{CA} = 3 \text{CL} = 3 \left(\frac{X}{9} + \frac{5,00,000}{3} \right)$

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

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

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

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

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

$$\frac{X}{36} = \frac{10,00,000}{36}$$

$$X = ₹ 1,20,00,000$$

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

$$\text{Capital} = ₹ 10,00,000$$

$$\text{And, Reserve} = ₹ 20,00,000$$

$$\text{Long term Loan} = \frac{X}{4} = 30,00,000$$

$$\text{Outstanding Interest} = 30,00,000 \times 10\% = 3,00,000$$

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

$$\text{Current Liabilities} = \text{Creditors} + \text{Other STCL} + \text{Outstanding Interest}$$

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

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

$$₹ 15,00,000 = \text{Other STCL} + ₹ 13,00,000 \quad \text{Other STCL} = ₹ 2,00,000$$

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Case Scenarios

RNOC Ltd is a listed company and has been facing a cash crunch situation since a while. The CFO is of the opinion that excess stock maintained as per the instructions of management of the company is the reason for cash crunch.

However, the management states that its product line requires larger amount of inventory due to greater variety of product line and customer may ask for any type of product. To maintain competitive advantage, the company should be able to cater to customer needs as and when required. The management is highly critical of the collection team as the management feels that they are not collecting the receivables within time as per industry standards.

You have been hired by the company as a financial consultant. Management has provided you the latest audited financial statements and also relevant industry statistics. You are required to advise the company to improve its liquidity position.

Statement of Profit and Loss	₹	₹
Sales		1,25,00,000
Cost of goods sold		
Opening Stock	23,00,000	
Add: Purchases	80,00,000	
Add: Direct expenses	12,00,000	
Less: Closing Stock	(38,60,000)	(76,40,000)
Gross Profit		48,60,000
Less: Operating Expenses		
Administrative Expenses	13,20,000	
Selling and Distribution Expenses	15,90,000	(29,10,000)
Operating Profit		19,50,000
Add: Non-Operating Income		3,28,000
Less: Non-Operating Expenses		(1,27,000)
Profit before Interest and taxes		21,51,000
Less: Interest		(4,39,000)
Profit before tax		17,12,000
Less: Taxes		(4,28,000)
Profit after Tax		12,84,000

Sources of Funds	₹	₹
Owned Funds		
Equity Share Capital	30,00,000	
Reserves and Surplus	18,00,000	48,00,000
Borrowed Funds		
Secured Loan	10,00,000	
Unsecured Loan	4,30,000	14,30,000
Total Funds Raised		62,30,000
Application of Funds		
Non-Current Assets		

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Building	7,50,000	
Machinery	2,30,000	
Furniture	7,60,000	
Intangible Assets	50,000	17,90,000
Current Assets		
Inventory	38,60,000	
Receivables	39,97,000	
ST investments	3,00,000	
Cash and Bank	2,30,000	83,87,000
Less: Current Liabilities		
Creditors	25,67,000	
ST loans	13,80,000	(39,47,000)
Total Funds Employed		62,30,000

Industry Standards

Receivables Turnover	=	90 Days
Inventory Turnover	=	100 Days
Payables turnover	=	90 Days
Net Asset Turnover	=	4 Times

The company has set certain standards for the upcoming year financial status. All the ratios are based on closing figures in financial statements.

Equity SC to Reserves	=	1
Net Profit Ratio	=	15%
Gross Profit Ratio	=	50%
loan Term Debt to Equity	=	0.5
Debtor Turnover	=	100 Days
Creditor Turnover (based on COGS)	=	100 Days
Inventory	=	70% of Opening inventory

Cash Balance is assumed to remain same for next year.

1. What is the inventory turnover ratio in days and whether assertion of CFO is correct?

- (a) 120 days; Assertion of CFO is correct.
- (b) 100 days; Assertion of CFO is incorrect.
- (c) 185 days; Assertion of CFO is correct.
- (d) 150 days; Assertion of CFO is incorrect.

Ans:(c)

$$\text{Inventory Turnover} = \frac{\text{Inventory}}{\text{COGS}} \times 365 = \frac{38,60,000}{76,40,000} \times 365$$

$$= 184.41 \text{ days} = 185 \text{ days (apx)}$$

Inventory holding period of 185 days is significantly higher as compared to industry standard of 100 days. This means a significant amount of working capital is tied in inventory, which may be leading to liquidity crunch.

2. What is the receivables turnover and whether assertion of management is correct?

- (a) 117 days; Assertion of management is correct.

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- (b) 100 days; Assertion of management is correct.
 (c) 85 days; Assertion of management is correct.
 (d) 85 days; Assertion of management is not correct.

Ans:(a)

$$\text{Receivables Turnover} = \frac{\text{Receivables}}{\text{Sales}} \times 365 = \frac{39,79,000 \times 365}{1,25,00,000} = 116.71 = 117 \text{ days (apx)}$$

Receivables turnover of 117 days as compared to industry standard of 90 days is a further delay of 27 days. This will lead to good amount of money being tied up in debtors.

3. What is the expense company needs to incur for earning ₹ 1 of revenue in the last year?

- (a) 0.844
 (b) 0.754
 (c) 0.962
 (d) 0.824

Ans:(a)

Operating Ratio is the number which indicates cost incurred by company for earning each rupee of revenue

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

$$= \frac{76,40,000 + 29,10,000}{1,25,00,000} \times 100 = 0.844$$

4. What is the projected net working capital of the company?

- (a) ₹ 42,87,891
 (b) ₹ 40,27,891
 (c) ₹ 48,27,891
 (d) ₹ 48,28,891

Ans:(b)

Equity to Reserves	=	1
Reserves	=	1x30,00,000 = ₹ 30,00,000
Projected profit	=	30,00,000 - 18,00,000 = ₹ 12,00,000
Net Profit Margin	=	15%
12,00,000/ Sales	=	0.15
Sales	=	₹ 80,00,000
Gross Profit	=	80,00,000 x 50% = ₹ 40,00,000
COGS	=	80,00,000 - 40,00,000 = ₹ 40,00,000
Projected Debtors Turnover	=	100 days = closing Receivables/ Sales x 365
100	=	Closing Receivables/ 80,00,000 x365
Closing Receivables	=	80,00,000x100/365 = ₹ 21,91,781
Projected Closing Inventory	=	70% of opening inventory
	=	70% of 38,60,000 = ₹ 27,02,000
Projected Creditor Turnover	=	100 days
	=	closing creditors/COGSx365
Closing Creditors	=	COGSx100/365
Closing Creditor	=	40,00,000x100/365 = ₹ 10,95,890
Net Working Capital	=	Cash+ Debtors+ Inventory- Creditors

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$$\begin{aligned} &= 2,30,000 + 21,91,781 + 27,02,000 - 10,95,890 \\ \text{Net Working Capital} &= ₹ 40,27,891 \end{aligned}$$

5. What is the projected Long-Term Debt of the company for the next year?

- (a) ₹ 60,00,000
- (b) ₹ 30,00,000
- (c) ₹ 14,30,000
- (d) ₹ 28,60,000

Ans:(b)

$$\begin{aligned} \text{Equity Share Capital + Reserves} &= 30,00,000 + 30,00,000 \\ &= ₹ 60,00,000 \\ \text{Long Term Debt to Equity} &= 0.5 \\ \text{LTD/60,00,000} &= 0.5 \\ \text{Long Term Debt} &= 0.5 \times 60,00,000 \\ \text{Long Term Debt} &= ₹ 30,00,000 \end{aligned}$$



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Chapter 4

Cost of Capital

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ILLUSTRATION

Question 1 (Illustration)

Five years ago, Sona Limited issued 12 per cent 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 per cent CALCULATE its current cost of debenture capital?

Answer 1

Cost of irredeemable debenture:

$$k_d = \frac{1}{NP} (1 - t)$$

$$k_d = \frac{\frac{₹ 12}{₹ 94}}{1 - 0.35} = 0.08297 \text{ or } 8.30\%$$

Question 2 (Illustration)

A company issued 10,000, 10% 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.

Answer 2

The cost of debenture (k_d) will be calculated as below:

$$\text{Cost of debenture } (k_d) = \frac{I(1-t) + \frac{(RV-NP)}{n}}{\frac{(RV+NP)}{2}}$$

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

$$k_d = \frac{₹ 10(1-0.35) + \frac{(₹ 100 - ₹ 110)}{5 \text{ years}}}{\frac{(₹ 100 + ₹ 110)}{2}}$$

$$\text{Or, } k_d = \frac{₹ 10 \times 0.65 - ₹ 2}{₹ 105} = \frac{₹ 4.5}{₹ 105} = 0.0428 \text{ or } 4.28\%$$

Question 3 (Illustration)

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 of its existing debt on 1.4.2023 when the market price of the debentures is ₹ 80. COMPUTE the cost of existing debentures assuming 35% tax rate.

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Answer 3

$$\text{Cost of debenture } (k_d) = \frac{I(1-t) + \frac{(RV-NP)}{n}}{\frac{(RV+NP)}{2}}$$

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	35% or 0.35

$$k_d = \frac{\frac{₹10(1-0.35) + \frac{(₹100-₹80)}{5\text{years}}}{\frac{(₹100+₹80)}{2}} = \frac{₹4 + ₹4}{₹90} = \frac{₹8}{₹90} = 0.1166 \text{ or } 11.67\%$$

Question 4 (Illustration)

Institutional Development Bank (IDB) issued Zero interest deep discount bonds offace value of ₹ 1,00,000 each issued at ₹ 2,500 & repayable after 25 years. COMPUTE the cost of debt if there is no corporate tax.

Answer 4

Here,

Redemption Value (RV)= ₹

1,00,000

Net Proceeds (NP) = ₹ 2,500

Interest = 0

Life of bond = 25 years

There is huge difference between RV and NP, therefore, in place of approximation method, we should use trial & error method.

$$FV = PV \times (1+r)^n$$

$$1,00,000 = 2,500 \times (1+r)^{25}$$

$$40 = (1+r)^{25}$$

$$\text{Trial 1: } r = 15\%, (1.15)^{25} = 32.919$$

$$\text{Trial 2: } r = 16\%, (1.16)^{25} = 40.874$$

Here:

$$L = 15\%, H = 16\%$$

$$NPV_L = ₹32.919 - ₹40 = ₹-7.081$$

$$NPV_H = ₹40.874 - ₹40 = + ₹0.874$$

$$IRR = L + \frac{NPV_L}{NPV_L - NPV_H} (H - L)$$

$$= 15\% + \frac{₹-7.081}{₹-7.081 - (₹0.874)} \times (16\% - 15\%) = 15.89\%$$

Question 5 (illustration)

RBML is proposing to sell a 5-year bond of ₹ 5,000 at 8 per cent 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 per cent?

Answer 5

The amount of interest will go on declining as the outstanding amount of

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bond will be reducing due to amortisation. The amount of interest for five years will be:

First year:	:	$₹5,000 \times 0.08 = ₹400;$
Second year	:	$(₹5,000 - ₹1,000) \times 0.08 = ₹320;$
Third year	:	$(₹4,000 - ₹1,000) \times 0.08 = ₹240;$
Fourth year	:	$(₹3,000 - ₹1,000) \times 0.08 = ₹160;$ and
Fifth year	:	$(₹2,000 - ₹1,000) \times 0.08 = ₹80$

The outstanding amount of bond will be zero at the end of fifth year.

Since RBML will have to return ₹1,000 every year, the outflows every year will consist of interest payment and repayment of principal as follows:

First year:	:	$₹1,000 + ₹400 = ₹1,400;$
Second year	:	$₹1,000 + ₹320 = ₹1,320;$
Third year	:	$₹1,000 + ₹240 = ₹1,240;$
Fourth year	:	$₹1,000 + ₹160 = ₹1,160;$ and
Fifth year	:	$₹1,000 + ₹80 = ₹1,080$

The above cash flows of all five years will be discounted with the cost of capital. Here, cost of capital will be the minimum expected rate of return i.e. 6%.

Value of the bond is calculated as follows:

$$\begin{aligned}
 V_B &= \frac{₹1,400}{(1.06)^1} + \frac{₹1,320}{(1.06)^2} + \frac{₹1,240}{(1.06)^3} + \frac{₹1,160}{(1.06)^4} + \frac{₹1,080}{(1.06)^5} \\
 &= \frac{₹1,400}{1.06} + \frac{₹1,320}{1.1236} + \frac{₹1,240}{1.1910} + \frac{₹1,160}{1.2624} + \frac{₹1,080}{1.3382} \\
 &= ₹1,320.75 + ₹1,174.80 + ₹1,041.14 + ₹918.88 + ₹807.05 = ₹5,262.62
 \end{aligned}$$

Question 6 (Illustration)

XYZ & Co. issues 2,000 10% preference shares of ₹100 each at ₹95 each. CALCULATE the cost of preference shares.

Answer 6

$$K_P = \frac{PD}{P_0} = K_P \frac{(10 \times 2,000)}{(95 \times 2,000)} = \frac{10}{95} = 0.1053 \text{ or } 10.53\%$$

Question 7 (Illustration)

If R Energy 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?

Answer 7

Here, Net Proceed (P_0)s will be issue price less flotation cost

$$P_0 = ₹100 - 3\% \text{ of } ₹100 = ₹97$$

$$= k_p = \frac{PD}{P_0}$$

$$= k_p = \frac{₹12}{₹97} = 0.1237 \text{ or } 12.37\%$$

Question 8 (Illustration)

XYZ 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?

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Answer 8

$$=k_p = \frac{PD + \frac{(RV-NP)}{n}}{\frac{(RV+NP)}{n}}$$

$$=k_p = \frac{10 + \left(\frac{100-95}{2}\right)}{\left(\frac{100+95}{2}\right)} = 0.1077 \text{ or } 10.77\% \text{ (approx.)}$$

Question 9 (Illustration)

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 of share is ₹ 55.

Answer 9

$$k_e = \frac{D_1}{P_0} + g = \frac{₹ 1(1+0.1)}{₹ 55} + 0.1 = 0.12 \text{ or } 12\%$$

Question 10 (Illustration)

Mr. Mehra had purchased a share of Alpha Limited for ₹ 1,000. He received dividend for a period of five years at the rate of 10 percent. At the end of the fifth year, he sold the share of Alpha Limited for ₹ 1,128. You are required to COMPUTE the cost of equity as per realised yield approach.

Answer 10

We know that as per the realised yield approach, cost of equity is equal to the realised rate of return. Therefore, it is important to compute the internal rate of return by trial and error method. This realised rate of return is the discount rate which equates the present value of the dividends received in the past five years plus the present value of sale price of ₹ 1,128 to the purchase price of ₹ 1,000. The discount rate which equalizes these two is 12 percent approximately. Let us look at the table given for a better understanding:

Year	Dividend (₹)	Sale Proceeds (₹)	Discount Factor @12%	Present Value (₹)
1	100	-	0.893	89.3
2	100	-	0.797	79.7
3	100	-	0.712	71.2
4	100	-	0.636	63.6
5	100	-	0.567	56.7
6	End	1,128	0.567	639.576
				1,000.076

We find that the purchase price of Alpha Limited's share was ₹ 1,000 and the present value of the past five years of dividends plus the present value of the sale price at the discount rate of 12 per cent is ₹ 1,000.076. Therefore, the realised rate of return may be taken as 12 per cent. This 12 per cent is the cost of equity.

Question 11 (Illustration)

CALCULATE the cost of equity from the following data using realized yield approach:

Year	1	2	3	4	5

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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

Answer 11

In this question, we will first calculate the yield for last 4 years and then will calculate its geometric mean.

Yield for last 4 years:

$$1+Y_1 = \frac{D_1+P_1}{P_0} = \frac{₹ 1+₹ 9.75}{₹ 9} = 1.1944$$

$$1+Y_2 = \frac{D_2+P_2}{P_1} = \frac{₹ 1+₹ 11.50}{9.75} = 1.2821$$

$$1+Y_3 = \frac{D_3+P_3}{P_2} = \frac{₹ 1.2+₹ 11}{₹ 11.5} = 1.0609$$

$$1+Y_4 = \frac{D_4+P_4}{P_3} = \frac{₹ 1.25+₹ 10.60}{11} = 1.0772$$

Geometric mean:

$$k_e = [(1 + Y_1) \times (1 + Y_2) \times \dots \times (1 + Y_n)]^{1/n} - 1$$

$$k_e = [1.1944 \times 1.2821 \times 1.0609 \times 1.0772]^{1/4} - 1 = 0.15 = 15\%$$

Question 12 (Illustration)

CALCULATE the cost of equity capital of H Ltd., whose risk-free rate of return equals 10%. The firm's beta equals 1.75 and the return on the market portfolio equals to 15%.

Answer 12

$$k_e = R_f + \beta(R_m - R_f)$$

$$K_e = 0.10 + 1.75 (0.15 - 0.10)$$

$$= 0.10 + 1.75 (0.05) = 0.1875 \text{ or } 18.75\%$$

Question 13 (Illustration)

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 partially 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 floatation cost will be ₹ 5 per share. Dividend at the end of first year is expected to be ₹ 10 and growth rate will be 5%.

Answer 13

$$k_r = \frac{D_1}{P_0} + g = \frac{10}{200} + 0.05 = 10\%$$

$$k_e = \frac{D_1}{P_0} + g = \frac{₹ 10}{₹ 190 - ₹ 5} + 0.05 = 10.41\%$$

Question 14 (Illustration)

ABC Company provides the following details:

$$D_0 = ₹ 4.19 \quad P_0 = ₹ 50 \quad g = 5\%$$

CALCULATE the cost of retained earnings.

Answer 14

$$K_r = \frac{D_1}{P_0} + g = \frac{D_0(1+g)}{P_0} + g = \frac{₹ 4.19(1+0.05)}{₹ 50} + 0.05 = 0.088 + 0.05 = 13.8\%$$

Question 15 (Illustration)

ABC Company provides the following details:

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$$R_f = 7\%$$

$$\beta = 1.20$$

$$R_m - R_f = 6\%$$

CALCULATE the cost of retained earnings based on CAPM method

Answer 15

$$K_r = R_f + \beta(R_m - R_f) = 7\% + 1.20(6\%) = 7\% + 7.20 = K_r = 14.2\%$$

Question 16 (Illustration)

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.

Answer 16

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 x ₹50 = ₹ 25,00,000

Market value of paid up equity capital = ₹25,00,000 x $\frac{1}{4}$ = ₹6,25,000

Market value of retained earnings = ₹ 25,00,000 x $\frac{3}{4}$ = ₹ 18,75,000

Calculation of WACC using market value weights

Source of capital	Market Value	Weights	Cost of capital	WACC (K_o)
	(₹)	(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_o) = 0.1010 or 10.10%

Question 17 (Illustration)

CALCULATE the WACC using the following data by using:

- (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 prices of these securities are:

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

Additional information:

- (1) ₹ 100 per debenture redeemable at par, 10% coupon rate, 4% floatation costs, 10-year maturity.
- (2) ₹ 100 per preference share redeemable at par, 5% coupon rate, 2% floatation cost and 10-year maturity.

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(3) Equity shares has ₹ 4 floatation cost and market price of ₹ 24 per share.

The next year expected dividend is ₹ 1 with annual growth 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.

Answer 17

(i) **Cost of Debt (k_e)**

$$= \frac{D_1}{P_0 - F} + g = \frac{₹1}{₹24 - ₹4} + 0.05 = 0.10 \text{ or } 10\%$$

(ii) **Cost of Debt (k_d)**

Current market price (P_0) – floatation cost

$$= I(1-t) \times PVA(r, 10) + RV \times PVIF(r, 10)$$

$$₹105 - 4\% \text{ of } ₹105 = ₹10(1-0.3) \times PVA(r, 10) + ₹100 \times PVIF(r, 10)$$

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

Calculation of IRR

$$IRR = 5\% + \frac{14.65}{14.65 - (-0.83)} (7\% - 5\%) = 5\% + \frac{14.65}{15.48} (7\% - 5\%) = 6.89\%$$

Cost of Debt (k_d) = 6.89%

(iii) **Cost of Preference shares (k_p)**

Current market price (P_0) – floatation cost = PD × PVA(r, 10) + RV × PVIF(r, 10)

$$₹110 - 2\% \text{ of } ₹110 = ₹5 \times PVA(r, 10) + ₹100 \times PVIF(r, 10)$$

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

Calculation of IRR

$$IRR = 3\% + \frac{9.25}{9.25 - (-7.79)} (5\% - 3\%) = 3\% + \frac{9.25}{17.04} (5\% - 3\%) = 4.08\%$$

Cost of Preference Shares (k_p) = 4.08%

(a) **Calculation of WACC using book value weights**

Source of capital	Book Value	Weights	After tax cost of capital	WACC (K_0)
	(₹)	(a)	(b)	(c) = (a) × (b)
10% Debentures	5,00,000	0.25	0.0689	0.01723

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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%

Question 18 (illustration)

ABC Ltd. has the following capital structure, which is considered to be optimum as on 31st March, 2023.

	(₹)
14% Debentures	30,000
11% Preference shares	10,000
Equity Shares (10,000 shares)	1,60,000
	2,00,000

The company share has a market price of ₹ 23.60. Next year dividend per share is 50% of year 2022 EPS. Following is the uniform trend of EPS for the preceding 10 years which is expected to continue in future:

Year	EPS (₹)	Year	EPS (₹)
2013	1.00	2018	1.61
2014	1.10	2019	1.77
2015	1.21	2020	1.95
2016	1.33	2021	2.15
2017	1.46	2022	2.36

The company issued new debentures carrying 16% rate of interest and the current market price of debenture is ₹ 96.

Preference shares of ₹ 9.20 (with annual dividend of ₹ 1.1 per share) were also issued. The company is in 50% tax bracket.

(A) CALCULATE after tax:

- Cost of new debt
- Cost of new preference shares
- Cost of new equity share (assuming new equity from retained earnings)

(B) CALCULATE marginal cost of capital when no new shares are issued.

(C) DETERMINE the amount that can be spent for capital investment before new ordinary shares must be sold. Assuming that the retained earnings for next year's investment is 50 percent of 2022.

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(D) COMPUTE marginal cost of capital when the fund exceeds the amount calculated in (C), assuming new equity is issued at ₹200 per share?

Answer 18

A.

(i) Cost of new debt

$$k_d = \frac{I(1-t)}{P_0} = \frac{₹16(1-0.5)}{₹96} = 0.0833$$

(ii) Cost of new preference shares

$$=K_p = \frac{PD}{P_0} = \frac{₹1.1}{₹9.2} = 0.12$$

(iii) Cost of new equity shares

$$k_e = \frac{D_1}{P_0} + g = \frac{₹1.18}{₹23.60} + 0.10 = 0.05 + 0.10 = 0.15$$

Calculation of g when there is a uniform trend (on the basis of EPS)

$$= \frac{\text{EPS (2014)} - \text{EPS (2013)}}{\text{EPS (2013)}} = \frac{₹1.10 - ₹1.00}{₹1.00}$$

$$= 0.10 \text{ or } 10\%$$

Calculation of D_1

$$D_1 = 50\% \text{ of } 2022 \text{ EPS} = 50\% \text{ of } 2.36 = ₹1.18$$

B. Calculation of marginal cost of capital

Type of Capital	Proportion	Specific Cost	Product
(1)	(2)	(3)	(2) × (3) = (4)
Debenture	0.15	0.0833	0.0125
Preference Share	0.05	0.1200	0.0060
Equity Share	0.80	0.1500	0.1200
Marginal cost of capital			0.1385

C. The company can spend the following amount without increasing marginal cost of capital and without selling the new shares:

Retained earnings = 50% of EPS of 2022 × outstanding equity shares

$$= 0.50 \times ₹2.36 \times 10,000 \text{ shares} = ₹11,800$$

The ordinary equity (Retained earnings in this case) is 80% of total capital

So, ₹11,800 = 80% of Total Capital

$$\therefore \text{Capital investment before issuing equity shares} = \frac{₹11,800}{0.80} = ₹14,750$$

D. If the company spends in excess of ₹14,750, it will have to issue new equity shares at ₹20 per share.

$\therefore$ The cost of new issue of equity shares will be

$$\frac{D_1}{P_0} + g = \frac{1.18}{20} + 0.10 = 0.159$$

The marginal cost of capital will be:

Type of Capital	Proportion	Specific Cost	Product
(1)	(2)	(3)	(2) × (3) = (4)
Debentures	0.15	0.0833	0.0125
Preference Shares	0.05	0.1200	0.0060
Equity Shares (New)	0.80	0.1590	0.1272
			0.1457

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Test Your Knowledge

Multiple Choice Questions

1. Which of the following is not an assumption of the capital asset pricing model (CAPM)?

- (a) The capital market is efficient.
- (b) Investors lend or borrow at a risk-free rate of return.
- (c) Investors do not have the same expectations about the risk and return.
- (d) Investor's decisions are based on a single-time period.

Ans: (c)

2. Given: risk-free rate of return = 5 %; market return = 10%; cost of equity = 15%; value of beta (β) is:

- (a) 1.9
- (b) 1.8
- (c) 2.0
- (d) 2.2

Ans: (c)

3. _____ may be defined as the cost of raising an additional rupee of capital:

- (a) Marginal cost of capital
- (b) Weighted Average cost of capital
- (c) Simple Average cost of capital
- (d) Liquid cost of capital

Ans: (a)

4. Which of the following cost of capital requires to adjust taxes?

- (a) Cost of Equity Share
- (b) Cost of Preference Shares,
- (c) Cost of Debentures
- (d) Cost of Retained Earnings

Ans: (c)

5. Marginal Cost of capital is the cost of:

- (a) Additional Revenue
- (b) Additional Funds
- (c) Additional Interests
- (d) None of the above

Ans: (b)

6. In order to calculate Weighted Average Cost of Capital, weights may be based on:

- (a) Market Values
- (b) Target Values
- (c) Book Values
- (d) Anyone of the above

Ans:(d)

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7. Firm's Cost of Capital is the average cost of:

- (a) All sources of finance
- (b) All Borrowings
- (c) All share capital
- (d) All Bonds & Debentures

Ans: (a)

8. A company has a financial structure where equity is 70% of its total debt plus equity. Its cost of equity is 10% and gross loan interest is 5%. Corporation tax is paid at 30%. What is the company's weighted average cost of capital (WACC)?

- (a) 7.55%
- (b) 7.80%
- (c) 8.70%
- (d) 8.05%

Ans:(d)

9. The cost of equity capital is all of the following except:

- (a) The minimum rate that a firm should earn on the equity-financed part of an investment.
- (b) A return on the equity-financed portion of an investment that, at worst, leaves the market price of the stock unchanged.
- (c) By far, the most difficult component cost to estimate.
- (d) Generally, lower than the before-tax cost of debt.

Ans:(d)

10. What is the overall (weighted average) cost of capital when the firm has ₹ 20 crores in long-term debt, ₹ 4 crores in preferred stock, and ₹ 16 crores in equity shares? The before-tax cost for debt, preferred stock, and equity capital are 8%, 9%, and 15%, respectively. Assume a 50% tax rate.

- (a) 7.60%
- (b) 6.90%
- (c) 7.30%
- (d) 8.90%

Ans:(d)

Theoretical Questions

Question 1

DISCUSS the meaning of weighted average cost of capital? ILLUSTRATE with an example.

Answer 1

To balance financial risk, control over the company and cost of capital, a company usually does not procure entire fund from a single source, rather it makes a mix of various sources of finance. Hence, cost of total capital will be equal to weighted average of cost of individual sources of finance.

WACC is also known as the overall cost of capital which includes the cost of different sources of capital as explained above. WACC of a company depends on the capital structure of a company. It weighs the cost of capital of a particular source of capital with its proportion to the total capital.

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Thus, weighted average cost of capital is the weighted average after-tax costs of the individual components of firm's capital structure. That is, the after-tax cost of each debt and equity is calculated separately and added together to a single overall cost of capital

The steps to calculate WACC is as follows:

Step 1: Calculate the total capital from all the sources of capital.

(Long-term debt capital + Pref. Share Capital + Equity Share Capital + Retained Earnings)

Step 2: Calculate the proportion (or %) of each source of capital to the total capital.

Equity Share Capital (For example)

Total Capital as calculated in step 1 above

Step 3: Multiply the proportion as calculated in Step 2 above with the respective cost of capital.

($K_e \times$ Proportion (%) of equity share capital (for example) calculated in Step 2 above)

Step 4: Aggregate the cost of capital as calculated in Step 3 above. This is the WACC.

($K_e + K_d + K_p + K_s$ as calculated in Step 3 above)

Calculation of WACC

Source of Capital	Cost of capital	% of total capital	Total
Retained Earnings	10% (K_r)	25% (W_r)	2.50% ($K_r \times W_r$)
Equity Share Capital	11% (K_e)	10% (W_e)	1.10% ($K_e \times W_e$)
Preference Share Capital	9% (K_p)	15% (W_p)	1.35% ($K_p \times W_p$)
Long term debts	6% (K_d)	50% (W_d)	3.00% ($K_d \times W_d$)
Total (WACC)			7.95%

The cost of weighted average method is preferred because the proportions of various sources of funds in the capital structure are different. To be representative, therefore, cost of capital should take into account the relative proportions of different sources of finance.

Securities analysts employ WACC all the time when valuing and selecting investments. In discounted cash flow analysis, WACC is used as the discount rate applied to future cash flows for deriving a business' net present value. WACC can be used as a hurdle rate against which to assess return on investment capital performance. Investors use WACC as a tool to decide whether or not to invest. The WACC represents the minimum rate of return at which a company produces value for its investors. Let's say, if a company produces a return of 20% and has a WACC of 11%. By contrast, the company's return is less than WACC meaning the company is shedding value, which indicates that investors should put their money elsewhere.

Therefore, WACC serves as a useful reality check for investors.

Question 2

DISCUSS the dividend price approach, and earnings price approach to estimate cost of equity capital.

Answer 2

Dividend Price Approach

This is also known as Dividend Valuation Model. This model makes an assumption that the dividend per share is expected to remain constant forever. Here, cost of equity capital is computed by dividing the expected dividend by market price per share as follows:

$$\text{Cost of Equity } (K_e) = \frac{D}{P_0}$$

Where,

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K_e = Cost of equity

D = Expected dividend (also written as D₁)

P₀ = Market price of equity (ex- dividend)

Earnings Price Approach

The advocates of this approach co-relate the earnings of the company with the market price of its share. Accordingly, the cost of equity share capital would be based upon the expected rate of earnings of a company. The argument is that each investor expects a certain amount of earnings, whether distributed or not from the company in whose shares he invests. Thus, if an investor expects that the company in which he is going to subscribe for shares should have at least a 20% rate of earning, the cost of equity share capital can be construed on this basis. Suppose the company expects to earn 30% the investor will be prepared to pay ₹150 ($\frac{30}{20} \times 100$) For each share of ₹100.

Earnings Price Approach:

$$\text{Cost of Equity } (K_e) = \frac{E}{P}$$

Where,

E = Current earnings per share

P = Market price per share

This approach assumes that the earnings per share will remain constant forever. The Earning Price Approach is similar to the dividend price approach; only it seeks to nullify the effect of changes in the dividend policy.

Question 3

What is the DIFFERENCE between Book Value and Market Value weights for calculating weighted average cost of capital?

Answer 3

There is a choice weights between the book value (BV) and market value (MV).

Book Value (BV): Book value weights is operationally easy and convenient. While using BV, reserves such as share premium and retained profits are included in the BV of equity, in addition to the nominal value of share capital. Here, the value of equity will generally not reflect historic asset values, as well as the future prospects of an organization.

Market Value (MV): Market value weight is more correct and represent a firm's capital structure. **It is preferable to use MV weights for the equity.** While using MV, reserves such as share premium and retained profits are ignored as they are in effect incorporated into the value of equity. It represents existing conditions and also take into consideration the impacts of changing market conditions and the current prices of various security. Similarly, in case of debt, MV is better to be used rather than the BV of the debt, though the difference may not be very significant.

There is no separate market value for retained earnings. Market value of equity shares represents both paid up equity capital and retained earnings. But cost of equity is not same as cost of retained earnings. Hence to give market value weights, market value of equity shares should be apportioned in the ratio of book value of paid up equity capital and book value of retained earnings.

Question 4

DISCUSS Marginal Cost of Capital?

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Answer 4

The marginal cost of capital may be defined as the cost of raising an additional rupee of capital. Since the capital is raised in substantial amount in practice, marginal cost is referred to as the cost incurred in raising new funds. Marginal cost of capital is derived, when the average cost of capital is **calculated using the marginal weights**.

The marginal weights represent the proportion of funds the firm intends to employ. Thus, the problem of choosing between the book value weights and the **market value weights** does not arise in the case of marginal cost of capital computation. To calculate the marginal cost of capital, the intended financing proportion should be applied as weights to marginal component costs. The marginal cost of capital should, therefore, be calculated in the composite sense. When a firm raises funds in proportional manner and the component's cost remains unchanged, there will be no difference between average cost of capital (of the total funds) and the marginal cost of capital. The component costs may remain constant upto certain level of funds raised and then start increasing with amount of funds raised.

Question 5

EXPLAIN YTM approach of calculating Cost of Debt.

Answer 5

The cost of redeemable debt (K_d) is also calculated by discounting the relevant cash flows using Internal rate of return (IRR). (The concept of IRR is discussed in the Chapter 7 - Investment Decisions). Here, YTM is the annual return of an investment from the current date till maturity date. So, YTM is the internal rate of return at which current price of a debt equals to the present value of all cash-flows.

The relevant cash flows are as follows:

Year	Cash flows
0	Net proceeds in case of new issue/ Current market price in case of existing debt (NP or P ₀)
1 to n	Interest net of tax [$I(1-t)$]
n	Redemption value (RV)

Steps to calculate relevant cash flows:

Step-1: Identify the cash flows.

Step-2: Calculate NPVs of cash flows as identified above using two discount rates (guessing).

Step-3: Calculate IRR.

Question 6

DISCUSS the meaning of Amortisation of Bond?

Answer 6

A bond may be amortised every year i.e., principal is repaid every year rather than at maturity. In such a situation, the principal will go down with annual payments and interest will be computed on the outstanding amount. The cash flows of the bonds will be uneven.

The formula for determining the value of a bond or debenture that is amortised every year is as follows:

$$V_B = \frac{C_1}{(1+K_d)^1} + \frac{C_2}{(1+K_d)^2} + \dots + \frac{C_n}{(1+K_d)^n} = V_B = \sum_{t=1}^n \frac{C_t}{(1+K_d)^t}$$

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Practical Problems

Question 1

Gamma Limited 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 time. If the company has no debt capital, COMPUTE the weighted average cost of capital?

Answer 1

Market value of equity, E = 5,00,000 shares × ₹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 per cent.

Question 2

The following details are provided by the GPS Limited:

	(₹)
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 (WACC) of the company

Answer 2

Calculation of Weighted Average Cost of Capital (WACC)

Source	Amount (₹)	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

* 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

Weighted Average Cost of Capital (WACC) = 0.1399 = 13.99%

(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.)

Question 3

ABC 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:

(i) CALCULATE the company's cost of equity capital.

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- (ii) If the company issues 10% debentures of face value of ₹ 100 each and realises ₹96 per debenture while the debentures are redeemable after 12 years at a premium of 12%, CALCULATE cost of debenture using YTM? Assume Tax Rate to be 50%.

Answer 3

i. **Cost of Equity Capital (K_e):**

$$K_e = \frac{\text{Expected dividend per share}(D_1)}{\text{Market price per share}(P_0)} + \text{Growth rate}(g)$$

$$\frac{₹2 \times 1.06}{₹25} + 0.06 = 0.1448 \text{ or } 14.48\%$$

ii. **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

Calculation of IRR

$$IRR = L + \frac{NPV_L}{NPV_L - NPV_H} (H - L)$$

$$= 5\% + \frac{₹10.7}{₹10.7 - (-₹26.2)} (10\% - 5\%) = 5\% + \frac{₹53.5}{₹36.9} = 6.45\%$$

Therefore, $K_d = 6.45\%$

Question 4

Masco Limited 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 following:

(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%

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- DETERMINE the pattern for raising the additional finance.
- DETERMINE the post-tax average cost of additional debt.
- DETERMINE the cost of retained earnings and cost of equity.
- COMPUTE the overall weighted average after tax cost of additional finance.

Answer 4

- a) 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

- (b) Determination of post-tax average cost of additional debt:

$$K_d = I(1 - t)$$

Where,

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

Average Cost of Debt

$$\frac{(\text{₹}1,80,000 \times 0.05) + (\text{₹}1,20,000 \times 0.08)}{\text{₹}3,00,000} \times 100 = 6.2\%$$

- (c) Determination of cost of retained earnings and cost of equity by applying Dividend growth model:

$$K_e \text{ or } K_r = \frac{D_1}{P_0} + g = \frac{D_1(1+g)}{P_0} + g$$

Where,

D_0 = Dividend paid = 50% of EPS = 50% × ₹4 = ₹2

g = Growth rate = 10%

P_0 = Current market price per share = ₹44

$$\text{So } K_e \text{ or } K_r = \frac{\text{₹}2(1+0.10)}{\text{₹}44} + 0.10$$

$$= \frac{\text{₹}2.2}{\text{₹}44} + 0.10 = 0.05 + 0.10 = 0.15 \text{ or } 15\%$$

- (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

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Question 5

DETERMINE the cost of capital of Best Luck Limited using the book value(BV) and market value (MV) weights from the following information:

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

Additional information:

- I. Equity: Equity shares are quoted at ₹ 130 per share and a new issue priced at ₹125 per share will be fully subscribed; flotation costs will be ₹5 per share.
- II. 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.
- III. Preference shares: 15% Preference shares with face value of ₹ 100 would realise ₹105 per share.
- IV. 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%.
- V. Tax: Corporate tax rate is 35%. Ignore dividend tax. Flotation cost would be calculated on face value.

Answer 5

$$(i) \text{ Cost of Equity } (K_e) = \frac{D_1}{P_0 - F} + g = \frac{Rs.15}{Rs.125 - Rs.5} + 0.06^*$$

$$K_e = 0.125 + 0.06 = 0.185$$

*Calculation of g:

$$₹10.6(1+g)^5 = ₹14.19$$

$$\text{Or, } (1+g)^5 = \frac{14.19}{10.6} = 1.338$$

Table (FVIF) suggests that ₹1 compounds to ₹1.338 in 5 years at the compound rate of 6 percent. Therefore, g is 6 per cent.

$$(ii) \text{ Cost of Retained Earnings } (K_r) = \frac{D_1}{P_0} + g = \frac{₹15}{₹125} + 0.06 = 0.18$$

$$(iii) \text{ Cost of Preference Shares } (K_p) = \frac{PD}{P_0} + g = \frac{₹15}{₹105} = 0.1429$$

$$(iv) \text{ Cost of Debentures } (K_d) = \frac{1(1-t)\left(\frac{RV-NP}{n}\right)}{\frac{RV+NP}{2}} = \frac{15(1-0.35)\left[\frac{₹100-₹91.75^*}{11\text{year}}\right]}{\left[\frac{₹100+₹91.75^*}{2}\right]} = \frac{₹15 \times 0.65 + ₹0.75}{₹95.875} = \frac{₹10.5}{₹95.875} = 0.1095$$

*Since yield on similar type of debentures is 16 per cent, the company would be required to offer debentures at discount.

Market price of debentures (approximation method)

$$= ₹15 \div 0.16 = ₹93.75$$

Sale proceeds from debentures = ₹93.75 – ₹2 (i.e., flotation cost) = ₹91.75

Market value (P₀) of debentures can also be found out using the present value method:

P₀ = Annual Interest × PVIFA (16%, 11 years) + Redemption value × PVIF (16%, 11 years)

$$P_0 = ₹15 \times 5.029 + ₹100 \times 0.195$$

$$P_0 = ₹75.435 + ₹19.5 = ₹94.935$$

Net Proceeds = ₹94.935 – 2% of ₹100 = ₹92.935

Accordingly, the cost of debt can be calculated

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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
Total	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):

Using Book Value = $\frac{\text{Rs.} 33.73}{\text{Rs.} 195} = 0.1729$ or 17.29%

Using Market Value = $\frac{\text{Rs.} 42.76}{\text{Rs.} 244.15} = 0.1751$ or 17.51%

Question 6

Kalyanam Ltd. has an operating profit of Rs.34,50,000 and has employed Debt which gives total Interest Charge of Rs.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 Rs.75 Lakhs and is expected to bring an additional profit of Rs. 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. You are required to CALCULATE the Weighted Average Cost of Capital (WACC) of Kalyanam Ltd.:

(i) Before the new Proposal

(ii) After the new Proposal.

Answer 6
Workings:

- a) Value of Debt = $\frac{\text{Interest}}{\text{Cost Debt}(K_d)} = \frac{\text{₹ } 7,50,000}{0.08} = \text{₹ } 93,75,000$
- b) Value of equity capital = $\frac{\text{Operating profit} - \text{Interest}}{\text{Cost of equity}(K_e)} = \frac{\text{₹ } 34,50,000 - \text{₹ } 7,50,000}{0.16} = \text{₹ } 1,68,75,000$
- c) New Cost of equity (K_e) after proposal = $\frac{\text{Increased Operating profit} - \text{Interest on Increased debt}}{\text{Equity capital}}$

$$= \frac{(\text{₹ } 34,50,000 + \text{₹ } 14,25,000) - (\text{₹ } 7,50,000 - \text{₹ } 6,00,000)}{\text{₹ } 1,68,75,000}$$

$$= \frac{\text{₹ } 48,75,000 - \text{₹ } 13,50,000}{\text{₹ } 1,68,75,000}$$

$$= \frac{\text{₹ } 35,25,000}{\text{₹ } 1,68,75,000} = 0.209 \text{ or } 20.9\%$$

(i) Calculation of Weighted Average Cost of Capital (WACC) before the new proposal

Sources	Amount (Rs)	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

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				13.15 %

(ii) Calculation of Weighted Average Cost of Capital (WACC) after the new proposal

Sources	Amount (Rs)	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 %

Question 7

A company issues:

- 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 cost of preference shares.

Year	1	2	3	4	5	6	7	8	9	10
PVIF 0.03, t	0.971	0.943	0.915	0.888	0.863	0.837	0.813	0.789	0.766	0.744
PVIF 0.05, t	0.952	0.907	0.864	0.823	0.784	0.746	0.711	0.677	0.645	0.614
PVIFA 0.03, t	0.971	1.913	2.829	3.717	4.580	5.417	6.230	7.020	7.786	8.530
PVIFA 0.05, 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

Answer 7

(i) Calculation of Cost of Convertible Debentures:

Given that,

$$R_f = 10\%$$

$$R_m - R_f = 18\%$$

$$B = 1.25$$

$$D_0 = 12.76$$

$$D_5 = ₹ 10$$

$$\text{Flotation Cost} = 5\%$$

Using CAPM,

$$K_e = R_f + \beta (R_m - R_f)$$

$$= 10\% + 1.25 (18\%)$$

$$= 32.50\%$$

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Calculation of growth rate in dividend

$$\begin{aligned}
 12.76 &= 10(1+g)^5 \\
 1.276 &= (1+g)^5 \\
 (1+5\%)^5 &= 1.276 \dots\dots\dots \text{from FV Table} \\
 g &= 5\%
 \end{aligned}$$

$$\text{Price of Share after 6 Years} = \frac{D_7}{k_e - g} = \frac{12.76(1.05)^7}{0.325 - 0.05}$$

$$P_6 = \frac{12.76 \times 1.407}{0.275} \quad P_6 = 65.28$$

$$\text{Redemption Value of Debenture (RV)} = 65.28 \times 2 = \mathbf{130.56 \text{ (RV)}}$$

$$NP = 95$$

$$n = 6$$

$$\begin{aligned}
 K_d &= \frac{\text{INT}(1-t) + \frac{RV - NP}{n}}{(RV + NP)} \times 100 \\
 &= \frac{15(1-0.4) + \frac{130.56 - 95}{6}}{\frac{130.56 + 95}{2}} \times 100 \\
 &= \frac{9 + 5.93}{112.78} \times 100 \quad K_d = \mathbf{13.24\%}
 \end{aligned}$$

(ii) Calculation of Cost of preference Shares:

$$\text{Net Proceeds} = 100(1.1) - 6\% \text{ of } 100(1.1)$$

$$= 110 - 6.60$$

$$= 103.40$$

$$\text{Redemption Value} = 100$$

Year	Cash Flows (₹)	PVF @ 3%	PV (₹)	PVF @ 5%	PV (₹)
0	103.40	1	103.40	1	103.40
1-10	-5	8.530	-42.65	7.722	-38.61
10	-100	0.744	-74.40	0.614	-61.40
			-13.65		3.39

$$K_p = 3\% + \frac{5\% - 3\%}{[(-13.65) - 3.39]} \times -13.65$$

$$= 3\% + \frac{2\%}{17.04} \times 13.65$$

$$K_p = \mathbf{4.6021\%}$$

Case Scenarios

1. MNP Ltd. is a multinational company having its operations spread mostly in India and neighbouring countries of India. The promoters of the company believed that capital structure of a company must be kept flexible and balanced, where proper mix should always be maintained between debt and equity. Such mix of debt and equity should be reviewed from time to time keeping in mind the changing situation of India and the global scenario.

The capital structure of MNP Ltd. is as under:

9% Debentures ₹ 2,75,000

11% Preference shares ₹ 2,25,000

Equity shares (face value: ₹ 10 per share) ₹ 5,00,000 Total capital of the company ₹ 10,00,000

The following are some of the additional information provided by MNP Ltd. relating to the above mentioned capital structure.

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- (i) ₹ 100 per debenture redeemable at par has 2% floatation cost and 10 years of maturity. The market price per debenture is ₹ 105.
- (ii) ₹ 100 per preference share redeemable at par has 3% floatation cost and 10 years of maturity. The market price per preference share is ₹ 106.
- (iii) Equity share has ₹ 4 floatation cost and market price per share of ₹ 24. The next year expected dividend is ₹ 2 per share with an annual growth of 5%. The firm has a practice of paying all earnings in the form of dividends.
- (iv) Corporate Income-tax rate is 35%.

Since the company is a multinational company market value weights are preferred over book value weights when calculating the Weighted Average Cost of Capital (WACC) for several reasons. The company believes that market values reflect the current market perception of a company's financial health and future prospects. This is more relevant for calculating the cost of capital today, as investors base their decisions on current market conditions. Book values, based on historical accounting principles, may not accurately represent the true economic value of the company's capital components. Market values capture the actual cost that a company would incur if it were to raise new capital in the current market. Book values might not reflect the true cost of debt due to factors like changes in interest rates or creditworthiness. Similarly, book value of equity might not reflect the current investor expectations for future dividends and growth. Market values are readily available through stock prices and market interest rates. Obtaining accurate book values, especially for intangible assets, can be a complex and time-consuming process.

Being a Finance manager of the company, you are required to provide the answer to the following questions to the top management:

1. Calculate the cost of equity and choose the correct answer from the following?

- (a) 14%
- (b) 15%
- (c) 16%
- (d) 17%

Ans: (b)

2. Calculate the cost of debt and choose the correct answer from the following?

- (a) 6.11%
- (b) 5.11%
- (c) 5.48%
- (d) 10.55%

Ans: (c)

3. Calculate the cost of preference shares and choose the correct answer from the following?

- (a) 10.57 %
- (b) 5.11%
- (c) 9%
- (d) 10.55%

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Ans: (a)

4. Calculate the WACC using market value weights and choose the correct answer from the following?

- (a) 12.80 %
- (b) 5.11%
- (c) 9%
- (d) 10.55%

Ans: (a)

5. What will be the current market price of MNP Ltd.'s equity shares if $K_e = 10\%$, expected dividend is ₹ 2 per share and annual growth rate is 5% from the following options:

- (a) ₹ 40 per share
- (b) ₹ 20 per share
- (c) ₹ 30 per share
- (d) ₹ 45 per share

Ans: (a)

Working Notes:

$$K_e = \frac{D_1}{P_0} + g = \frac{2}{20} + 0.05 = 15\%$$

$$K_p = \frac{PD + \frac{(RV-NP)}{n}}{\frac{(RV+NP)}{2}} = \frac{11 + \frac{(100-102.82)}{10}}{\frac{(100+102.82)}{2}} = 10.57\%$$

$$K_d = \frac{I(1-t) + \frac{(RV-NP)}{n}}{\frac{(RV+NP)}{2}} = \frac{9(1-0.35) + \frac{(100-102.90)}{10}}{\frac{(100+102.90)}{2}} = 5.48\%$$

Calculation of WACC using market value weights

Source of capital	Market Value	Weights	After tax cost of capital	WACC (K_0)
	(₹)	(a)	(b)	(c) = (a)×(b)
Debentures (₹105 per debenture)	2,88,750	0.1672	0.0548	0.0092
Preference shares (₹ 106 per preference share)	2,38,500	0.1381	0.1057	0.0146
Equity shares (₹ 24)	12,00,000	0.6947	0.1500	0.1042
	17,27,250	1.00		0.128

WACC (K_0) = 12.8%

$$\text{Current Market Price} = \frac{D_1}{K_e - g} = \frac{2}{0.10 - 0.05} = ₹ 40 \text{ per Share}$$

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Chapter 5

Financing Decisions

Capital Structure

81

ILLUSTRATION

Question 1 (Illustration)

Rupa Ltd.'s EBIT is ₹ 5,00,000. The company has 10%, ₹ 20 lakh debentures. The equity capitalization rate (K_e) is 16%.

You are required to CALCULATE:

- Market value of equity and value of firm
- Overall cost of capital

Answer 1

(i) Statement showing Market value of equity and value of firm

	₹
EBIT	5,00,000
Less: Interest on debentures (10% of ₹ 20,00,000)	(2,00,000)
Earnings available for equity holders i.e. Net Income (NI)	3,00,000
Equity capitalization rate (K_e)	16%
Market value of equity (S) = $\frac{NI}{K_e} = \left[\frac{3,00,000}{16} \times 100 \right]$	18,75,000
Market value of debt (D)	20,00,000
Total value of firm $V = S + D$	38,75,000

(ii) Overall cost of capital = $\frac{EBIT}{\text{Value to firm}} = \frac{₹ 5,00,000}{₹ 38,75,000} = 12.90\%$

Question 2 (Illustration)

Indra Ltd. has an EBIT of ₹ 1,00,000. The company makes use of both the debt and equity capital. The firm has 10% debentures of ₹ 5,00,000 and the firm's equity capitalization rate is 15%.

You are required to COMPUTE:

- Total value of the firm
- Overall cost of capital.

Answer 2

(i) Calculation of total value of the firm

	₹
EBIT	1,00,000
Less: Interest (@10% on ₹ 5,00,000)	50,000
Earnings available for equity holders	50,000
Equity capitalization rate i.e. K_e	15%

Value of equity (S) = $\frac{\text{Earning available for equity holders}}{K_e} = \frac{₹ 50,000}{0.15} = ₹ 3,33,333$

Value of Debt (D) (given)	5,00,000

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Total value of the firm (V) = D + S (5,00,000 + 3,33,333)	8,33,333

(ii) Overall cost of capital $(K_0) = k_e \left(\frac{S}{V}\right) + k_d \left(\frac{D}{V}\right)$

$$= 0.15 \left[\frac{₹3,33,333}{₹8,33,333} \right] + 0.10 \left[\frac{₹5,00,000}{₹8,33,333} \right]$$

$$= \frac{1}{₹8,33,333} [₹50,000 + ₹50,000] = 12.00\%$$

$$\text{OR, } K_0 = \frac{\text{EBT}}{V} = \frac{₹1,00,000}{₹8,33,333} = 12.00\%$$

Question 3 (Illustration)

DETERMINE the optimal capital structure of a company from the following information:

Options	Cost of Debt(K_d) in %	Cost of Equity(K_e) in %	Percentage of Debt on totalvalue (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

Answer 3

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.

$$K_0 = \frac{K_d \times D + K_e \times S}{D + S}$$

In this question total of weight is equal to 1 in all cases, hence we need not to divide by it.

- (1) $K_0 = 11\% \times 0 + 13\% \times 1 = 13.00\%$
- (2) $K_0 = 11\% \times 0.1 + 13\% \times 0.9 = 12.80\%$
- (3) $K_0 = 11.6\% \times 0.2 + 14\% \times 0.8 = 13.52\%$
- (4) $K_0 = 12\% \times 0.3 + 15\% \times 0.7 = 14.10\%$
- (5) $K_0 = 13\% \times 0.4 + 16\% \times 0.6 = 14.80\%$
- (6) $K_0 = 15\% \times 0.5 + 18\% \times 0.5 = 16.50\%$
- (7) $K_0 = 18\% \times 0.6 + 20\% \times 0.4 = 18.80\%$

Decision: 2nd option is the best because it has lowest WACC.

Question 4 (Illustration)

Amita 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:

- (i) Total value of the firm
- (ii) Cost of equity

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Answer 4
(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) = $V - D = ₹ 33,33,333 - ₹ 15,00,000$	18,33,333

$$K_e = \frac{\text{Earnings available for equity holder}}{\text{Value of equity (S)}} = \frac{₹ 3,50,000}{₹ 18,33,333} = 19.09\%$$

Or, $\frac{EBIT - \text{Interest paid on debt}}{\text{Market value of equity}} = \frac{₹ 3,50,000}{₹ 18,33,333} = 19.09\%$

OR

$$K_0 = K_e \left(\frac{S}{V} \right) + K_d \left(\frac{D}{V} \right)$$

$$K_e = K_0 \left(\frac{V}{S} \right) - K_d \left(\frac{D}{S} \right)$$

$$= 0.15 \left[\frac{₹ 33,33,333}{₹ 18,33,333} \right] - 0.10 \left[\frac{₹ 15,00,000}{₹ 18,33,333} \right]$$

$$= \frac{1}{₹ 18,33,333} (0.15 \times ₹ 33,33,333) - (0.10 \times ₹ 15,00,000)$$

$$= \frac{1}{₹ 18,33,333} 5,00,000 - 1,50,000 = 19.09\%$$

Question 5 (Illustration)

Alpha Ltd. and Beta Ltd. are identical except for capital structure. Alpha Ltd. has 50 per cent debt and 50 per cent equity, whereas Beta Ltd. has 20 per cent debt and 80 per cent equity (All percentages are in market-value terms). The borrowing rate for both the companies is 8 per cent in a no-tax world, and capital markets are assumed to be perfect.

- (a) (i) If you own 2 per cent of the shares of Alpha Ltd., DETERMINE your return if the company has net operating income of ₹ 3,60,000 and the overall capitalisation rate of the company (K_0) is 18 per cent.
- (ii) CALCULATE the implied required rate of return on equity of Alpha Ltd.
- (b) Beta Ltd. has the same net operating income as Alpha Ltd.
- (i) CALCULATE the implied required rate of return on equity of Beta Ltd.
- (ii) ANALYSE why does it differ from that of Alpha Ltd.

Answer 5

(a) Value of the Alpha Ltd. = $\frac{NOI}{K_0} = \frac{₹ 3,60,000}{18\%} = ₹ 20,00,000$

(i) Return on Equity shares of Alpha Ltd.

	₹
Value of the company	20,00,000
Market value of debt (50% × ₹ 20,00,000)	10,00,000

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Market value of equity (50% × ₹ 20,00,000)	10,00,000
	₹
Net operating income	3,60,000
Less: Interest on debt (8% × ₹ 10,00,000)	80,000
Earnings available to equity shareholders	2,80,000
Return on 2% equity shares (2% × ₹ 2,80,000)	5,600

(ii) Implied required rate of return on equity of Alpha Ltd.

$$= \frac{\text{Earnings available for equity Shareholder}}{\text{Market Value of equity}} = \frac{\text{Rs.2,80,000}}{\text{Rs.10,00,000}} = 28\%$$

(b) (i) Calculation of Implied rate of return on equity of Beta Ltd.

	₹
Total value of company	20,00,000
Market value of debt (20% × ₹ 20,00,000)	4,00,000
Market value of equity (80% × ₹ 20,00,000)	16,00,000
	₹
Net operating income	3,60,000
Less: Interest on debt (8% × ₹ 4,00,000)	32,000
Earnings available to shareholders	3,28,000

Implied required rate of return on equity

$$= \frac{\text{Earnings available for equity Shareholder}}{\text{Market Value of equity}} = \frac{\text{₹ 3,28,000}}{\text{₹ 16,00,000}} = 20.5\%$$

- (ii)** Implied required rate of return on equity of Beta Ltd. is lower than that of Alpha Ltd. because Beta Ltd. uses less debt in its capital structure. As the equity capitalisation is a linear function of the debt-to-equity ratio when we use the net operating income approach, the decline in required equity return offsets exactly the disadvantage of not employing so much in the way of “cheaper” debt funds.

Question 6 (Illustration)

(When value of levered firm is more than the value of unlevered firm)

There are two companies N Ltd. and M Ltd., having same earnings before interest and taxes (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?

Answer 6

	Company	
	M Ltd.	N Ltd.
EBIT (NOI)	₹ 20,000	₹ 20,000
Debt (D)	₹ 1,00,000	--
K_e	11.50%	10%
K_d	7%	--

$$\begin{aligned} \text{Value of equity (S)} &= \frac{\text{NOI interest}}{\text{cost of equity}} \\ S_M &= \frac{\text{₹20,000} - \text{₹7,000}}{11.50\%} = ₹ 1,13,043 \\ S_N &= \frac{\text{₹ 20,000}}{10\%} = ₹ 2,00,000 \end{aligned}$$

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Value of Firm (V) = S + D

$$V_M = 1,13,043 + 1,00,000 = ₹ 2,13,043$$

$$V_N = ₹ 2,00,000$$

Arbitrage Process:

If you have 10% shares of M Ltd., your value of investment in equity shares is 10% of ₹ 1,13,043 i.e. ₹ 11,304.30 and return will be 10% of (₹20,000 – ₹ 7,000) = ₹ 1,300.

Alternate Strategy will be:

Sell your 10% shares of levered firm for ₹ 11,304.30 and borrow 10% of levered firm's debt i.e. ₹ 10,000 (10% of ₹ 1,00,000) and invest the money i.e. 10% in unlevered firm's stock:

Total resources /Money we have = ₹ 11,304.30 + ₹ 10,000 = ₹ 21,304.3 and you invest 10% of ₹ 2,00,000 = ₹ 20,000

Surplus cash available with you is = ₹ 21,304.3 – ₹ 20,000 = ₹ 1,304.3

Your return = 10% EBIT of unlevered firm – Interest to be paid on borrowed funds

i.e. = 10% of ₹ 20,000 – 7% of ₹ 10,000 = ₹ 2,000 – ₹ 700 = ₹ 1,300

Now your return remains the same i.e. ₹ 1,300 which you are getting from N Ltd. before investing in M Ltd. but still you have ₹ 1,304.3 excess money available with you. Hence, you are better off by doing arbitrage.

In the above example you have not invested entire amount received from “sale of shares of levered company plus amount borrowed”. You maintained same level of earning and reduced investment. Alternatively, you could have invested entire amount in unlevered company. In that case your annual earnings would have increased. An example for the same is as follows:

Question 7 (Illustration)

Following data is available in respect of two companies having same business risk:

Capital employed = ₹ 2,00,000, EBIT = ₹ 30,000 and $K_e = 12.5\%$

Sources	Levered Company (₹)	Unlevered Company (₹)
Debt (@10%)	1,00,000	Nil
Equity	1,00,000	2,00,000

An investor is holding 15% shares in levered company. CALCULATE the increase in annual earnings of investor if he switches his holding from Levered to Unlevered company.

Answer 7

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

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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	24,000
Borrow money (₹ 1,00,000 x 15%)	15,000
Buy shares in Unlevered company	39,000

3. Change in Return

	₹
Income from shares in Unlevered company (₹ 39,000 x 12.5%)	4,875
Less: Interest on loan (₹ 15,000 x 10%)	1,500
Net Income from unlevered firm	3,375
Less: Income from Levered firm (₹ 24,000 x 12.5%)	3,000
Incremental Income due to arbitrage	375

Question 8 (Illustration)

(When value of unlevered firm is more than the value of levered firm.)

There are two companies U Ltd. and L 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. & L Ltd. are 10% and 18% respectively.

COMPUTE how arbitrage process will work.

Answer 8

Particulars	Company	
	U Ltd.	L Ltd.
NOI (EBIT)	₹ 20,000	₹ 20,000
Debt (D)	–	₹ 1,00,000
K_d	–	7%
K_e	10%	18%
Value of equity capital (S)	₹ 2,00,000	₹ 72,222
$\left[\frac{\text{EBIT} - \text{Interest}}{k_e} \right]$	$\left[\frac{20,000}{0.10} \right]$	$\left[\frac{20,000 - 7,000}{0.18} \right]$
Total value of the firm (V) = S + D	₹ 2,00,000	₹ 1,72,222
		(₹ 72,222 + ₹ 1,00,000)

Arbitrage Process:

If you have 10% shares of unlevered firm i.e. investment of 10% of ₹ 2,00,000 = ₹ 20,000 and Return @ 10% on ₹ 20,000. Investment will be 10% of earnings available for equity i.e. $10\% \times ₹ 20,000 = ₹ 2,000$.

Alternative strategy will be:

Sell your shares in unlevered firm for ₹ 20,000 and buy 10% shares of levered firm's equity plus debt.

10% equity of levered firm	₹ 7,222
10% debt of levered firm	₹ 10,000

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Total investment in levered firm	<u>₹ 17,222</u>
Your resources are	<u>₹ 20,000</u>

Surplus cash available = Surplus – Investment = ₹ 20,000 – ₹ 17,222 = ₹ 2,778

Your return on investment is:

7% on debt of ₹ 10,000 ₹ 700

10% on equity i.e. 10% of earnings available for equity holders (10% × ₹ 13,000) ₹ 1,300

Total return ₹ 2,000

In both the cases the return received is ₹ 2,000 and still you have excess cash of ₹ 2,778.

Hence, you are better off by doing arbitrage i.e. you will start selling unlevered company shares and buy levered company's shares thereby pushing down the value of shares of unlevered firm and increasing the value of levered firm till equilibrium is reached.

In the above example we have not invested entire amount received from “sale of shares of Unlevered company”. We also have the same level of earning along with reduced investment. Alternatively, we could have invested entire amount in Levered company. In that case annual earnings would have increased. An example for the same is as follows:

Question 9 (Illustration)

Following data is available in respect of two companies having same business risk:

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
K_e	20%	12.5%

An investor is holding 15% shares in Unlevered company. **CALCULATE** the increase in annual earnings of investor if he switches his holding from Unlevered to Levered Company.

Answer 9

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/ K_e)	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.

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Sell shares in Unlevered company (₹ 2,40,000 x 15%)	<u>36,000</u>
Lend money (₹ 36,000 x 50%)	<u>18,000</u>
Buy shares in Levered company (₹ 36,000 x 50%)	<u>18,000</u>
Total	<u>36,000</u>

3. Change in Return

Income from shares in Levered company (₹ 18,000 x 20%)	<u>3,600</u>
Interest on money lent (₹ 18,000 x 10%)	<u>1,800</u>
Total Income after switch over	<u>5,400</u>
Less: Income from Unlevered firm (₹ 36,000 x 12.5%)	<u>4,500</u>
Incremental Income due to arbitrage	<u>900</u>

Question 10 (Illustration)

Blue 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:

- Market value of the company
- Overall Cost of capital
- Cost of equity

Answer 10

Workings:

$$\begin{aligned} \text{Market Value of Equity} &= \frac{\text{Net income (NI) for equity holders}}{k_e} \\ ₹ 1,750 \text{ lakhs} &= \frac{\text{Net income (NI) for equity holders}}{0.20} \\ \text{Net Income to equity holders/EAT} &= ₹ 350 \text{ lakhs} \\ \text{Therefore, EBIT} &= \frac{\text{EAT}}{(1-t)} = \frac{₹ 350 \text{ lakhs}}{(1-0.3)} = ₹ 500 \text{ lakhs} \end{aligned}$$

Income Statement

	All Equity (₹ In lakhs)	Equity & Debt (₹ In lakhs)
EBIT (as calculated above)	500	500.00
Interest on ₹ 275 lakhs @ 15%	-	<u>41.25</u>
EBT	500	458.75
Tax @ 30%	<u>150</u>	<u>137.63</u>
Income available to equity holders	350	321.12

- Market value of the company

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$$\begin{aligned}
 \text{Market value of levered firm} &= \text{Value of unlevered firm} + \text{Tax Advantage} \\
 &= ₹ 1,750 \text{ lakhs} + (₹ 275 \text{ lakhs} \times 0.3) \\
 &= ₹ 1,832.5 \text{ lakhs} \\
 \text{Change in market value of the company} &= ₹ 1,832.5 \text{ lakhs} - ₹ 1,750 \text{ lakhs} \\
 &= ₹ 82.50 \text{ lakhs}
 \end{aligned}$$

The impact is that the market value of the company has increased by ₹ 82.50 lakhs due to replacement of equity with debt.

(ii) Overall Cost of Capital

$$\begin{aligned}
 \text{Market Value of Equity} &= \text{Market value of levered firm} - \text{Equity repurchased} \\
 &= ₹ 1,832.50 \text{ lakhs} - ₹ 275 \text{ lakhs} = ₹ 1,557.50 \text{ lakhs} \\
 \text{Cost of Equity } (K_e) &= \frac{\text{Net Income to equity holders}}{\text{Market value of equity}} \times 100 \\
 &= \frac{₹ 321.12 \text{ lakhs}}{₹ 1,557.50 \text{ lakhs}} \times 100 = 20.62\% \\
 \text{Cost of debt } (K_d) &= 15 (1 - t) = 15 (1 - 0.3) = 10.50\%
 \end{aligned}$$

Components	Amount (₹ In lakhs)	Cost of Capital %	Weight	WACC (K_0) %
Equity	1,557.50	20.62	0.85	17.53
Debt	275.00	10.50	0.15	1.58
	1,832.50		1	19.11

The impact is that the Overall Cost of Capital or K_0 has fallen by 0.89% (20% - 19.11%) due to the benefit of tax relief on debt interest payment.

(iii) Cost of Equity

The impact is that cost of equity has risen by 0.62% (20.62% - 20%) due to the presence of financial risk i.e. introduction of debt in capital structure.

Note: Cost of Capital and Cost of equity can also be calculated with the help of following formulas, though there will be no change in the final answers.

$$\text{Cost of Capital } (K_0) = K_{eu} [1 - (t \times L)]$$

Where,

K_{eu} = Cost of equity in an unlevered company

t = Tax rate

$$L = \frac{\text{Debt}}{\text{Debt} + \text{Equity}}$$

$$\text{So, } K_0 = 0.20 \left[1 - \left(0.3 \times \frac{₹ 275 \text{ lakhs}}{₹ 1,832.5 \text{ lakhs}} \right) \right] = 0.191 \text{ or } 19.10\% \text{ (approx.)}$$

$$\text{Cost of Equity } (K_e) = K_{eu} + (K_{eu} - K_d) \frac{\text{Debt}(1-t)}{\text{Equity}}$$

Where,

K_{eu} = Cost of equity in an unlevered company

K_d = Cost of debt

t = Tax rate

$$\text{So, } K_e = 0.20 + \left[(0.20 - 0.15) \times \frac{₹ 275 \text{ lakhs} (1 - 0.3)}{₹ 1,557.5 \text{ lakhs}} \right] = 0.2062 \text{ or } 20.62\%$$

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Question 11 (Illustration)

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 per cent rate of interest, (iii) to issue 2,500 preference shares of ₹ 100 each at an 8 per cent 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 per cent, FIND the effect on the earnings per share under the three financing alternatives.

Answer 11

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	1,36,250
Shares outstanding	1,25,000	1,00,000	1,00,000
EPS	1.25	1.46	1.36

The firm is able to maximize the earnings per share when it uses debt financing. Though the rate of preference dividend is equal to the rate of interest, EPS is high in case of debt financing because interest charges are tax deductible while preference dividends are not. With increasing levels of EBIT, EPS will increase at a faster rate with a high degree of leverage.

We know that market price per share is equal to earning per share multiplied by price earning (PE) ratio. If PE ratio is same for all three plans, then the plan which has highest EPS will also have highest MPS and it will be selected. On the other hand, if PE ratio for equity plan is 10 times, for debt plan it is 8 times and for preference plan it is 7 times then:

EPS	1.25	1.46	1.36
PE ratio	x10	x8	x7
MPS	12.50	11.68	9.52

Now despite of lower EPS, equity plan will be selected because it has highest MPS.

However, if a company is not able to earn a rate of return on its assets higher than the interest rate (or the preference dividend rate), debt (or preference financing) will have an adverse impact on EPS. Suppose the firm in illustration above has an EBIT of ₹ 75,000, then EPS under different methods will be as follows:

EPS under alternative financing methods: Unfavourable EBIT:

Particulars	Equity Financing (₹)	Debt Financing (₹)	Preference Financing (₹)
EBIT	75,000	75,000	75,000

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Less: Interest	0	20,000	0
PBT	75,000	55,000	75,000
Less: Taxes	37,500	27,500	37,500
PAT	37,500	27,500	37,500
Less: Preference dividend	0	0	20,000
Earnings available to ordinary shareholders	37,500	27,500	17,500
Shares outstanding	1,25,000	1,00,000	1,00,000
EPS	0.30	0.275	0.175

It is obvious that under unfavourable conditions i.e., when the rate of return on the total assets is less than the cost of debt, the earnings per share will fall with the degree of leverage.

Question 12 (Illustration)

Best of Luck 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:

- 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.
- To issue 16% non-convertible debentures of ₹ 100 each for the entire amount.
- To issue equity capital for ₹ 25 lakhs (face value of ₹ 10) and 16% non-convertible debentures for the balance amount. In this case, the company can issue shares at a premium of ₹ 40 each.

ADVISE which option is the most suitable to raise the additional capital, keeping in mind that the management wants to maximize the earnings per share to maintain its goodwill. The company is paying income tax at 50%.

Answer 12

Calculation of Earnings per share under the three options:

Particulars	Options		
	Option I: Issue Equity shares only	Option II: Issue 16% Debentures only	Option III: Issue Equity Shares and 16% Debentures of equal amount
Number of Equity Shares			
- Existing	10,00,000	10,00,000	10,00,000
- Newly issued	2,00,000 $\left[\frac{\text{₹ } 50,00,000}{\text{₹ } (10+15)} \right]$	---	50,000 $\left[\frac{\text{₹ } 25,00,000}{\text{₹ } (10+40)} \right]$
Total	12,00,000	10,00,000	10,50,000
16% Debentures (₹)	---	50,00,000	25,00,000

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	₹	₹	₹
Profit Before Interest and Tax:			
Existing pre-tax profit	60,00,000	60,00,000	60,00,000
From new projects	40,00,000	40,00,000	40,00,000
	1,00,00,000	1,00,00,000	1,00,00,000
Less: Interest on 16% Debenture	---	8,00,000 (16% × ₹50,00,000)	4,00,000 (16% × ₹25,00,000)
Profit Before Tax	1,00,00,000	92,00,000	96,00,000
Less: Tax at 50%	50,00,000	46,00,000	48,00,000
Profit After Tax	50,00,000	46,00,000	48,00,000
Earnings Per Share (EPS)	4.17	4.60	4.57
$\left[\frac{\text{PAT}}{\text{No of shares}} \right]$	$\left[\frac{₹ 50,00,000}{₹ 12,00,000} \right]$	$\left[\frac{₹ 46,00,000}{₹ 10,00,000} \right]$	$\left[\frac{₹ 48,00,000}{₹ 10,50,000} \right]$

Advise: Option II i.e., issue of 16% Debentures is most suitable to maximize the earnings per share.

Question 13 (Illustration)

Shahji Steel Limited 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 percent upto ₹ 2,50,000, at 15 percent over ₹ 2,50,000 and upto ₹ 10,00,000 and at 20 percent over ₹ 10,00,000. The tax rate applicable to the company is 50 percent. ANALYSE which form of financing should the company choose?

Answer 13

Plan I	=	Raising Debt of ₹ 2.5 lakh + Equity of ₹ 22.5 lakh
Plan II	=	Raising Debt of ₹ 10 lakh + Equity of ₹ 15 lakh
Plan III	=	Raising Debt of ₹ 15 lakh + Equity of ₹ 10 lakh

Calculation of Earnings per share (EPS):

Particulars	FINANCIAL PLANS		
	Plan I	Plan II	Plan III
	₹	₹	₹
Expected EBIT	5,00,000	5,00,000	5,00,000
Less: Interest ^(a)	(25,000)	(1,37,500)	(2,37,500)
Earnings before taxes	4,75,000	3,62,500	2,62,500
Less: Taxes @ 50%	(2,37,500)	(1,81,250)	(1,31,250)
Earnings after taxes (EAT)	2,37,500	1,81,250	1,31,250
Number of shares ^(b)	15,000	10,000	8,000
Earnings per share (EPS)	15.83	18.13	16.41

Financing Plan II (i.e. Raising debt of ₹ 10 lakh and issue of equity share capital of ₹ 15 lakh) is the option which maximises the earnings per share.

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Working Notes:
(a) Calculation of interest on Debt

Plan		₹	₹
I	(₹ 2,50,000 × 10%)		25,000
II	(₹ 2,50,000 × 10%)	25,000	
	(₹ 7,50,000 × 15%)	1,12,500	1,37,500
III	(₹ 2,50,000 × 10%)	25,000	
	(₹ 7,50,000 × 15%)	1,12,500	
	(₹ 5,00,000 × 20%)	1,00,000	2,37,500

(b) Number of equity shares to be issued

$$\text{Plan I} = \frac{\text{₹ 22,50,000}}{\text{₹ 150 (Market price of share)}} = 15,000 \text{ shares}$$

$$\text{Plan II} = \frac{\text{₹ 15,00,000}}{\text{₹ 150}} = 10,000 \text{ shares}$$

$$\text{Plan III} = \frac{\text{₹ 10,00,000}}{\text{₹ 125}} = 8,000 \text{ shares}$$

Question 14 (Illustration)

The following data are presented in respect of Quality Automation Ltd.:

	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
PE Ratio	10
Market price per share	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%, pushes the K_e up to 12.5%, means reducing the PE ratio to 8 and rises the interest rate on additional amount borrowed to 14%. FIND OUT the probable price of share if:

- the additional funds are raised as a loan.
- the amount is raised by issuing equity shares. (Note: Retained earnings of the company is ₹ 1.2 crore)

Answer 14

In this question, EBIT after proposed extension is not given. Therefore, we can assume that existing return on capital employed will be maintained.

Working notes:

1.	Return on Capital Employed	=	$\frac{\text{EBIT}}{\text{Capital Employed}} = \frac{\text{Rs.52,00,000}}{\text{Rs.3,00,000}} = 17.33\%$
	Capital Employed	=	Debt + Equity
		=	₹ 1,00,00,000 + (₹ 80,00,000 + ₹ 1,20,00,000)
		=	₹ 3,00,00,000

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2.	Proposed EBIT	=	Proposed Capital Employed x Return on capital employed
		=	(₹ 3,00,00,000 + ₹ 40,00,000) x 17.33%
		=	₹ 58,92,200
(If you take return on capital employed in full digits then accurate EBIT will be ₹ 58,93,333.)			
3.	Debt Equity Ratio	=	$\frac{\text{Debt}}{\text{Debt} + \text{Equity}}$

Option1: Loan option

Debt	=	₹ 1,00,00,000 + ₹ 40,00,000 = ₹ 1,40,00,000
Equity	=	₹ 2,00,00,000
Debt Equity ratio	=	$\frac{1.4 \text{ Cr.}}{1.4 \text{ Cr.} + 2 \text{ Cr.}} = 41.18\%$
Debt equity ratio has crossed the limit of 35%, hence, PE ratio in this case will be 8 times and additional borrowing will be at the rate of 14%.		

Option2: Equity option

Debt	=	₹ 1,00,00,000
Equity	=	₹ 2,00,00,000 + ₹ 40,00,000 = ₹ 2,40,00,000
Debt Equity ratio	=	$\frac{1 \text{ Cr.}}{1 \text{ Cr.} + 2.4 \text{ Cr.}} = 29.41\%$
Debt equity ratio has not crossed the limit of 35% hence PE ratio in this case will remain at 10 times.		

4. Number of equity shares to be issued in case of equity option @ ₹ 25 per share = ₹ 40,00,000 / ₹ 25 = 1,60,000

Calculation of EPS and MPS under two financial options

Particulars	Financial Options	
	Option I	Option II
	14% additional loan of 40,00,000 (₹)	8,00,000 equity shares @ ₹ 10 i.e 1,60,000 equity shares @ ₹ 25(₹)
Profit before interest and Tax (PBIT)	58,92,200	58,92,200
Less: Interest on old debentures @ 12%	12,00,000	12,00,000
Less: Interest on additional loan (new) @ 14% on ₹ 40,00,000	5,60,000	Nil
Profit before tax	41,32,200	46,92,000
Less: Taxes @ 50%	20,66,100	23,46,100
Earnings for equity shareholders (EAT/Profit after tax)	20,66,100	23,46,100
Number of Equity Shares	8,00,000	9,60,000
Earnings per Share (EPS)	2.58	2.44
Price/ Earnings ratio	8	10
Market price per share (MPS)	20.66	24.44

Decision: Though loan option has higher EPS but equity option has higher MPS therefore company should raise additional fund through equity option.

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Test Your Knowledge

Multiple Choice Questions

1. The assumptions of MM hypothesis of capital structure do not include the following:

- (a) Capital markets are imperfect
- (b) Investors have homogeneous expectations
- (c) All firms can be classified into homogeneous risk classes
- (d) The dividend-payout ratio is cent percent, and there is no corporate tax

Ans: (a)

2. Which of the following is irrelevant for optimal capital structure?

- (a) Flexibility
- (b) Solvency
- (c) Liquidity
- (d) Control

Ans: (b)

3. Financial Structure refers to:

- (a) All financial resources
- (b) Short-term funds
- (c) Long-term funds
- (d) None of these

Ans: (a)

4. An EBIT-EPS indifference analysis chart is used for:

- (a) Evaluating the effects of business risk on EPS
- (b) Examining EPS results for alternative financial plans at varying EBIT levels
- (c) Determining the impact of a change in sales on EBIT
- (d) Showing the changes in EPS quality over time

Ans: (b)

5. The term "capital structure" means:

- (a) Long-term debt, preferred stock, and equity shares
- (b) Current assets and current liabilities
- (c) Net working capital
- (d) Shareholder's equity

Ans: (a)

6. The cost of monitoring management is considered to be a (an):

- (a) Bankruptcy cost
- (b) Transaction cost
- (c) Agency cost
- (d) Institutional cost

Ans: (c)

7. The traditional approach towards the valuation of a firm assumes:

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- (a) That the overall capitalization rate changes in financial leverage.
- (b) That there is an optimum capital structure.
- (c) That the total risk is not changed with the changes in the capital structure.
- (d) That the markets are perfect

Ans: (b)

8. Market values are often used in computing the weighted average cost of capital because:

- (a) This is the simplest way to do the calculation.
- (b) This is consistent with the goal of maximizing shareholder value.
- (c) This is required by SEBI.
- (d) This is a very common mistake.

Ans: (b)

9. A firm's optimal capital structure:

- (a) Is the debt-equity ratio that results in the minimum possible weighted average cost of capital
- (b) 40 percent debt and 60 percent equity
- (c) When the debt-equity ratio is 0.50
- (d) When Cost of equity is minimum

Ans: (a)

10. Capital structure of a firm influences the:

- (a) Risk
- (b) Return
- (c) Both Risk and Return
- (d) Return but not Risk

Ans: (c)

11. Consider the below mentioned statements:

1. A company is considered to be over-capitalised when its actual capitalisation is lower than the proper capitalization as warranted by the earning capacity.
2. Both over-capitalization and under-capitalization are detrimental to the interests of the society.

State True or False:

- (a) 1-True, 2-True
- (b) 1-False, 2-True
- (c) 1-False, 2-False
- (d) 1-True, 2-False

Ans: (b)

12. A critical assumption of the Net Operating Income (NOI) approach to valuation is:

- (a) That debt and equity levels remain unchanged.
- (b) That dividends increase at a constant rate.
- (c) That k_0 remains constant regardless of changes in leverage.
- (d) That interest expense and taxes are included in the calculation.

Ans: (c)

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13. Which of the following steps may be adopted to avoid the negative consequences of over-capitalisation?

- (a) The shares of the company should be split up. This will reduce dividend per share, though EPS shall remain unchanged.
- (b) Issue of Bonus Shares.
- (c) Revising upward the par value of shares in exchange of the existing shares held by them.
- (d) Reduction in claims of debenture-holders and creditors.

Ans: (d)

Theoretical Questions & Answers

Question 1

DESCRIBE Capital Structure.

Answer 1

Capital structure is the combination of capitals from different sources of finance. The capital of a company consists of equity share holders' fund, preference share capital and long term external debts. The source and quantum of capital is decided keeping in mind the following factors:

1. **Control:** Capital structure should be designed in such a manner that existing shareholders continue to hold majority stake.
 2. **Risk:** Capital structure should be designed in such a manner that financial risk of a company does not increase beyond tolerable limit.
 3. **Cost:** Overall cost of capital remains minimum.
- Practically, it is difficult to achieve all of the above three goals together, hence, a finance manager has to make a balance among these three objectives.

Question 2

EXPLAIN in brief the assumptions of Modigliani-Miller theory.

Answer 2

The NOI approach is definitional or conceptual and lacks behavioural significance. It does not provide operational justification for irrelevance of capital structure. However, Modigliani-Miller (MM) approach provides behavioural justification for constant overall cost of capital and therefore, total value of the firm.

MM Approach – 1958: without tax:

This approach describes, in a perfect capital market where there is no transaction cost and no taxes, the value and cost of capital of a company remain unchanged irrespective of change in the capital structure. This approach is based on further following additional assumptions:

- ◆ Capital markets are perfect. All information is freely available and there are no transaction costs.
- ◆ All investors are rational.
- ◆ Firms can be grouped into 'Equivalent risk classes' on the basis of their business risk.
- ◆ Non-existence of corporate taxes.

Question 3

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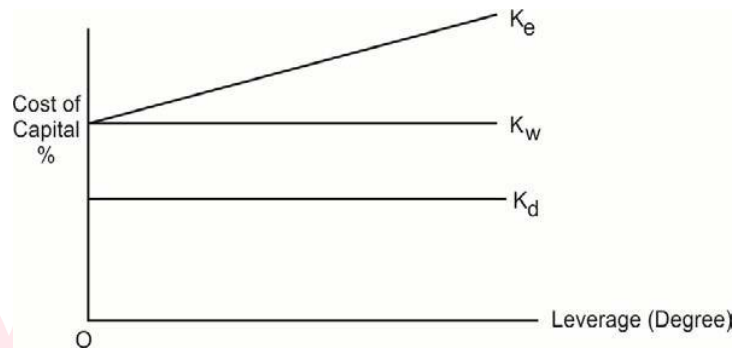
DESCRIBE Net Operating Income (NOI) theory of capital structure? EXPLAIN the assumptions of Net Operating Income approach theory of capital structure.

Answer 3

NOI means Earnings before interest and tax (EBIT). According to this approach, capital structure decisions of the firm are **irrelevant**.

Any change in the leverage will not lead to any change in the total value of the firm and the market price of shares, as the overall cost of capital is independent of the degree of leverage. As a result, the division between debt and equity is irrelevant.

As per this approach, an increase in the use of debt which is apparently cheaper is offset by an increase in the equity capitalisation rate. This happens because equity investors seek higher compensation as they are opposed to greater risk due to the existence of fixed return securities in



the capital structure.

The above diagram shows that K_w (Weighted Average Cost of Capital) and K_d (debt capitalisation rate) are constant and K_e (Cost of equity) increases with leverage.

Question 4

EXPLAIN the principles of “Trading on equity”.

Answer 4

Financial leverage or Trading on Equity: The use of long-term fixed interest bearing debt and preference share capital along with equity share capital is called financial leverage or trading on equity. The use of long-term debt increases the earnings per share if the firm yields a return higher than the cost of debt. The earnings per share also increase with the use of preference share capital but due to the fact that interest is allowed to be deducted while computing tax, the leverage impact of debt is much more. However, leverage can operate adversely also if the rate of interest on long-term loan is more than the expected rate of earnings of the firm. Therefore, it needs caution to plan the capital structure of a firm.

Question 5

DISCUSS financial break-even and EBIT-EPS indifference analysis

Or

DISCUSS the concept of Debt-Equity or EBIT-EPS indifference point, while determining the capital structure of a company.

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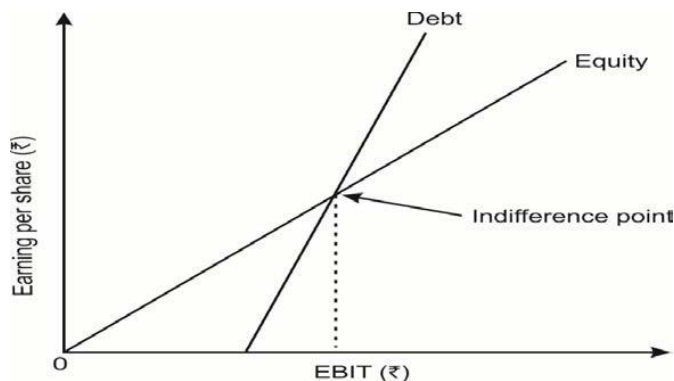
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Answer 5


Financial break-even point is the minimum level of EBIT needed to satisfy all the fixed financial charges i.e. interests and preference dividends. It denotes the level of EBIT for which the company's **EPS equals zero**.

Financial breakeven point (BEP) can be calculated as:

Financial Break-even point = $\frac{\text{Interest} + \text{Preference dividend}}{(1 - \text{tax rate})}$

If the EBIT is less than the financial break-even point, then the EPS will be negative but if the expected level of EBIT is more than the break-even point, then more fixed costs financing instruments can be taken in the capital structure, otherwise, equity would be preferred.

EBIT-EPS break-even analysis is used for determining the appropriate amount of debt a company might carry.

Another method of considering the impact of various financing alternatives on earnings per share is to prepare the EBIT chart or the range of Earnings chart. This chart shows the likely EPS at various probable EBIT levels. Thus, under one particular alternative, EPS may be ₹ 2 at a given EBIT level. However, the EPS may go down if another alternative of financing is chosen even though the EBIT remains at the same level. At a given EBIT, earnings per share under various alternatives of financing may be plotted. A straight line representing the EPS at various levels of EBIT under the alternative may be drawn. Wherever this line intersects, it is known as **break-even point**. This point is a useful guide in formulating the capital structure. This is known as EPS equivalency point or indifference point since this shows that, between the two given alternatives of financing (i.e., regardless of leverage in the financial plans), EPS would be the same at the given level of EBIT.

The equivalency or indifference point can also be calculated algebraically in the following manner:

$$\frac{(\text{EBIT} - I_1)}{E_1} = \frac{(\text{EBIT} - I_2)(1 - t)}{E_2}$$

Where,		
EBIT	=	Indifference point
E1	=	Number of equity shares in Alternative 1
E2	=	Number of equity shares in Alternative 2
I1	=	Interest charges in Alternative 1
I2	=	Interest charges in Alternative 2
T	=	Tax-rate

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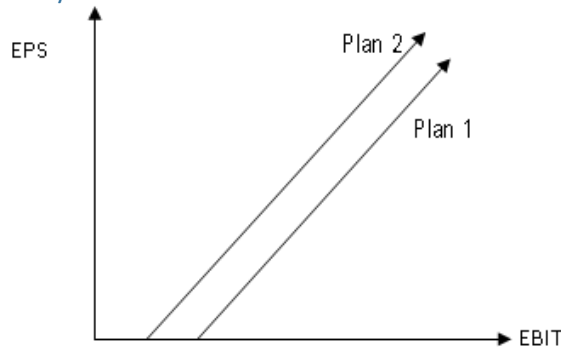
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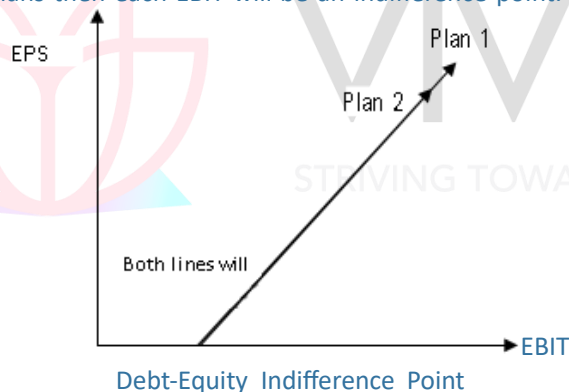
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Just keep in mind that if amount of equity share capital is same under two financial plans, then one of the following two situations will arise:

1. **No indifference point:** If after tax cost of the source other than equity shares is **not same** under both plans then there will be no indifference point between the two. Because one plan will be better than other at all levels of EBIT. For example, if two plans have equity shares of ₹ 1,00,000 each. Plan 1 has 10% debentures of ₹ 50,000 while plan 2 has 8% Term loan of ₹ 50,000. Then plan 2 will be better than plan 1 at any level of EBIT and there will be no indifference point.



2. **Many indifference points:** If after tax cost of the source other than equity shares is **same** under both plans then each EBIT will be an indifference point.



Practical Problems

Question 1

Aaina 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.

Answer 1

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

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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

$$\text{Point of Indifference between the above two alternatives} = \frac{\text{EBIT} \times (1 - t)}{\text{No. of equity shares (N1)}} = \frac{(\text{EBIT} - \text{Interest}) \times (1 - t)}{\text{No. of equity shares (N2)}}$$

$$\text{Or, } \frac{\text{EBIT} \times (1 - 0.30)}{90,00,000 \text{ shares}} = \frac{(\text{EBIT} - 72,00,000) \times (1 - 0.30)}{30,00,000 \text{ shares}}$$

Or, 0.7 EBIT	=	2.1 EBIT – ₹ 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).

Question 2

Xylo Ltd. is considering two alternative financing plans as follows:

Particulars	Plan – A (₹)	Plan – B (₹)
Equity shares of ₹ 10 each	8,00,000	8,00,000
Preference Shares of ₹ 100 each	-	4,00,000
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.

Answer 2

Computation of Rate of Preference Dividend

$$\begin{aligned} \frac{(\text{EBIT} - \text{Interest}) \times (1 - t)}{\text{No. of equity shares (N}_1\text{)}} &= \frac{\text{EBIT}(1 - t) - \text{Preference Dividend}}{\text{No. of equity shares (N}_2\text{)}} \\ \frac{₹ 4,80,000 - ₹ 48,000 \times (1 - 0.30)}{80,00,000 \text{ shares}} &= \frac{₹ 4,80,000(1 - 0.30) - \text{Preference Dividend}}{80,00,000 \text{ shares}} \\ \frac{₹ 3,02,400}{80,00,000 \text{ shares}} &= \frac{₹ 3,36,000 - \text{Preference Dividend}}{80,00,000 \text{ shares}} \\ ₹ 3,02,400 &= ₹ 3,36,000 - \text{Preference Dividend} \\ \text{Preference Dividend} &= ₹ 3,36,000 - ₹ 3,02,400 = ₹ 33,600 \\ \text{Rate of Dividend} &= \frac{\text{Preference Dividend}}{\text{Preference share capital}} \times 100 \\ &= \frac{\text{Rs. } 33,600}{4,00,000} \times 100 = 8.4\% \end{aligned}$$

Question 3

Ganesha Limited is setting up a project with a capital outlay of ₹ 60,00,000. It has two alternatives in financing the project cost.

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 debts is 18% p.a. The corporate tax rate is 40%. CALCULATE the indifference point between the two alternative methods of financing.

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Answer 3
Calculation of Indifference point between the two alternatives offinancing
Alternative-I

By issue of 6,00,000 equity shares of ₹ 10 each amountingto ₹ 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 debt	=	₹ 40,00,000 × $\frac{18}{100}$ = ₹ 7,20,000

The difference point between the two alternatives is calculated by:

$$\frac{EBIT - I_1(1-T)}{E_1} = \frac{EBIT - I_2(1-T)}{E_2}$$

Where,

EBIT	=	Earnings before interest and taxes
I_1	=	Interest charges in Alternative-I
I_2	=	Interest charges in Alternative-II
T	=	Tax rate
E_1	=	Equity shares in Alternative-I
E_2	=	Equity shares in Alternative-II

Putting the values, the break-even point would be as follows:

$$\frac{(EBIT-0)(1-0.40)}{6,00,000} = \frac{(EBIT-7,20,000)(1-0.40)}{2,00,000}$$

$$\frac{EBIT(0.60)}{6,00,000} = \frac{(EBIT-7,20,000)(0.60)}{2,00,000}$$

$$\frac{EBIT(0.60)}{3} = \frac{0.60(EBIT-7,20,000)}{1}$$

$$EBIT = 3EBIT - 21,60,000$$

$$- 2 EBIT = - 21,60,000$$

$$EBIT = \frac{21,60,000}{2}$$

$$EBIT = ₹ 10,80,000$$

Therefore, at EBIT of ₹ 10,80,000 earnings per share for the two alternatives is equal.

Question 4

Ganapati Limited is considering three financing plans. The key information is as follows:

(a) Total investment to be raised is ₹ 2,00,000.

(b) Plans of Financing Proportion:

Plans	Equity	Debt	Preference Shares
A	100%	-	-
B	50%	50%	-
C	50%	-	50%

(c) Cost of debt 8%

Cost of preference shares 8%

(d) Tax rate 50%

(e) Equity shares of the face value of ₹ 10 each will be issued at a premium of ₹ 10 per

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share.

(f) Expected EBIT is ₹ 80,000.

You are required to DETERMINE for each plan:

- (i) Earnings per share (EPS)
- (ii) The financial break-even point
- (iii) Indicate if any of the plans dominate and compute the EBIT range among the plans for indifference.

Answer 4

(i) Computation of Earnings per share (EPS)

Plans	A (₹)	B (₹)	C (₹)
Earnings before interest and tax (EBIT)	80,000	80,000	80,000
Less: Interest charges	---	(8,000) (8% × ₹1 lakh)	---
Earnings before tax (EBT)	80,000	72,000	80,000
Less: Tax (@ 50%)	(40,000)	(36,000)	(40,000)
Earnings after tax (EAT)	40,000	36,000	40,000
Less: Preference dividend	---	---	(8,000) (8% × ₹1 lakh)
Earnings available for Equity shareholders (A)	40,000	36,000	32,000
No. of Equity shares (B)	10,000 (₹2 lakh ÷ ₹20)	5,000 (₹1 lakh ÷ ₹20)	5,000 (₹1 lakh ÷ ₹20)
EPS [(A) ÷ (B)]	4	7.20	6.40

(ii) Calculation of Financial Break-even point

Financial break-even point = Interest + Preference Dividend/(1-t)

Plan A: Under this plan there is no interest or preference dividend payment hence, the Financial Break-even point will be zero.

Plan B: Under this plan there is an interest payment of ₹ 8,000 and no preference dividend, hence, the Financial Break-even point will be ₹ 8,000 (Interest charges).

Plan C: Under this plan there is no interest payment but an after tax preference dividend of ₹ 8,000 is paid. Hence, the Financial Break-even point will be before tax earnings of ₹ 16,000 (i.e. ₹ 8,000 ÷ (1 - 0.5) = ₹ 16,000)

(iii) Computation of indifference point between the plans

The indifference between two alternative methods of financing is calculated by applying the following formula:

$$\frac{(EBIT - I_1)(1 - T)}{E_1} = \frac{(EBIT - I_2)(1 - T)}{E_2}$$

I. Indifference point where EBIT of Plan A and Plan B is equal.

$$\begin{aligned} \frac{(EBIT - 0)(1 - 0.5)}{10,000} &= \frac{(EBIT - 8000)(1 - 0.5)}{5000} \\ 0.5 EBIT (5,000) &= (0.5 EBIT - 4,000) (10,000) \\ 0.5 EBIT &= EBIT - 8,000 \\ 0.5 EBIT &= 8,000 \end{aligned}$$

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$$\text{EBIT} = ₹ 16,000$$

II. Indifference point where EBIT of Plan A and Plan C is equal.

$\frac{(\text{EBIT}-0)(1-0.5)}{10,000}$	=	$\frac{(\text{EBIT}-0)(1-0.5)-8000}{5000}$
$\frac{0.5 \text{ EBIT}}{10,000}$	=	$\frac{0.5 \text{ EBIT}-8,000}{5,000}$
0.25 EBIT	=	0.5 EBIT – 8,000
0.25 EBIT	=	8,000
EBIT	=	₹ 32,000

III. Indifference point where EBIT of Plan B and Plan C are equal.

$\frac{(\text{EBIT}-₹ 8000)(1-0.5)}{5,000}$	=	$\frac{(\text{EBIT}-0)(1-0.5)-8000}{5000}$
0.5 EBIT – 4,000	=	0.5 EBIT - ₹ 8,000

There is no indifference point between the financial plan B and C.

It can be seen that Financial Plan B dominates Plan C. Since, the financial break-even point of the former is only ₹ 8,000 but in case of latter it is ₹ 16,000. Further EPS of plan B is the highest.

Question 5

Yoyo Limited presently has ₹ 36,00,000 in debt outstanding bearing an interest rate of 10 per cent. It wishes to finance a ₹ 40,00,000 expansion programme and is considering three alternatives: additional debt at 12 per cent interest, preference shares with an 11 per cent 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 per cent tax bracket.

- If earnings before interest and taxes are presently ₹ 15,00,000, DETERMINE earnings per share for the three alternatives, assuming no immediate increase in profitability.
- ANALYSE which alternative do you prefer. COMPUTE how much would EBIT need to increase before the next alternative would be best.

Answer 5

a)

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)	---

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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 ₹ 2,376 × ₹ 1,500 = ₹ 876 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 (in thousands)-

$$\frac{\text{EBIT} - ₹ 840}{840} = \frac{\text{EBIT} - ₹ 360}{1,050}$$

$$\text{EBIT (1,050)} - ₹ 840(1,050) = \text{EBIT (800)} - ₹ 360(800)$$

$$250\text{EBIT} = ₹ 5,94,000$$

$$\text{EBIT} = ₹ 2,376$$

Question 6

Alpha Limited requires funds amounting to ₹ 80 lakh for its new project. To raise the funds, the company has following two alternatives:

- To issue Equity Shares of ₹ 100 each (at par) amounting to ₹ 60 lakh and borrow the balance amount at the interest of 12% p.a., or
- 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.

Answer 6

(i)

$$\text{Amount} = ₹ 80,00,000$$

$$\text{Plan I} = \text{Equity of ₹ 60,00,000} + \text{Debt of ₹ 20,00,000}$$

$$\text{Plan II} = \text{Equity of ₹ 40,00,000} + 12\% \text{ Debentures of ₹ 40,00,000}$$

Plan I: Interest Payable on Loan

$$= 12\% \times ₹ 20,00,000 = ₹ 2,40,000$$

Plan II: Interest Payable on Debentures

$$= 12\% \times ₹ 40,00,000 = ₹ 4,80,000$$

Computation of Point of Indifference

$$\frac{\text{EBIT} - I_1(1-t)}{E_1} = \frac{\text{EBIT} - I_2(1-t)}{E_2}$$

$$\frac{(\text{EBIT} - ₹ 2,40,000)(1-0.3)}{60,000} = \frac{\text{EBIT} - ₹ 4,80,000(1-0.3)}{40,000}$$

$$2 (\text{EBIT} - ₹ 2,40,000) = 3 (\text{EBIT} - ₹ 4,80,000)$$

$$2 \text{ EBIT} - ₹ 4,80,000 = 3 \text{ EBIT} - ₹ 14,40,000$$

$$2 \text{ EBIT} - 3 \text{ EBIT} = - ₹ 14,40,000 + ₹ 4,80,000$$

$$\text{EBIT} = ₹ 9,60,000$$

- (ii) **Earnings per share (EPS) under Two Situations for both the Plans**

Situation A (EBIT is assumed to be ₹ 9,50,000)

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Particulars	Plan I (₹)	Plan II (₹)
EBIT	9,50,000	9,50,000
Less: Interest @ 12%	(2,40,000)	(4,80,000)
EBT	7,10,000	4,70,000
Less: Taxes @ 30%	(2,13,000)	(1,41,000)
EAT	4,97,000	3,29,000
No. of Equity Shares	60,000	40,000
EPS	8.28	8.23

Comment: In Situation A, when expected EBIT is less than the EBIT at indifference point then, Plan I is more viable as it has higher EPS. The advantage of EPS would be available from the use of equity capital and not debt capital.

Situation B (EBIT is assumed to be ₹ 9,70,000)		
Particulars	Plan I (₹)	Plan II (₹)
EBIT	9,70,000	9,70,000
Less: Interest @ 12%	(2,40,000)	(4,80,000)
EBT	7,30,000	4,90,000
Less: Taxes @ 30%	(2,19,000)	(1,47,000)
EAT	5,11,000	3,43,000
No. of Equity Shares	60,000	40,000
EPS	8.52	8.58

Comment: In Situation B, when expected EBIT is more than the EBIT at indifference point then, Plan II is more viable as it has higher EPS. The use of fixed-cost source of funds would be beneficial from the EPS viewpoint. In this case, financial leverage would be favorable.

(Note: The problem can also be worked out assuming any other figure of EBIT which is more than ₹ 9,60,000 and any other figure less than ₹ 9,60,000. Alternatively, the answer may also be based on the factors/governing the capital structure like the cost, risk, control, etc. Principles).

Question 7

One-third of the total market value of Sanghmani Limited consists of loan stock, which has a cost of 10 per cent. Another company, Samsui Limited, is identical in every respect to Sanghmani Limited, except that its capital structure is all-equity, and its cost of equity is 16 per cent. According to Modigliani and Miller, if we ignored taxation and tax relief on debt capital, COMPUTE the cost of equity of Sanghmani Limited?

Answer 7

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 Samsui Limited is all-equity financed, its WACC is the same as its cost of equity finance, i.e. 16 per cent. It follows that Sanghmani Limited should have WACC equal to 16 per cent also.

Therefore, Cost of equity in Sanghmani Ltd. (levered company) will be calculated as follows:

$$K_o = \frac{3}{2} \times K_e + \frac{1}{3} \times K_e = 16\% \text{ (i.e. equal to WACC of Samsui Ltd.)}$$

$$\text{Or, } 16\% = \frac{2}{3} \times K_e + \frac{1}{3} \times 10\% \quad \text{Or, } K_e = 19$$

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Question 8

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:

- 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.
- Determine the total market value, Equity capitalization rate and weighted average cost of capital for each company assuming 40% taxes as per M.M. Approach.

Answer 8

- Assuming no tax as per MM Approach.

Calculation of Value of Firms 'A Ltd.' and 'B Ltd' according to MM Hypothesis

Market Value of 'B Ltd' [Unlevered(u)]

Total Value of Unlevered Firm (V_u) = $[NOI/K_e] = 18,00,000/0.18 = ₹ 1,00,00,000$

K_e of Unlevered Firm (given) = 0.18

K_o of Unlevered Firm (Same as above = K_e as there is no debt) = 0.18

Market Value of 'A Ltd' [Levered Firm (l)]

Total Value of Levered Firm (V_L)	=	$V_u + (\text{Debt} \times \text{Nil})$
	=	₹ 1,00,00,000 + (54,00,000 × nil)
	=	₹1,00,00,000

Computation of Equity Capitalization Rate and
Weighted Average Cost of Capital (WACC)

	Particulars	A Ltd.	B Ltd.
A.	Net Operating Income (NOI)	18,00,000	18,00,000
B.	Less: Interest on Debt (I)	6,48,000	-
C.	Earnings of Equity Shareholders (NI)	11,52,000	18,00,000
D.	Overall Capitalization Rate (k_o)	0.18	0.18
E.	Total Value of Firm ($V = NOI/k_o$)	1,00,00,000	1,00,00,000
F.	Less: Market Value of Debt	54,00,000	-
G.	Market Value of Equity (S)	46,00,000	1,00,00,000
H.	Equity Capitalization Rate [$k_e = NI/S$]	0.2504	0.18
I.	Weighted Average Cost of Capital [$WACC (K_o)] \times K_o$ $= (K_e \times S/V) + (K_d \times D/V)$	0.18	0.18

*Computation of WACC A Ltd

Component of Capital	Amount	Weight	Cost of Capital	WACC
Equity	46,00,000	0.46	0.2504	0.1152
Debt	54,00,000	0.54	0.12*	0.0648
Total	1,00,00,000			0.18

* $K_d = 12\%$ (since there is no tax)

WACC = 18%

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(b) Assuming 40% taxes as per MM Approach

Calculation of Value of Firms 'A Ltd.' and 'B Ltd' according to MM Hypothesis

Market Value of 'B Ltd' [Unlevered(u)]
 $\text{Total Value of unlevered Firm } (V_u) = [\text{NOI} (1 - t) / k_e] = 18,00,000 (1 - 0.40) / 0.18 = ₹ 60,00,000$
 $K_e \text{ of unlevered Firm (given)} = 0.18$
 $K_o \text{ of unlevered Firm (Same as above} = K_e \text{ as there is no debt)} = 0.18$
Market Value of 'A Ltd' [Levered Firm (l)]
 $\text{Total Value of Levered Firm } (V_L) = V_u + (\text{Debt} \times \text{Tax})$
 $= ₹ 60,00,000 + (54,00,000 \times 0.4) = ₹ 81,60,000$
Computation of Weighted Average Cost of Capital (WACC) of 'B Ltd.'
 $= 18\% \text{ (i.e. } K_e = K_o)$

Computation of Equity Capitalization Rate and Weighted Average Cost of Capital (WACC) of A Ltd

Particulars	A Ltd. (₹)
Net Operating Income (NOI)	18,00,000
Less: Interest on Debt (I)	6,48,000
Earnings Before Tax (EBT)	11,52,000
Less: Tax @ 40%	4,60,800
Earnings for equity shareholders (NI)	6,91,200
Total Value of Firm (V) as calculated above	81,60,000
Less: Market Value of Debt	54,00,000
Market Value of Equity (S)	27,60,000
Equity Capitalization Rate [$K_e = \text{NI}/S$]	0.2504
Weighted Average Cost of Capital (K_o) * $K_o = (K_e \times S/V) + (K_d \times D/V)$	13.23

*Computation of WACC A Ltd

Component of Capital	(₹)	Weight	Cost of Capital	WACC
Equity	27,60,000	0.338	0.2504	0.0846
Debt	54,00,000	0.662	0.072*	0.0477
Total	81,60,000			0.1323

 $*K_d = 12\% (1 - 0.4) = 12\% \times 0.6 = 7.2\%$
 $\text{WACC} = 13.23\%$
Question 9

Leo Ltd. has a net operating income of ₹ 21,60,000 and the total capitalisation 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.

Debt value (₹)	Interest rate (%)	Equity Capitalization rate (%)
0	N.A.	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

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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.

Answer 9

As per MM approach, cost of the capital (K_0) remains constant, and cost of equity increases linearly with debt.

$$\text{Value of a Firm} = \frac{\text{NOI}}{K_0}$$

$$\therefore 1,20,00,000 = \frac{21,60,000}{K_0}$$

$$\therefore K_0 = \frac{21,60,000}{1,20,00,000} = 18\%$$

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 (%)	$K_0 - K_d$ (%)	$K_e = K_0 + (K_0 - K_d)$ (%)
-	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

Question 10

Axar Ltd. has a Sales of ₹ 68,00,000 with a Variable cost Ratio of 60%.

The company has fixed cost of ₹16,32,000. The capital of the company comprises of 12% long term debt, ₹ 1,00,000 Preference Shares of ₹ 10 each carrying dividend rate of 10% and 1,50,000 equity shares.

The tax rate applicable for the company is 30%.

At current sales level, DETERMINE the Interest, EPS and amount of debt for the firm if a 25% decline in Sales will wipe out all the EPS.

Answer 10

Break Even Sales = ₹ 68,00,000 × 0.75 = ₹ 51,00,000

Income Statement

	Original ₹	Calculation of Interest at BEP (backward calculation) ₹	Now at present level ₹
Sales	68,00,000	51,00,000	68,00,000
Less: Variable Cost	40,80,000	30,60,000	40,80,000

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Contribution	27,20,000	20,40,000	27,20,000
Less: Fixed Cost	16,32,000	16,32,000	16,32,000
EBIT	10,88,000	4,08,000	10,88,000
Less: Interest (EBIT-PBT)	?	3,93,714	3,93,714
PBT	?	14,286(10,000/70%)	6,94,286
Less: Tax @ 30%(or PBT- PAT)	?	4,286	2,08,286
PAT	?	10,000(Nil+10,000)	4,86,000
Less: Preference Dividend	10,000	10,000	10,000
Earnings for Equity share holders	?	Nil (at BEP)	4,76,000
Number of Equity Shares	1,50,000	1,50,000	1,50,000
EPS	?	-	3.1733

So Interest = ₹ 3,93,714, EPS = ₹ 3.1733, Amount of debt = $3,93,714/12\% = ₹ 32,80,950$

Question 11

The financial advisor of Sun Ltd. is confronted with following two alternative financing plans for raising ₹ 10 lakhs that is needed for plant expansion and modernization

Alternative I: Issue 80% of funds with 14% Debenture [Face value (FV) ₹ 100] at par and redeem at a premium of 10% after 10 years and balance by issuing equity shares at $33\frac{1}{3}\%$ premium.

Alternative II: Raise 10% of funds required by issuing 8% Irredeemable Debentures [Face value (FV) ₹ 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 ₹ 200,000 annually.

The firm's condensed Balance Sheet for the current year is 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	Plan & Equipment (Net)	34,00,000
Reserves & Surplus	10,00,000		
Equity Share Capital (FV: ₹ 100 each)	20,00,000		
TOTAL	50,00,000	TOTAL	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 P/E 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 P/E 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 reason which alternative is better on the basis of each of the below given criteria:

- Earnings per share (EPS) & Market Price per share (MPS)

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II. Financial Leverage
III. Weighted Average Cost of Capital & Marginal Cost of Capital (using Book Value weights)
Answer 11
Calculation of Equity Share capital and Reserves and surplus:

Alternative 1:

$$\text{Equity Share capital} = ₹ 20,00,000 + \frac{₹ 2,00,000 \times 100}{133.3333} = ₹ 21,50,000$$

$$\text{Reserves} = ₹ 10,00,000 + \frac{₹ 2,00,000 \times 33.3333}{133.3333} = ₹ 10,50,000$$

Alternative 2 :

$$\text{Equity Share Capital} = ₹ 20,00,000 + \frac{₹ 9,00,000 \times 100}{125} = ₹ 27,20,000$$

$$\text{Reserves} = ₹ 10,00,000 + \frac{₹ 9,00,000 \times 25}{125} = ₹ 11,80,000$$

Capital Structure Plans

(Amount in ₹)		
Capital	Alternative 1 ₹	Alternative 2 ₹
Equity Share capital	21,50,000	27,20,000
Reserves and surplus	10,50,000	11,80,000
10% long term debt	15,00,000	15,00,000
14% Debentures	8,00,000	-
8% Irredeemable Debentures	-	1,00,000
Total Capital Employed	55,00,000	55,00,000

Computation of Present Earnings before interest and tax (EBIT)

EPS (₹)	21
No. of equity shares	20,000
Earnings for equity shareholders (I x II) (₹)	4,20,000
Profit Before Tax (III/75%) (₹)	5,60,000
Interest on long term loan (1500000 x 10%) (₹)	1,50,000
EBIT (IV + V) (₹)	7,10,000

$$\text{EBIT after expansion} = ₹ 7,10,000 + ₹ 2,00,000 = ₹ 9,10,000$$

Evaluation of Financial Plans on the basis of EPS, MPS and Financial Leverage

(Amount in ₹)		
Particulars	Alternative I	Alternate II
EBIT	9,10,000	9,10,000
Less: Interest: 10% on long term loan	(1,50,000)	(1,50,000)
14% on Debentures	(1,12,000)	Nil
8% on Irredeemable Debentures	Nil.	(8000)
PBT	6,48,000	7,52,000
Less: Tax @25%	(1,62,000)	(1,88,000)
PAT	4,86,000	5,64,000
No. of equity shares	21,500	27,200

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EPS	22.60	20.74
Applicable P/E ratio (Working Note 1)	7	8.5
MPS (EPS X P/E ratio)	158.2	176.29
Financial Leverage EBIT/PBT	1.40	1.21

Working Note 1

	Alternative I	Alternative II
Debt:		
₹15,00,000 + ₹8,00,000	23,00,000	-
₹15,00,000 + ₹1,00,000	-	16,00,000
Total capital Employed (₹)	55,00,000	55,00,000
Debt Ratio (Debt/Capital employed)	=0.4182	=0.2909
	=41.82%	=29.09%
Change in Equity: ₹21,50,000-₹20,00,000	1,50,000	
₹27,20,000-₹20,00,000		7,20,000
Percentage change in equity	7.5%	36%
Applicable P/E ratio	7	8.5

Calculation of Cost of equity and various type of debt

	Alternative I	Alternative II
A) Cost of equity		
EPS ₹	22.60	20.74
DPS (EPS X 60%) ₹	13.56	12.44
Growth (g)	10%	10%
P ₀ (MPS)	158.2	176.29
$K_e = \frac{D_0(1+g)}{P_0} + 10\%$	$\frac{13.56(1.1)}{158.2} + 10\%$	$\frac{12.44(1.1)}{176.29} + 10\%$
	=19.43%	=17.76%
B) Cost of Debt:		
10% long term debt	10% + (1-0.25)	10% + (1-0.25)
	= 7.5%	= 7.5%
14% redeemable debentures	$\frac{14(1-0.25) + (110-100/10)}{110+100/2}$	nil
	= 10.5 + 1 / 10.5	
	= 10.95%	
8% irredeemable debenture	NA	8000
		(1-0.25)/1,00,00
		= 6%

Calculation of Weighted Average cost of capital (WACC)

	Alternative 1			Alternative 2		
Capital	Weights	Cost(%)	WACC	Weights	Cost(%)	WACC
Equity Share Capital	0.3909	19.43	7.60%	0.4945	17.76	8.78%
Reserves and Surplus	0.1909	19.43	3.71%	0.2145	17.76	3.81%
10% Long term Debt	0.2727	7.50	2.05%	0.2727	7.50	2.05%
14% Debenture	0.1455	10.95	1.59%			

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8% Irredeemable Debentures	-			0.0182	6	0.11%
			14.94%			14.75%

Calculation Marginal Cost of Capital (MACC)

Capital	Alternative 1			Alternative 2		
	(weight)	Cost(%)	MACC	(weight)	Cost (%)	MACC
Equity Share Capital	₹ 1,50,000 (0.15)	19.43	2.91%	₹7,20,000 (0.72)	17.76	12.79%
Reserves and Surplus	₹ 50,000 (0.05)	19.43	0.97%	₹1,80,000 (0.18)	17.76	3.20%
14% Debenture	₹ 8,00,000 (0.80)	10.95	8.76%	-		0.00%
8% Irredeemable Debentures	-			₹1,00,000 (0.10)	6	0.60%
Total Capital Employed	₹10,00,000		12.64%	₹10,00,000		16.59%

Summary of solution:

	Alternate I	Alternate II
Earning per share (EPS) ₹	22.60	20.74
Market price per share (MPS) ₹	158.20	176.29
Financial leverage	1.4043	1.2101
Weighted Average cost of capital (WACC)	14.94%	14.75%
Marginal cost of capital (MACC)	12.64%	16.59%

Alternative 1 of financing will be preferred under the criteria of EPS, whereas Alternative II of financing will be preferred under the criteria of MPS, Financial leverage, WACC and marginal cost of capital.

Case Scenarios

- XYZ Industries Ltd., a renowned player in the manufacturing sector, has been contemplating an ambitious expansion program. To finance this growth, the company scrutinizes its current capital structure, which is a blend of equity, retained earnings, preference shares, and debentures. The equity base of XYZ Industries Ltd., is robust with 40,000 equity shares valued at ₹ 100 each, amounting to a substantial ₹ 40,00,000. This equity foundation is bolstered by retained earnings of ₹ 10,00,000, reflecting the company's prudent profit reinvestment strategy. In addition to equity, XYZ Industries Ltd., has diversified its financing through 9% preference shares and 7% debentures, each contributing ₹ 25,00,000 to the capital pool. This strategic mix of debt and equity showcases the company's balanced approach to leveraging and risk management. The company's capital yields a healthy return rate of 12% on capital employed, indicative of its operational efficiency and market competitiveness. However, it operates in a high-tax environment with an income-tax rate of 50%, which significantly impacts its net earnings and available reinvestment capital.

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Faced with the need to raise an additional ₹ 25,00,000 for its expansion program, XYZ Industries Ltd., stands at a crossroads. The decision to fund this venture will require careful consideration of the cost of capital, tax implications, and the impact on shareholder value.

The management must evaluate whether to issue more equity shares, preference shares or debentures. Issuing equity could dilute current shareholders' value but would not increase the company's debt burden. Preference shares offer a fixed return to investors and have priority over equity in profit distribution but come at a higher cost than debt. Debentures are less expensive due to tax-deductible interest expenses but increase financial risk. XYZ Industries Ltd.'s journey towards expansion is not just about raising funds but also about maintaining a delicate balance between growth aspirations and financial stability. The company's choice will set a precedent for its future financial strategies and market reputation.

Faced with the challenge of capital structure decision making to finance the expansion programme the finance manager is considering the following alternatives:

- (i) Issue of 20,000 equity shares at a premium of ₹ 25 per share.
- (ii) Issue of 10% preference shares.
- (iii) Issue of 8% debentures

The manufacturing company has estimated that the PE ratios in the cases of equity preference and debenture financing would be 20, 17 and 16 respectively. You are required to evaluate the various financial alternatives considering three plans proposed i.e. Plan I (Equity), Plan II (Preference Shares) and Plan III (Debentures).

Based on the information provided above you are required to answer the following MCQ's:

1. What will be the amount of PAT under the three plans i.e. Plan I (Equity), Plan II (Preference Shares) and Plan III (Debentures) respectively from the following?
 - (a) ₹ 13,25,000, ₹ 13,25,000 and ₹ 11,25,000
 - (b) ₹ 8,62,500, ₹ 9,62,500 and ₹ 10,62,500
 - (c) ₹ 15,00,000, ₹ 15,00,000 and ₹ 15,00,000
 - (d) ₹ 6,62,500, ₹ 6,62,500 and ₹ 5,62,500

Ans: (d)

2. What will be the amount of total preference dividend under the three plans i.e. Plan I (Equity), Plan II (Preference Shares) and Plan III (Debentures) respectively from the following?
 - (a) ₹ 3,25,000, ₹ 3,25,000 and ₹ 5,25,000
 - (b) ₹ 8,62,500, ₹ 9,62,500 and ₹ 10,62,500
 - (c) ₹ 2,25,000, ₹ 4,75,000 and ₹ 2,25,000
 - (d) ₹ 2,25,000, ₹ 2,25,000 and ₹ 2,25,000

Ans: (c)

3. What will be the amount of earnings available for equity shareholders under the three plans i.e. Plan I (Equity), Plan II (Preference Shares) and Plan III (Debentures) respectively from the following?
 - (a) ₹ 3,47,500, ₹ 5,77,500 and ₹ 3,98,000
 - (b) ₹ 9,37,500, ₹ 8,87,500 and ₹ 7,37,500
 - (c) ₹ 4,37,500, ₹ 1,87,500 and ₹ 3,37,500
 - (d) ₹ 5,37,500, ₹ 2,87,500 and ₹ 4,37,500

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Ans: (c)

4. What will be the EPS under the three plans i.e. Plan I (Equity), Plan II (Preference Shares) and Plan III (Debentures) respectively from the following?

- (a) 4.44, 7.66 and 7.29
- (b) 7.00, 6.88 and 7.29
- (c) 7.29, 4.69 and 8.44
- (d) 8.44, 9.88 and 6.78

Ans: (c)

5. What will be the market price per share under the three plans i.e. Plan I (Equity), Plan II (Preference Shares) and Plan III (Debentures) respectively from the following?

- (a) 134.50, 123.45 and 78.98
- (b) 145.80, 79.73 and 135.04
- (c) 148.8, 187.96 and 118.48
- (d) 168.8, 167.96 and 108.48

Ans: (b)

Evaluation of various financial alternatives	Plan I (Equity) (₹)	Plan II (Preference Shares) (₹)	Plan III (Debentures) (₹)
1. EBIT**	15,00,000	15,00,000	15,00,000
2. Interest:			
Existing	1,75,000	1,75,000	1,75,000
Additional	-	-	2,00,000
Total Interest	1,75,000	1,75,000	3,75,000
3. PBT (1-2)	13,25,000	13,25,000	11,25,000
4. TAX 50%	6,62,500	6,62,500	5,62,500
5. PAT (3-4)	6,62,500	6,62,500	5,62,500
6. Preference dividend			
Existing	2,25,000	2,25,000	2,25,000
Additional	-	2,50,000	-
Total Preference Dividend	2,25,000	4,75,000	2,25,000
7. Equity earnings (5-6)	4,37,500	1,87,500	3,37,500
8. No. of equity shares	*60,000	40,000	40,000
9. EPS [7/8]	7.29	4.69	8.44
10. P/E Ratio (Given)	20	17	16
11. Market Price per share	145.80	79.73	135.04

*40,000 + 20,000 new shares = 60,000 shares

**EBIT = 12% of (100 lakhs existing + new 25 lakhs) = ₹ 15,00,000

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ILLUSTRATION**Question 1 (Illustration)**

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.

- (a) CALCULATE operating leverage.
(b) If sales are up by 10%, then COMPUTE the impact on EBIT?

Answer 1**(a) Statement of Profitability**

	₹
Sales Revenue (10,000 × 500)	50,00,000
Less: Variable Cost (10,000 × 200)	20,00,000
Contribution	30,00,000
Less: Fixed Cost	25,00,000
EBIT	5,00,000

$$\text{Operating Leverage} = \frac{\text{contribution}}{\text{EBIT}} = \frac{\text{₹ 30 lakhs}}{\text{₹ 5 lakhs}} = 6 \text{ times}$$

(b)

Operating Leverage (OL)	=	$\frac{\% \text{ change in EBIT}}{\% \text{ change in sale}}$
6	=	$\frac{X / 5,00,000}{5,00,000 / 50,00,000}$
X	=	3,00,000

$$\therefore \Delta \text{EBIT} = \text{₹ } 3,00,000 / \text{₹ } 5,00,000 = 60\%$$

Question 2 (Illustration)

CALCULATE the operating leverage for each of the four firms A, B, C and D from the following price and cost data:

	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

What calculations can you draw with respect to levels of fixed cost and the degree of operating leverage result? EXPLAIN. Assume number of units sold is 5,000.

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	Firms			
	A (₹)	B (₹)	C (₹)	D (₹)
Sales (units)	5,000	5,000	5,000	5,000
Sales revenue (Units × sale price per unit)	1,00,000	1,60,000	2,50,000	3,50,000
Less: Variable cost (Units × variable cost per unit)	(30,000)	(80,000)	(1,00,000)	(2,50,000)
Less: Fixed operating costs	(60,000)	(40,000)	(1,00,000)	Nil
EBIT	10,000	40,000	50,000	1,00,000

Answer 2

$$DOL = \frac{\text{Current sales (S)} - \text{Variable costs (VC)}}{\text{Current EBIT}}$$

$$DOL_{(A)} = \frac{\frac{₹1,00,000 - ₹30,000}{₹10,000}}{₹1,00,000 - ₹30,000} = 7$$

$$DOL_{(B)} = \frac{\frac{₹1,60,000 - ₹80,000}{₹40,000}}{₹1,60,000 - ₹80,000} = 2$$

$$DOL_{(C)} = \frac{\frac{₹2,50,000 - ₹1,00,000}{₹50,000}}{₹2,50,000 - ₹1,00,000} = 3$$

$$DOL_{(D)} = \frac{\frac{₹3,50,000 - ₹2,50,000}{₹1,00,000}}{₹3,50,000 - ₹2,50,000} = 1$$

The operating leverage exists only when there are fixed costs. In the case of firm D, there is no magnified effect on the EBIT due to change in sales. A 20 per cent increase in sales has resulted in a 20 per cent increase in EBIT. In the case of other firms, operating leverage exists. It is maximum in firm A, followed by firm C and minimum in firm B. The interception of DOL of 7 is that 1 per cent change in sales results in 7 per cent change in EBIT level in the direction of the change of sales level of firm A.

Question 3 (Illustration)

A firm's details are as under:

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:

- Operating Leverage
- Financial Leverage
- Combined Leverage
- Return on Investment
- If the sales increases by ₹ 6,00,000; what will the new EBIT?

Answer 3

	(₹)
Sales	24,00,000
Less: Variable cost	12,00,000
Contribution	12,00,000
Less: Fixed cost	10,00,000

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EBIT	2,00,000
Less: Interest	1,00,000
EBT	1,00,000
Less: Tax (50%)	50,000
EAT	50,000
No. of equity shares	10,000
EPS	5

(a) Operating Leverage = $\frac{\text{₹}12,00,000}{\text{₹}2,00,000} = 6$ times

(b) Financial Leverage = $\frac{\text{₹}2,00,000}{\text{₹}1,00,000} = 2$ times

(c) Combined Leverage = OL × FL = 6 × 2 = 12 times.

(d) ROI = $\frac{\text{₹}50,000}{\text{₹}10,00,000} \times 100 = 5\%$

Here ROI is calculated as ROE i.e. $\frac{\text{EAT} - \text{Pref.Dividend}}{\text{Equity shareholders/fund}}$

(e) Operating Leverage = 6

$6 = \frac{\Delta \text{EBIT}}{0.25}$

$\Delta \text{EBIT} = \frac{6 \times 1}{4} = 1.5$

Increase in EBIT = ₹ 2,00,000 × 1.5

= ₹ 3,00,000

New EBIT = ₹ 5,00,000

Question 4 (Illustration)

The following information is related to Yizi Company Ltd. for the current Financial Year:

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:

- Operating Leverage;
- Combined leverage; and
- Earnings per share.

Show calculation up-to two decimal points

Answer 4

Computation of Profits after Tax (PAT)

Particulars	Amount (₹)
Sales	84,00,000
Contribution (Sales × P/V ratio)	23,14,200
Less: Fixed cost (excluding Interest)	(6,96,000)

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EBIT (Earnings before interest and tax)	16,18,200
Less: Interest on debentures (12% × ₹37 lakhs)	(4,44,000)
Less: Other fixed Interest (balancing figure)	(88,160)*
EBT (Earnings before tax)	10,86,040
Less: Tax @ 40%	4,34,416
PAT (Profit after tax)	6,51,624

(i) **Operating Leverage:**

$$= \frac{\text{Contribution}}{\text{EBIT}} = \frac{₹23,14,200}{₹16,18,200} = 1.43$$

(ii) **Combined Leverage:**

= Operating Leverage × Financial Leverage

$$= 1.43 \times 1.49 = 2.13$$

Or,

$$\text{Combined Leverage} = \frac{\text{Contribution}}{\text{EBIT}} \times \frac{\text{EBIT}}{\text{EBT}}$$

$$\text{Combined Leverage} = \frac{\text{Contribution}}{\text{EBIT}} = \frac{₹23,14,200}{₹10,86,040} = 2.13$$

$$* \text{ Financial Leverage} = \frac{\text{EBIT}}{\text{EBT}} = \frac{₹16,18,200}{₹10,86,040} = 1.49$$

$$\text{So, EBT} = \frac{₹16,18,200}{1.49} = ₹10,86,040$$

$$\text{Accordingly, other fixed interest} = ₹16,18,200 - ₹10,86,040 - ₹4,44,000$$

$$= ₹88,160$$

(iii) **Earnings per share (EPS):**

$$= \frac{\text{PAT}}{\text{No. of shares outstanding}} = \frac{₹6,51,624}{5,00,000 \text{ equity shares}} = ₹1.30$$

Question 5 (Illustration)

Following are the selected financial information of A Ltd. and B Ltd. for the current Financial Year:

	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:

(i) EBIT

(ii) Sales

(iii) Fixed Cost

(iv) Identify the company which is better placed with reasons based on leverages.

Answer 5

Company A

$$(i) \text{ Financial Leverage} = \frac{\text{EBIT}}{\text{EBT i.e. EBIT} - \text{Interest}}$$

$$\text{So, } 3 = \frac{\text{EBIT}}{\text{EBIT} - ₹20,000}$$

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Or,	3 (EBIT – 20,000)	= EBIT
Or,	2 EBIT	= 60,000
Or,	EBIT	= 30,000

(ii) Operating Leverage = $\frac{\text{Contribution}}{\text{EBIT}}$ Or, $5 = \frac{\text{contribution}}{\text{Rs.30,000}}$
 Or, Contribution = ₹ 1, 50,000
 Sale = $\frac{\text{Contribution}}{\text{P/V Ratio (1 – variable cost ratio)}}$ = $\frac{\text{₹ 1,50,000}}{40\%}$ = ₹ 3,75,000

(iii)
 Fixed Cost = Contribution – EBIT
 = ₹ 1, 50,000 – 30,000
 Or, Fixed cost = ₹ 1,20,000

Company B

(i)
 Financial Leverage = $\frac{\text{EBIT}}{\text{EBT i.e. EBIT – Interest}}$
 So, 2 = $\frac{\text{EBIT}}{\text{EBIT – 1,00,000}}$
 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 = $\frac{\text{Contribution}}{\text{₹2,00,000}}$
 Or, Contribution = ₹ 4,00,000
 Sale = $\frac{\text{Contribution}}{\text{P/V Ratio (1 – variable cost ratio)}}$ = $\frac{\text{₹ 4,00,000}}{50\%}$ = ₹ 8,00,000

(iii)
 Fixed Cost = Contribution – EBIT
 = ₹ 4, 00,000 – ₹ 2,00,000
 Or, Fixed cost = ₹ 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:

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- Capacity of Company B to meet interest liability is better than that of companies A (from EBIT/Interest ratio)

$$\left[A = \frac{₹30,000}{₹20,000} = 1.5, B = \frac{₹2,00,000}{₹1,00,000} = 2 \right]$$
- 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)

Test Your Knowledge

Multiple Choice Questions

1. Given

Operating fixed costs	₹ 20,000
Sales	₹ 1,00,000
P/ V ratio	40%

The operating leverage is:

- (a) 2.00
- (b) 2.50
- (c) 2.67
- (d) 2.47

Ans: (a)

2. If EBIT is ₹ 15,00,000, interest is ₹ 2,50,000, corporate tax is 40%, degree of financial leverage is;

- (a) 1:11
- (b) 1.20
- (c) 1.31
- (d) 1.41

Ans: (b)

3. If DOL is 1.24 and DFL is 1.99, DCL would be:

- (a) 2.14
- (b) 2.18
- (c) 2.31
- (d) 2.47

Ans: (d)

4. Operating Leverage is calculated as:

- (a) Contribution ÷ EBIT
- (b) EBIT ÷ PBT
- (c) EBIT ÷ Interest
- (d) EBIT ÷ Tax

Ans: (a)

5. Financial Leverage is calculated as:

- (a) EBIT ÷ Contribution
- (b) EBIT ÷ PBT
- (c) EBIT ÷ Sales

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(d) $\text{EBIT} \div \text{Variables Cost}$

Ans: (b)

6. Which of the following is correct?

- (a) $\text{CL} = \text{OL} + \text{FL}$
- (b) $\text{CL} = \text{OL} - \text{FL}$
- (c) $\text{CL} = \text{OL} \times \text{FL}$
- (d) $\text{OL} = \text{OL} \div \text{FL}$

Ans: (c)

7. Which of the following indicates business risk?

- (a) Operating leverage
- (b) Financial leverage
- (c) Combined leverage
- (d) Total leverage

Ans: (a)

8. Degree of combined leverage is the fraction of:

- (a) Percentage change in EBIT on Percentage change in Sales.
- (b) Percentage change in EPS on Percentage change in Sales.
- (c) Percentage change in Sales on Percentage change in EPS.
- (d) Percentage change in EPS on Percentage change in EBIT.

Ans: (b)

9. From the following information, calculate combined leverage:

Sales	₹ 20,00,000
Variable Cost	40%
Fixed Cost	₹ 10,00,000
Borrowings	₹ 10,00,000 @ 8% p.a.

- (a) 10 times
- (b) 6 times
- (c) 1.667 times
- (d) 0.10 times

Ans: (a)

10. Operating leverage is a function of which of the following factors?

- (a) Amount of variable cost.
- (b) Variable contribution margin.
- (c) Volume of purchases.
- (d) Amount of semi-variable cost.

Ans: (b)

11. Financial leverage may be defined as:

- (a) Use of funds with a product cost in order to increase earnings per share.
- (b) Use of funds with a contribution cost in order to increase earnings before interest and

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taxes.

- (c) Use of funds with a fixed cost in order to increase earnings per share.
- (d) Use of funds with a fixed cost in order to increase earnings before interest and taxes.

Ans: (c)

12. If Margin of Safety is 0.25 and there is 8% increase in output, then EBIT will be:

- (a) Decrease by 2%
- (b) Increase by 32%
- (c) Increase by 2%
- (d) Decrease by 32%

Ans: (b)

13. If degree of financial leverage is 3 and there is 15% increase in Earning per share (EPS), then EBIT will be:

- (a) Decrease by 15%
- (b) Increase by 45%
- (c) Decrease by 45%
- (d) Increase by 5%

Ans: (d)

14. When EBIT is much higher than Financial break-even point, then degree of financial leverage will be slightly:

- (a) Less than 1
- (b) Equals to 1
- (c) More than 1
- (d) Equals to 0

Ans: (c)

15. Firm with high operating leverage will have:

- (a) Higher breakeven point
- (b) Lower business risk
- (c) Higher margin of safety
- (d) All of above

Ans: (a)

16. When sales are at breakeven point, the degree of operating leverage will be:

- (a) Zero
- (b) Infinite
- (c) One
- (d) None of above

Ans: (b)

17. If degree of combined leverage is 3 and margin of safety is 0.50, then degree of financial leverage is:

- (a) 6.00
- (b) 3.00

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(c) 0.50

(d) 1.50

Ans: (d)

Theoretical Questions & Answers

Question 1

DIFFERENTIATE between Business risk and Financial risk.

Or

Operating risk is associated with cost structure, whereas financial risk is associated with capital structure of a business concern.” Critically EXAMINE this statement.

Answer 1

Objective of financial management is to **maximize wealth**. Here, wealth means market value. Value is directly related to performance of company and inversely related to expectation of investors. In turn, expectation of investor is dependent on risk of the company. Therefore, to maximize value, company should try to manage its risk. This risk may be business risk, financial risk or both as defined below:

Business Risk: It refers to the risk associated with the firm's operations. It is the uncertainty about the future operating income (EBIT) i.e., how well can the operating income be predicted?

Financial Risk: It refers to the additional risk placed on the firm's shareholders because of use of debt i.e., the additional risk, a shareholder bears when a company uses debt in addition to equity financing. Companies that issue more debt instruments would have higher financial risk than companies financed mostly or entirely by equity.

Question 2

EXPLAIN the concept of “Double edged sword” in Financial leverage analysis?

Answer 2

When the cost of ‘fixed cost fund’ is less than the return on investment, financial leverage will help to increase return on equity and EPS. The firm will also benefit from the saving of tax on interest on debts etc. However, when cost of debt will be more than the return it will affect return of equity and EPS unfavourably and as a result firm can be under financial distress. Therefore, financial leverage is also known as “**double edged sword**”.

Effect on EPS and ROE:

When, $ROI > \text{Interest}$ – Favourable – Advantage When, $ROI < \text{Interest}$ – Unfavourable – Disadvantage

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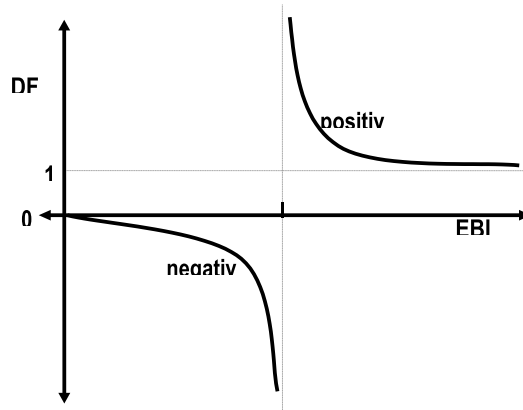
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When, ROI = Interest – Neutral – Neither advantage nor disadvantage.



Note: DFL can never be between zero and one. It can be zero or less or it can be one or more.

*Financial BEP is the level of EBIT at which earning per share is zero. If a company has not issued preference shares, then Financial BEP is simply equal to amount of Interest.

When EBIT is much higher than Financial BEP, DFL will be slightly more than one. With decrease in EBIT, DFL will increase. At Financial BEP, DFL will be infinite. When EBIT is slightly less than Financial BEP, DFL will be negative infinite. With further reduction in EBIT, DFL will move towards zero. At zero EBIT, DFL will also be zero.

Practical Questions & Answers

Question 1

From the following information extracted from the books of accounts of Imax Ltd., CALCULATE percentage change in earnings per share, if sales increase by 10% and Fixed Operating cost is ₹ 1,57,500.

Particulars	Amount in (₹)
EBIT (Earnings before Interest and Tax)	31,50,000
Earnings before Tax (EBT)	14,00,000

Answer 1

Operating Leverage (OL)

$$= \frac{\text{Contribution}}{\text{EBIT}} = \frac{\text{EBIT} + \text{Fixed Cost}}{\text{EBIT}} = \frac{₹ 31,50,000 + ₹ 1,57,500}{₹ 31,50,000} = 1.05$$

Financial Leverage (FL)

$$= \frac{\text{EBIT}}{\text{EBT}} = \frac{₹ 31,50,000}{₹ 14,00,000} = 2.25$$

Combined Leverage (CL)

$$= 1.05 \times 2.25 = 2.3625$$

Percentage Change in Earnings per share

$$\text{DCL} = \frac{\% \text{ change in EPS}}{\% \text{ change in Sales}} = 2.3625 = \frac{\% \text{ change in EPS}}{10\%}$$

$$\therefore \% \text{ change in EPS} = 23.625\%$$

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Hence, if sales increases by 10%, EPS will be increased by 23.625%.

Question 2

Consider the following information for Mega Ltd.:

Production level	2,500 units
Contribution per unit	₹ 150
Operating leverage	6
Combined leverage	24
Tax rate	30%

Required:

COMPUTE its earnings after tax.

Answer 2

Workings:

1. Operating Leverage

$$= \frac{\text{Contribution}}{\text{EBIT}} = \frac{\text{₹ } 150 \times 2,500}{\text{₹ } 3,75,000} = \frac{\text{₹ } 3,75,000}{\text{₹ } 3,75,000} = 6$$

$$\therefore \text{EBIT} = \frac{\text{₹ } 3,75,000}{6} = \text{₹ } 62,500$$

2. Operating Leverage (OL) × Financial Leverage (FL) = Combined Leverage (CL)

$$6 \times \text{Financial Leverage} = 24$$

$$\therefore \text{Financial Leverage} = 4$$

$$\text{Also, Financial Leverage} = \frac{\text{EBIT}}{\text{EBT}} = 4$$

$$\therefore \text{EBT} = \frac{\text{EBIT}}{4} = \frac{62,500}{4} = \text{₹ } 15,625$$

Computation of Earnings after tax

$$\text{Earnings after Tax (EAT)} = \text{EBT} (1 - t)$$

$$= \text{₹ } 15,625 (1 - 0.30) = \text{₹ } 15,625 \times 0.70$$

$$\therefore \text{Earnings after Tax (EAT)} = \text{₹ } 10,938$$

Question 3

From the following information, prepare Income Statement of Company A & B:

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%

Answer 3

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

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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 – ₹ 6,000	=	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
Contribution	=	₹ 20,000

Company B

Operating Leverage	=	1/Margin of Safety
	=	1/0.25= 4
Operating Leverage	=	Contribution/EBIT
4	=	Contribution/₹ 3,000
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

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Question 4

The capital structure of PS Ltd. at the end of the current Financial Year consisted as follows:

Particulars	Amount in (₹)
Equity share capital (face value ₹ 100 each)	10,00,000
10% debentures (₹ 100 each)	10,00,000

During the year, 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:

- The degree of financial leverage at 1,20,000 units and 1,00,000 units.
- The degree of operating leverage at 1,20,000 units and 1,00,000 units.
- The percentage change in EPS.

Answer 4

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
Debt 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 = $\frac{EBIT}{EBT}$	$= \frac{₹ 2,80,000}{₹ 1,80,000} = 1.56$	$\frac{Rs. 2,00,000}{Rs. 1,00,000} = 2$
(ii) Operating leverage = $\frac{Contribution}{EBIT}$	$\frac{Rs. 4,80,000}{Rs. 2,80,000} = 1.71$	$\frac{Rs. 4,00,000}{Rs. 2,00,000} = 2$
(iii) Earnings per share (EPS) = $\frac{PAT}{No. of shares}$	$\frac{Rs. 1,26,000}{Rs. 10,000} = ₹ 12.6$	$\frac{Rs. 70,000}{Rs. 10,000} = ₹ 7$
Decrease in EPS	$= ₹ 12.6 - ₹ 7 = ₹ 5.6$ $\% \text{ decrease in EPS} = \frac{5.6}{12.6} \times 100$ $= 44.44\%$	

Question 5

The Sale revenue of TM excellence 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.

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Answer 5
(i) Calculation of Fixed Cost

$$DOL = \frac{\text{Contribution}}{\text{Contribution} - \text{fixed cost}} = \text{or } 2.5 = \frac{\text{Rs. } 10,00,000}{\text{EBIT}} \text{ or EBIT} = ₹ 4,00,000$$

$$\text{EBIT} = \text{Contribution} - \text{Fixed Cost}$$

$$₹ 4,00,000 = ₹ 10,00,000 - \text{Fixed Cost}$$

$$\text{Fixed Cost} = ₹ 10,00,000 - ₹ 4,00,000 = ₹ 6,00,000$$

(ii) Calculation of Degree of Combined Leverage (DCL)

Question says that 25% change in sales will wipe out EPS. Here, wipe out means it will reduce EPS by 100%.

$$DCI = \frac{\text{Percentage change in EPS}}{\text{Percentage change in Sales}} = \frac{100\%}{25\%} = 4$$

(iii) Calculation of Degree of Financial Leverage (DFL)

$$DCL = DOL \times DFL$$

$$4 = 2.5 \times DFL$$

$$\text{So, DFL} = 1.6$$

(iv) Calculation of Interest and amount of Debt

$$DFL = \frac{\text{EBIT}}{\text{EBIT} - \text{Int}} \text{ or } 1.6 = \frac{₹ 4,00,000}{₹ 4,00,000 - \text{Int}}$$

$$\text{Or, Int} = ₹ 1,50,000$$

$$\text{Debt} \times \text{Interest rate} = \text{Amount of Interest}$$

$$\text{Debt} \times 16\% = ₹ 1,50,000$$

$$\text{Debt} = ₹ 9,37,500$$

(v) Calculation of Earnings per share (EPS)

$$\text{EPS} = \frac{(\text{EBIT} - \text{Int})(1 - t)}{N} = \frac{(₹ 4,00,000 - ₹ 1,50,000) 0.5}{1,00,000} = ₹ 1.25$$

Question 6

Betatronics Ltd. has the following balance sheet and income statement information:

Balance Sheet

Liabilities	(₹)	Assets	(₹)
Equity capital (₹ 10 per share)	8,00,000	Net fixed assets	10,00,000
10% Debt	6,00,000	Current assets	9,00,000
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
Earnings before tax	1,60,000
Less: Taxes	56,000
Net Earnings (EAT)	1,04,000

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- (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 percent and (ii) decrease by 20 percent, COMPUTE the earnings per share at the new sales level?

Answer 6

- (a) Calculation of Degree of Operating (DOL), Financial (DFL) and Combined leverages (DCL).

$$DOL = \frac{\text{₹ } 3,40,000 - \text{₹ } 60,000}{\text{₹ } 2,20,000} = 1.27$$

$$DFL = \frac{\text{₹ } 2,20,000}{\text{₹ } 1,60,000} = 1.38$$

$$DCL = DOL \times DFL = 1.27 \times 1.38 = 1.75$$

(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%)

Question 7

A company had the following Balance Sheet as on 31st March, 2021:

Liabilities	(₹) in crores	Assets	(₹) in crores
Equity Share Capital (50 lakhs shares of ₹ 10 each)	5	Fixed Assets (Net)	12.5
Reserves and Surplus	1	Current Assets	7.5
15% Debentures	10		
Current Liabilities	4		
	20		20

The additional information given is as under:

Fixed cost per annum (excluding interest)	₹ 4 crores
Variable operating cost ratio	65%
Total assets turnover ratio	2.5
Income Tax rate	30%

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Required:

CALCULATE the following and comment:

- (i) Earnings Per Share
- (ii) Operating Leverage
- (iii) Financial Leverage
- (iv) Combined Leverage

Answer 7

Workings:

Total Assets	=	₹ 20 crores
Total Asset Turnover Ratio	=	2.5
Hence, Total Sales = 20 × 2.5	=	20 × 2.5 = ₹ 50 crores

Computation of Profit after Tax (PAT)

	(₹) in crores
Sales	50.00
Less: Variable Operating Cost @ 65%	32.50
Contribution	17.50
Less: Fixed Cost (other than Interest)	4.00
EBIT	13.50
Less: Interest on Debentures (15% ₹ 10 crores)	1.50
PBT	12.00
Less: Tax @ 30%	3.60
PAT	8.40

(i) Earnings per Share

$$\text{EPS} = \frac{\text{PAT}}{\text{Number of Equity Shares}} = \frac{₹ 8.40 \text{ crores}}{50,00,000} = ₹ 16.80$$

It indicates the amount; the company earns per share. Investors use this as a guide while valuing the share and making investment decisions. It is also an indicator used in comparing firms within an industry or industry segment.

(ii) Operating Leverage

$$\text{Operating Leverage} = \frac{\text{contribution}}{\text{EBIT}} = \frac{₹ 17.50 \text{ crores}}{₹ 13.50 \text{ Crores}} = 1.296$$

It indicates the choice of technology and fixed cost in cost structure. It is level specific. When firm operates beyond operating break-even level, then operating leverage is low. It indicates sensitivity of earnings before interest and tax (EBIT) to change in sales at a particular level.

(iii) Financial Leverage

$$\text{Financial Leverage} = \frac{\text{EBIT}}{\text{PBT}} = \frac{₹ 13.50 \text{ crores}}{₹ 12.00 \text{ crores}} = 1.125$$

The financial leverage is very comfortable since the debt service obligation is small vis-à-vis EBIT.

(iv) Combined Leverage

$$\text{Combined Leverage} = \frac{\text{contribution}}{\text{EBIT}} \times \frac{\text{EBIT}}{\text{PBT}}$$

Or,

$$= \text{Operating Leverage} \times \text{Financial Leverage}$$

$$= 1.296 \times 1.125 = 1.458$$

The combined leverage studies the choice of fixed cost in cost structure and choice of debt in capital structure. It studies how sensitive the change in EPS is vis-à-vis change in sales. The

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leverages, operating, financial and combined are used as measurement of risk.

Question 8

CALCULATE the operating leverage, financial leverage and combined leverage from the following data under Situation I and II and Financial Plan A and B:

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
	20,000	20,000

Answer 8

(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)

	A (₹)	B (₹)
Situation I		
EBIT	30,000	30,000
Less: Interest on debt	2,000	1,000
EBT	28,000	29,000
Financial Leverage (FL) = $\frac{EBIT}{EBT}$	$= \frac{₹ 30,000}{₹ 28,000} = 1.07$	$= \frac{₹ 30,000}{₹ 29,000} = 1.034$

	A (₹)	B (₹)
Situation-II		
EBIT	25,000	25,000
Less: Interest on debt	2,000	1,000
EBT	23,000	24,000

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Financial Leverage (FL) = $\frac{EBIT}{EBT}$	$= \frac{₹ 25,000}{₹ 23,000} = 1.09$	$= \frac{₹ 25,000}{₹ 24,000} = 1.04$

(iii) Combined Leverage (CL)

	A	B
Situation-I		
CL = FL x OL	$1.5 \times 1.07 = 1.61$	$1.5 \times 1.034 = 1.55$
Situation-II		
CL = FL x OL	$1.8 \times 1.09 = 1.96$	$1.8 \times 1.04 = 1.872$

Question 9

The following particulars relating to Navya Ltd. for the year ended 31st March is given:

Output	1,00,000 units at normal capacity
Selling price per unit	Rs.40
Variable cost per unit	Rs 20
Fixed cost	Rs 10,00,000

The capital structure of the company as on 31st March is as follows:

Particulars	Rs
Equity share capital (1,00,000 shares of ₹ 10 each)	10,00,000
Reserves and surplus	5,00,000
7% debentures	10,00,000
Current liabilities	5,00,000
Total	30,00,000

Navya 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 increased 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 alternative schemes for financing the proposed expansion programme are planned:

- Entirely by equity shares of ₹ 10 each at par.
- ₹ 5 lakh by issue of equity shares of ₹ 10 each and the balance by issue of 6% debentures of ₹ 100 each at par.
- Entirely by 6% debentures of ₹ 100 each at par.

FIND out which of the above-mentioned alternatives would you recommend for Navya Ltd. with reference to the risk and return involved, assuming a corporate tax of 40%.

Answer 9

Statement showing Profitability of Alternative Schemes for Financing

Particulars	Existing	(₹ in '00,000)		
		Alternative Schemes		
		(i)	(ii)	(iii)

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Equity Share capital (existing)	10	10	10	10
New issues	-	10	5	-
	10	20	15	10
7% debentures	10	10	10	10
6% debentures	-	-	5	10
	20	30	30	30
Debenture interest (7%)	0.7	0.7	0.7	0.7
Debenture interest (6%)	-	-	0.3	0.6
	0.7	0.7	1.0	1.3
Output (units in lakh)	1	1.5	1.5	1.5
Contribution per. unit (Rs) (Selling price - Variable Cost)	20	22	22	22
Contribution (Rs 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) (Rs)	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 Navya 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.

Question 10

The following details of a company for the year ended 31st March are given below:

Operating leverage	2:1
Combined leverage	2.5:1

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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:

- Financial Leverage
- P/V ratio and Earning per Share (EPS)
- If the company belongs to an industry, whose assets turnover is 1.5, does it have a high or low assets turnover?
- At what level of sales, the Earning before Tax (EBT) of the company will be equal to zero?

Answer 10

(i) Financial leverage

Combined Leverage	=	Operating Leverage (OL) × Financial Leverage (FL)
2.5	=	2 × FL
Or, FL	=	1.25
Financial Leverage	=	1.25

(ii) P/V Ratio and Earning per share (EPS)

Operating leverage	=	$\frac{\text{Contribution (c)}}{\text{Contribution} - \text{Fixed Cost (FC)}}$
2	=	$\frac{C}{C - 3,40,000}$
Or, C	=	2 (C - 3,40,000)
Or, C	=	2C - 6,80,000
Or, Contribution	=	₹ 6,80,000

$$\text{Now, P/V ratio} = \frac{\text{contribution (c)}}{\text{sales(s)}} \times 100 = \frac{6,80,000}{50,00,000} \times 100 = 13.6\%$$

Therefore, P/V Ratio = 13.6%

EBT = Sales – Variable Cost – Fixed Cost – Interest

$$= ₹ 50,00,000 - ₹ 50,00,000 (1 - 0.136) - ₹ 3,40,000 - (8\% \times ₹ 30,25,000)$$

$$= ₹ 50,00,000 - ₹ 43,20,000 - ₹ 3,40,000 - ₹ 2,42,000 = ₹ 98,000$$

$$\text{PAT} = \text{EBT}(1 - T) = ₹ 98,000(1 - 0.3) = ₹ 68,600$$

$$\text{EPS} = \frac{\text{Profit after tax}}{\text{No. of equity Shares}}$$

$$\text{EPS} = \frac{₹ 68,600}{3,40,000 \text{ shares}} = ₹ 0.202$$

(iii) Assets turnover

$$\begin{aligned} \text{Assets turnover} &= \frac{\text{sales}}{\text{Total Assets*}} \\ &= \frac{₹ 50,00,000}{₹ 34,00,000 + ₹ 30,25,000} = 0.78 \end{aligned}$$

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.

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Alternatively

$$\begin{aligned}
 \text{Required sales when EBT is zero} &= \frac{\text{Fixed Cost} + \text{Interest} + \text{desired Profit}}{\text{PV ratio}} \\
 &= \frac{\text{₹ 3,40,000} + \text{₹ 2,42,000} + \text{zero}}{13.60\%} \\
 &= \frac{\text{Rs.5,82,000}}{13.60\%} \\
 &= \text{₹ 42,79,412}
 \end{aligned}$$

[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]

Question 11

You are given the following information of 5 firms of the same industry:

Name of the Firm	Change in Revenue	Change in Operating Income	Change in Earning per share
M	28%	26%	32%
N	27%	34%	26%
P	25%	38%	23%
Q	23%	43%	27%
R	25%	40%	28%

You are required to CALCULATE for all firms:

- Degree of operating leverage and
- Degree of combined leverage.

Answer 11

Calculation of Degree of Operating leverage and Degree of Combined leverage

Firm	Degree of Operating Leverage (DOL) = $\frac{\% \text{ change in Operating Income}}{\% \text{ change in Revenue}}$	Degree of Combined Leverage (DCL) = $\frac{\% \text{ change in EPS}}{\% \text{ change in Revenue}}$
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	$\frac{40\%}{25\%} = 1.60$	$\frac{28\%}{25\%} = 1.120$

Question 12

The following data have been extracted from the books of LM Ltd:

Sales	₹ 100 lakhs
Interest Payable per annum	₹ 10 lakhs
Operating leverage	1.2
Combined leverage	2.16

You are required to calculate:

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- (i) The financial leverage,
- (ii) Fixed cost and
- (iii) P/V ratio

Answer 12
(i) Calculation of Financial Leverage:

Combined Leverage (CL) = Operating Leverage (OL) × Financial Leverage (FL)

$$2.16 = 1.2 \times FL$$

$$FL = 1.8$$

(ii) Calculation of Fixed cost:

Financial Leverage	=	$\frac{EBIT}{EBT \text{ i.e. } EBIT - \text{Interest}}$
1.8	=	$\frac{EBIT}{EBIT - 10,00,000}$
1.8 (EBIT - 10,00,000)	=	EBIT
1.8 EBIT - 18,00,000	=	EBIT
$EBIT = \frac{18,00,000}{0.8}$	=	₹ 22,50,000
Further, Operating Leverage	=	$\frac{\text{Contribution}}{EBIT}$
1.2	=	$\frac{\text{Contribution}}{₹ 22,50,000}$
Contribution	=	₹ 27,00,000
Fixed Cost	=	Contribution - EBIT
	=	₹ 27,00,000 - ₹ 22,50,000
Fixed cost	=	₹ 4,50,000

(iii) Calculation of P/V ratio:

$$P/V \text{ Ratio} = \frac{\text{Contribution (c)}}{\text{Sales (S)}} \times 100 = \frac{27,00,000}{100,00,000} \times 100 = 27 \%$$

Case Scenarios

1. BEST Limited, a prominent company in semi-conductors' industry, aims to understand the impact of operating and combined leverage on its financial performance for the year ended 31st March 2024. By examining the provided financial details, the company seeks to make informed decisions regarding its cost structure and financing mix.

BEST Limited is a well-established firm known for its products in the market. With a focus on innovation and customer satisfaction, the company has achieved significant growth and success over the years.

Financial Analysis: For the financial year ending 31st March 2024, BEST Limited provides the following financial details:

- ◆ Fixed Cost (Excluding interest): ₹2,040 Lakhs
- ◆ Sales: ₹30,000 Lakhs
- ◆ 12% Debentures of ₹100 each: ₹21,250 Lakhs
- ◆ Equity Share Capital of ₹10 each: ₹17,000 Lakhs

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◆ **Income tax rate: 30%**

Mr. Pallav Kumar, an Executive Director from engineering background discussed following analysis with CA Nagarjuna, Additional Director - Finance of the company:

1. **Operating Leverage:** Operating leverage, which is currently at 1.4, measures the impact of fixed costs on the company's operating income.
2. **Combined Leverage:** Combined leverage considers both operating and financial leverage. It is calculated as the product of operating leverage and financial leverage. And company's combined leverage is 2.8.

CA Nagarjuna explained to Mr. Pallav that the Finance department is already analysing the various leverages like Operating Leverage, Financial Leverage and Combined Leverage. Due to these, BEST Limited gains insights into its cost structure and financial risk. These information enables the company to make strategic decisions regarding its operating expenses, financing options, and overall business strategy. Continuous monitoring and evaluation of leverage ratios will be essential for BEST Limited to maintain financial stability and drive sustainable growth in the competitive market landscape.

Calculate the ratios to understand the financial health of BEST Ltd and CA Nagarjuna can submit his report to Mr. Pallav Kumar.

1. **Calculate the Financial Leverage.**

- (a) 0.5
- (b) 2
- (c) 3.92
- (d) 4

Ans: (b)

Combined Leverage = Operating Leverage (OL) × Financial Leverage (FL)

$$2.8 = 1.4 \times FL$$

$$FL = 2$$

$$\text{Financial Leverage} = 2$$

2. **Calculate the Profit Volume Ratio.**

- (a) 47.60%
- (b) 15.86%
- (c) 23.8%
- (d) 17.43%

Ans: (c)

P/V Ratio

$$\text{P/V Ratio} = \frac{\text{Contribution (C)}}{\text{Sales (S)}} \times 100$$

$$\text{Operating leverage} = \frac{C}{C - \text{Fixed Cost (FC)}}$$

$$1.4 = \frac{C}{C - 2040}$$

$$1.4(C - 2,040) = C$$

$$1.4C - 2,856 = C$$

$$C = \frac{2,856}{0.4}$$

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C = ₹7,140 Lakhs

$$P/V = \frac{₹7,140}{30,000} \times 100 = 23.8\%$$

Therefore, P/V Ratio = **23.8%**

3. Calculate the Earnings Per Share.

- (a) ₹ 1.5
- (b) ₹ 1.05
- (c) ₹ 4.2
- (d) ₹ 2.1

Ans: (b)

$$EPS = \frac{\text{Profit after tax}}{\text{No. of equity shares}}$$

$$EBT = C - FC - \text{Interest}$$

$$= 7140 - 2,040 - 2,550$$

$$= ₹ 2,550 \text{ Lakhs}$$

$$PAT = EBT - \text{Tax}$$

$$= 2,550 - 765 = ₹ 1,785 \text{ Lakhs}$$

$$EPS = \frac{1,785}{1,700} = 1.05$$

4. Calculate the Asset Turnover ratio of BEST Ltd.

- (a) 1
- (b) 0.5
- (c) 0.784
- (d) 1.41

Ans: (c)

$$\text{Assets Turnover} = \frac{\text{Sales}}{\text{Total Assets}} = \frac{30,000}{38,250} = 0.784$$

$$\text{Total Assets} = \text{Debt} + \text{Equity} = ₹ 21,250 \text{ Lakhs} + ₹ 17,000 \text{ Lakhs} \\ = ₹ 38,250 \text{ Lakhs}$$

5. Calculate the minimum level of Sales which must be attained to at least pay finance cost of BEST Ltd.

- (a) ₹19,286 Lakhs
- (b) ₹8,574 Lakhs
- (c) ₹24,000 Lakhs
- (d) ₹27,000 Lakhs

Ans: (a)

The minimum level of Sales which must be attained to at least pay finance cost of BEST Ltd. EBT zero means 100% reduction in EBT. Since the combined leverage is 2.8, sales will be dropped by $100/2.8 = 35.714\%$. Hence new sales will be;

$$₹30,000 \text{ Lakhs} \times (100 - 35.714) = ₹19,286 \text{ Lakhs.}$$

Therefore, at ₹19,286 Lakhs level of sales, the Earnings before Tax of the company will be equal to zero.

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Chapter 7

Investment Decisions

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ILLUSTRATION

Question 1 (Illustration)

ABC Ltd is evaluating the purchase of a new machinery with a depreciable base of ₹ 1,00,000; expected economic life of 4 years and change in earnings before taxes and depreciation of ₹ 45,000 in year 1, ₹ 30,000 in year 2, ₹ 25,000 in year 3 and ₹ 35,000 in year 4. Assume straight-line depreciation and a 20% tax rate. You are required to COMPUTE relevant cash flows.

Answer 1

Depreciation = ₹ 1,00,000 ÷ 4 = ₹ 25,000

	Amount in (₹)			
	Years			
	1	2	3	4
Earnings before tax and depreciation	45,000	30,000	25,000	35,000
Less: Depreciation	(25,000)	(25,000)	(25,000)	(25,000)
Earnings before tax	20,000	5,000	0	10,000
Less: Tax @20%	(4,000)	(1,000)	0	(2,000)
Earnings after tax	16,000	4,000	0	8,000
Add: Depreciation	25,000	25,000	25,000	25,000
Net Cash flow	41,000	29,000	25,000	33,000

Question 2 (Illustration)

A project requiring an investment of ₹ 10,00,000 and it yields profit after tax and depreciation which is as follows:

Years	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.

Answer 2

In this case the rate of return can be calculated as follows:

$$\frac{\text{Total Profit} \div \text{No. of years}}{\text{Average investment} / \text{Initial Investment}} \times 100$$

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- (a) If Initial Investment is considered then,

$$= \frac{₹ 4,60,000 \div 5 \text{ years}}{₹ 10,00,000} \times 100 = \frac{₹ 92,000}{₹ 10,00,000} \times 100 = 9.2\%$$

This rate is compared with the rate expected on other projects, had the same funds been invested alternatively in those projects. Sometimes, the management compares this rate with the minimum rate (called-cut off rate). For example, management may decide that they will not undertake any project which has an average annual yield after tax less than 20%. Any capital expenditure proposal which has an average annual yield of less than 20%, will be automatically rejected.

- (b) If Average investment is considered, then,

$$= \frac{₹ 92,000}{\text{Average investment}} \times 100 = \frac{₹ 92,000}{₹ 5,40,000} \times 100 = 17.04\%$$

Where,

Average Investment = $\frac{1}{2}$ (Initial investment – Salvage value) + Salvage value

= $\frac{1}{2}$ (₹ 10,00,000 – ₹ 80,000) + ₹ 80,000

= ₹ 4,60,000 + ₹ 80,000 = ₹ 5,40,000

Question 3 (Illustration)

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%.

[PVIF @ 10% for three years are 0.909, 0.826 and 0.751]

Answer 3

Year	Net Cash Flows (₹)	PVIF @ 10%	Discounted Cash Flows (₹)
0	(1,00,000)	1.000	(1,00,000)
1	55,000	0.909	49,995
2	80,000	0.826	66,080
3	15,000	0.751	11,265
Net Present Value			27,340

Recommendation: Since the net present value of the project is positive, the company should accept the project.

Question 4 (Illustration)

ABC Ltd. is a small company that is currently analyzing 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 ₹ 500,000 which ABC 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 ABC Ltd is 12%. You are required to COMPUTE the NPV of the different projects.

	Project A (₹)	Project B (₹)	Project C (₹)	Project D (₹)
Initial Investment	200,000	190,000	250,000	210,000
Project Cash Inflows:				
Year 1	50,000	40,000	75,000	75,000

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2	50,000	50,000	75,000	75,000
3	50,000	70,000	60,000	60,000
4	50,000	75,000	80,000	40,000
5	50,000	75,000	100,000	20,000

Answer 4

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)

Question 5 (Illustration)

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.

Answer 5

The desirability factors for the three projects would be as follows:

- $\frac{\text{₹ } 6,50,000}{\text{₹ } 5,50,000} = 1.18$
- $\frac{\text{₹ } 95,000}{\text{₹ } 75,000} = 1.27$
- $\frac{\text{₹ } 1,00,30,000}{\text{₹ } 1,00,20,000} = 1.001$

It can be seen that in absolute terms, project 3 gives the highest cash inflows yet its desirability factor is low. This is because the outflow is also very high.

Question 6 (Illustration)

A 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.

Answer 6

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 12% and 13% respectively.

NPV @ 12% and 13% is:

$$\text{NPV}_{12\%} = (10,00,000) + 4.111 \times 2,50,000 = +27,750$$

$$\text{NPV}_{13\%} = (10,00,000) + 3.998 \times 2,50,000 = -500$$

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The internal rate of return is, thus, more than 12% but less than 13%. The exact rate can be obtained by interpolation:

$$\begin{aligned} \text{IRR} &= 12\% + \frac{27,750}{27,750 - (-500)} \times (13\% - 12\%) \\ &= 12\% + \frac{27,750}{28,250} = 12.978\% \\ \text{IRR} &= 12.978\% \end{aligned}$$

Question 7 (Illustration)

CALCULATE the internal rate of return of an investment of ₹ 1,36,000 which yields the following cash inflows:

Year	Cash Inflows (₹)
1	30,000
2	40,000
3	60,000
4	30,000
5	20,000

Answer 7

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
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:

$$\begin{aligned} \text{IRR} &= \text{LR} + \frac{\text{NPV at LR}}{\text{NPV at LR} - \text{NPV at HR}} \times (\text{HR} - \text{LR}) \\ &= 10 + \frac{₹ 2,280}{₹ 2,280 - (-4,190)} \times (12 - 10) \end{aligned}$$

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$$= 10 + \frac{₹ 2,280}{₹ 6,470} \times (12-10) = 10 + 0.704$$

$$IRR = 10.704\%$$

Question 8 (Illustration)

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:

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.

Answer 8
Computation of Cash inflow per annum

Particulars	₹
Net operating income per annum	68,000
Less: Tax @ 45%	(30,600)
Profit after tax	37,400
Add: Depreciation (₹ 3,60,000 / 5 years)	72,000
Cash inflow	1,09,400

The IRR of the investment can be found as follows:

$$NPV = - ₹ 3,60,000 + ₹ 1,09,400 (PVA_{5, r}) = 0$$

$$\text{or } PVA_{5, r} (\text{Cumulative factor}) = \frac{₹ 3,60,000}{₹ 1,09,400} = 3.29$$

As 3.29 falls between Discounted rate 15 & 16, the computation is as below :

Computation of Internal Rate of Return

	Discounting Rate	
	15%	16%
Cumulative factor	3.35	3.27
PV of Inflows (₹)	3,66,490 (₹ 1,09,400 × 3.35)	3,57,738 (₹ 1,09,400 × 3.27)
Less: Initial outlay (₹)	3,60,000	3,60,000
NPV (₹)	6,490	(2,262)

$$IRR = 15 + \left[\frac{6,490}{6,490 + 2,262} \right] \times (16 - 15) = 15 + 0.74 = 15.74\%.$$

Question 9 (Illustration)

An investment of ₹ 1,36,000 yields the following cash inflows (profits before depreciation but after tax). DETERMINE MIRR considering 8% as cost of capital.

Year	(₹)
1	30,000
2	40,000
3	60,000
4	30,000
5	20,000

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	1,80,000

Answer 9

Year 0 – Cash outflow = ₹ 1,36,000

The MIRR is calculated on the basis of investing the inflows at the cost of capital. The table below shows the value of the inflows, if they are immediately reinvested at 8%.

Year	Cash flow	@ 8% reinvestment rate factor	(₹)
1	30,000	1.3605*	40,815
2	40,000	1.2597	50,388
3	60,000	1.1664	69,984
4	30,000	1.0800	32,400
5	20,000	1.0000	20,000
			2,13,587

* Investment of ₹ 1 at the end of the year 1 is reinvested for 4 years (at the end of 5 years) shall become $1(1.08)^4 = 1.3605$. Similarly, reinvestment rate factor for remaining years shall be calculated. Please note that the investment at the end of 5th year shall be reinvested for zero year, hence, reinvestment rate factor shall be 1.

The total cash outflow in year 0 (₹ 1,36,000) is compared with the possible inflow at year 5 and the resulting figure = $\frac{1,36,000}{2,13,587} = 0.6367$ is the discount factor in year 2,13,587. By looking at the year 5 row in the present value tables, you will see that this gives a return of 9%. This means that the ₹ 2,13,587 received in year 5 is equivalent to ₹ 1,36,000 in year 0 if the discount rate is 9%. Alternatively, we can compute MIRR as follows:

$$\text{Total return} = \frac{2,13,587}{1,36,000} = 1.5705$$

$$\text{MIRR} = \sqrt[5]{1.5705 - 1} = 9\%$$

Question 10 (Illustration)

Suppose there are two Project A and Project B are under consideration. The cash flows associated with these projects are as follows:

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.

Answer 10

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

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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.

Question 11 (Illustration)

Suppose ABC Ltd. is considering two Project X and Project Y for investment. The cash flows associated with these projects are as follows:

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

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Assuming Cost of Capital be 10%, IDENTIFY which project should be accepted as per NPV Method and IRR Method.

Answer 11

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
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:

$$\text{IRR}_X = 20\% + \frac{14,950}{14,950 - (-400)} \times (25\% - 20\%)$$

$$= 20\% + \left[\frac{14,950}{15,350} \times 5\% \right] = 24.87\%$$

$$\text{IRR}_Y = 15\% + \frac{16,500}{16,500 - (-15,250)} \times (20\% - 15\%)$$

$$= 15\% + \left[\frac{16,500}{31,750} \times 5\% \right] = 17.60\%$$

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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.

Question 12 (Illustration)

Suppose MVA Ltd. is considering two Project A and Project B for investment. The cash flows associated with these projects are as follows:

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 equal to 12%, ANALYSE which project should be accepted as per NPV Method and IRR Method?

Answer 12
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

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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.

Question 13 (Illustration)

Shiva Limited is planning its capital investment programme 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:

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 returns from a package of projects within the capital spending limit. The projects are independent of each other and are divisible (i.e., part- project is possible).

Answer 13

Computation of NPVs per ₹ 1 of Investment and Ranking of the Projects

Project	Investment ₹ '000	NPV @ 15% ₹ '000	NPV per ₹ 1 invested	Ranking
A	(50)	15.4	0.31	5
B	(40)	18.7	0.47	2
C	(25)	10.1	0.40	3
D	(30)	11.2	0.37	4
E	(35)	19.3	0.55	1

Building up of a Programme of Projects based on their Rankings

Project	Investment ₹ 000	NPV @ 15% ₹ 000
E	(35)	19.3
B	(40)	18.7
C	(25)	10.1
D	(20)	7.5

(2/3 of project total)

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	120	55.6

Thus, Project A should be rejected and only two-third of Project D be undertaken. If the projects are not divisible then other combinations can be examined as:

	Investment ₹ 000	NPV @ 15% ₹ 000
E + B + C	100	48.1
E + B + D	105	49.2

In this case E + B + D would be preferable as it provides a higher NPV despite D ranking lower than C.

Question 14 (Illustration)

R Pvt. Ltd. is considering modernizing its production facilities and it has two proposals under consideration. The expected cash flows associated with these projects and their NPV as per discounting rate of 12% and IRR is as follows:

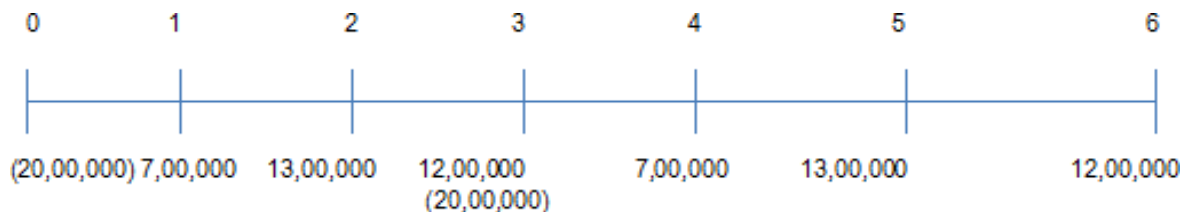
Year	Cash Flow	
	Project A (₹)	Project B (₹)
0	(40,00,000)	(20,00,000)
1	8,00,000	7,00,000
2	14,00,000	13,00,000
3	13,00,000	12,00,000
4	12,00,000	0
5	11,00,000	0
6	10,00,000	0
NPV @12%	6,49,094	5,15,488
IRR	17.47%	25.20%

IDENTIFY which project should R Pvt. Ltd. accept?

Answer 14

Although from NPV point of view, Project A appears to be better but from IRR point of view, Project B appears to be better. Since, both projects have unequal lives, selection on the basis of these two methods shall not be proper. In such situation, we shall use any of the following method:

- (i) **Replacement Chain (Common Life) Method:** Since the life of the Project A is 6 years and Project B is 3 years, to equalize lives, we can have second opportunity of investing in project B after one time investing. The position of cash flows in such situation shall be as follows:



NPV of extended life of 6 years of Project B shall be ₹ 8,82,403 and IRR of 25.20%. Accordingly, with extended life NPV of Project B it appears to be more attractive.

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(ii) **Equivalent Annualized Criterion:** The method discussed above has one drawback when we have to compare two projects with one has a life of 3 years and other has 5 years. In such case, the above method shall require analysis of a period of 15 years i.e. common multiple of these two values. The simple solution to this problem is use of Equivalent Annualized Criterion involving following steps:

- Compute NPV using the WACC or discounting rate.
- Compute Present Value Annuity Factor (PVA) of discounting factor used above for the period of each project.
- Divide NPV computed under step (a) by PVA as computed under step (b) and compare the values.

Accordingly, for proposal under consideration:

	Project A	Project B
NPV @ 12%	₹ 6,49,094	₹ 5,15,488
PVA @ 12%	4.112	2.402
Equivalent Annualized Criterion	₹ 1,57,854	₹ 2,14,608

Thus, Project B should be selected.

Question 15 (Illustration)

Alpha Company is considering the following investment projects:

Projects	Cash Flows (₹)			
	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

- 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 per cent.
- Assuming the projects are independent, which one should be accepted? If the projects are mutually exclusive, IDENTIFY which project is the best?

Answer 15

(a)

(i) **Payback Period**

Project A: ₹ 10,000/₹ 10,000 = 1 year

Project B: ₹ 10,000/₹ 7,500 = $1\frac{1}{3}$ years

Project C: 2 years + $\frac{₹ 10,000 - ₹ 6,000}{₹ 12,000} = 2\frac{1}{3}$ years

Project D: 1 year

(ii) **ARR (Figures in ₹)**

Project A: = $\frac{(10,000 - 10,000)1/2}{(10,000)1/2} = 0$

$$\text{Project B:} = \frac{(15,000-10,000)1/2}{(10,000)1/2} = \frac{2,500}{5,000} = 50\%$$

$$\text{Project C:} = \frac{(18,000-10,000)1/3}{(10,000)1/2} = \frac{2,667}{5,000} = 53\%$$

$$\text{Project D:} = \frac{(16,000-10,000)1/3}{(10,000)1/2} = \frac{2,000}{5,000} = 40\%$$

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

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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 (A 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 C 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.

Question 16 (Illustration)

The expected cash flows of three projects are given below. The cost of capital is 10 per cent.

- (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.

(₹ 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	
6	900	1,200	
7	900	1,300	
8	900	1,400	
9	900	1,500	
10	900	1,600	

Answer 16

(a) Payback Period Method:

$$A = 5 + (500/900) = 5.56 \text{ years}$$

$$B = 5 + (500/1,200) = 5.42 \text{ years}$$

$$C = 2 + (1,000/2,000) = 2.5 \text{ years}$$

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

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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

IRR_A = 12 + $\left[\frac{85}{85+116.60} \right] \times (13-12) = 12 + 0.42 = 12.42\%$.

Project B

IRR_B

Year	Cashflow (₹)	10% discount factor	Present value (₹)	16% discount factor	Present value (₹)
0	(5,000)	1.000	(5,000)	1.000	(5,000)
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

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Year	Cashflow (₹)	15% discount factor	Presentvalue (₹)	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: $IRR_C = 15\% + \frac{140}{(140+136)} \times (18\% - 15\%) = 15\% + 1.52\% = 16.52\%$

Accounting Rate of Return:

ARR_A : Average capital employed = $\frac{5,000}{2} = ₹ 2,500$

Average accounting profit = $\frac{(9,000-5,000)}{10} = ₹ 400$

$ARR_A = \frac{(400 \times 100)}{2,500} = 16$ per cent

ARR_B Average accounting profit = $\frac{(11,500-5,000)}{10} = ₹ 650$

$ARR_B = \frac{(650 \times 100)}{2,500} = 26$ per cent

ARR_C Average accounting profit = $\frac{(7,000-5,000)}{4} = ₹ 500$

$ARR_C = \frac{(500 \times 100)}{2,500} = 22$ per cent

(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

Question 17 (Illustration)

X Limited is considering purchasing of new plant worth ₹ 80,00,000. The expected netcash flows after taxes and before depreciation are as follows:

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

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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:

- Pay-back period
- Net present value at 10 discount factor
- Profitability index at 10 discount factor
- 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

Answer 17

(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.,
 $5 \text{ years} + \frac{\text{₹ } 10,00,000}{\text{₹ } 16,00,000} = 5.625 \text{ years or } 5 \text{ years } 7.5 \text{ months}$

(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

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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:

$$\text{Profitability Index} = \frac{\text{Present Value of Cash inflows}}{\text{Cost of the investment}}$$

$$= \frac{\text{₹ 97,92,200}}{\text{₹ 80,00,000}} = 1.224$$

(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
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:

$$\text{IRR} = L + \frac{\text{NPV}_L}{\text{NPV}_L - \text{NPV}_H} (H - L)$$

$$= 10\% + \frac{\text{₹ 17,92,200}}{\text{₹ 17,92,200} - (-\text{₹ 1,16,000})} (15\% - 10\%)$$

$$= 10\% + \frac{\text{₹ 17,92,200}}{\text{₹ 19,08,200}} \times 5\% = 14.7\%$$

Question 18 (Illustration)

HMR 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. The machine has begun causing problems with breakdowns and it

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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.

PV factors @ 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

Answer 18

Workings:

1. Calculation of Base for depreciation or Cost of New Machine

Particulars	(₹)
Purchase price of new machine	4,50,000
Less: Sale price of old machine	1,00,000
	3,50,000

2. Calculation of Profit before tax as per books

Particulars	Old machine (₹)	New machine (₹)	Difference (₹)
PBT as per books	3,24,750	3,87,250	62,500
Add: Depreciation as per books	24,000	41,500	17,500
Profit before tax and depreciation (PBTd)	3,48,750	4,28,750	80,000

Calculation of Incremental NPV

Year	PVF @ 10%	PBTd (₹)	Dep. @ 7.5% (₹)	PBT (₹)	Tax @ 30% (₹)	Cash Inflows (₹)	PV of Cash Inflows (₹)
	(1)	(2)	(3)	(4)	(5) = (4) x 0.30	(6) = (4) - (5) + (3)	(7) = (6) x (1)
1	0.909	80,000.00	26,250.00	53,750.00	16,125.00	63,875.00	58,062.38
2	0.826	80,000.00	24,281.25	55,718.75	16,715.63	63,284.38	52,272.89

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3	0.751	80,000.00	22,460.16	57,539.84	17,261.95	62,738.05	47,116.27
4	0.683	80,000.00	20,775.64	59,224.36	17,767.31	62,232.69	42,504.93
5	0.621	80,000.00	19,217.47	60,782.53	18,234.76	61,765.24	38,356.21
6	0.564	80,000.00	17,776.16	62,223.84	18,667.15	61,332.85	34,591.73
7	0.513	80,000.00	16,442.95	63,557.05	19,067.12	60,932.88	31,258.57
8	0.467	80,000.00	15,209.73	64,790.27	19,437.08	60,562.92	28,282.88
9	0.424	80,000.00	14,069.00	65,931.00	19,779.30	60,220.70	25,533.58
10	0.386	80,000.00	13,013.82	66,986.18	20,095.85	59,904.15	23,123.00
							3,81,102.44
Add: PV of Salvage value of new machine (₹ 35,000 × 0.386)							13,510.00
Total PV of incremental cash inflows							3,94,612.44
Less: Cost of new machine							3,50,000.00
Incremental Net Present Value							44,612.44

Analysis: Since the Incremental NPV is positive, the old machine should be replaced.

Test Your Knowledge

Multiple Choice Questions

1. A capital budgeting technique which does not require the computation of cost of capital for decision making purposes is:

- (a) Net Present Value method
- (b) Internal Rate of Return method
- (c) Modified Internal Rate of Return method
- (d) Payback Period method

Ans: (d)

2. If two alternative proposals are such that the acceptance of one shall exclude the possibility of the acceptance of another then such decision making will lead to:

- (a) Mutually exclusive decisions
- (b) Accept reject decisions
- (c) Contingent decisions
- (d) None of the above

Ans: (a)

3. In case a company considers a discounting factor higher than the cost of capital for arriving at present values, the present values of cash inflows will be:

- (a) Less than those computed on the basis of cost of capital
- (b) More than those computed on the basis of cost of capital
- (c) Equal to those computed on the basis of the cost of capital
- (d) None of the above

Ans: (a)

4. If the cut off rate of a project is greater than IRR, we may:

- (a) Accept the proposal

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- (b) Reject the proposal
- (c) Be neutral about it
- (d) Wait for the IRR to increase and match the cut off rate

Ans: (b)

5. While evaluating capital investment proposals, time value of money is used in which of the following techniques:

- (a) Payback Period method
- (b) Accounting rate of return
- (c) Net present value
- (d) None of the above

Ans: (c)

6. IRR would favor project proposals which have:

- (a) Heavy cash inflows in the early stages of the project.
- (b) Evenly distributed cash inflows throughout the project.
- (c) Heavy cash inflows at the later stages of the project.
- (d) None of the above.

Ans: (a)

7. The re-investment assumption in the case of the IRR technique assumes that:

- (a) Cash flows can be re-invested at the projects IRR.
- (b) Cash flows can be re-invested at the weighted cost of capital.
- (c) Cash flows can be re-invested at the marginal cost of capital.
- (d) None of the above

Ans: (a)

8. Multiple IRRs are obtained when:

- (a) Cash flows in the early stages of the project exceed cash flows during the later stages.
- (b) Cash flows reverse their signs during the project.
- (c) Cash flows are uneven.
- (d) None of the above.

Ans: (b)

9. Depreciation is included as a cost in which of the following techniques:

- (a) Accounting rate of return
- (b) Net present value
- (c) Internal rate of return
- (d) None of the above

Ans: (a)

10. Management is considering a ₹ 1,00,000 investment in a project with a 5 year life and no residual value. If the total income from the project is expected to be ₹ 60,000 and recognition is given to the effect of straight line depreciation on the investment, the average rate of return is:

- (a) 12%

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- (b) 24%
- (c) 60%
- (d) 75%

Ans: (b)

11. Assume cash outflow equals ₹ 1,20,000 followed by cash inflows of ₹ 25,000 per year for 8 years and a cost of capital of 11%. What is the Net present value?

- (a) ₹ 38,214
- (b) ₹ 9,653
- (c) ₹ 8,653
- (d) ₹ 38,214

Ans: (c)

12. What is the Internal rate of return for a project having cash flows of ₹ 40,000 per year for 10 years and a cost of ₹ 2,26,009?

- (a) 8%
- (b) 9%
- (c) 10%
- (d) 12%

Ans: (d)

13. While evaluating investments, the release of working capital at the end of the project's life should be considered as:

- (a) Cash inflow
- (b) Cash outflow
- (c) Having no effect upon the capital budgeting decision
- (d) None of the above

Ans: (a)

14. Capital rationing refers to a situation where:

- (a) Funds are restricted and the management has to choose from amongst available alternative investments.
- (b) Funds are unlimited and the management has to decide how to allocate them to suitable projects.
- (c) Very few feasible investment proposals are available with the management.
- (d) None of the above.

Ans: (a)

15. Capital budgeting is done for:

- (a) Evaluating short term investment decisions.
- (b) Evaluating medium term investment decisions.
- (c) Evaluating long term investment decisions.
- (d) None of the above.

Ans: (c)

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Theoretical Questions Answers

Question 1

DISCUSS the various techniques of capital budgeting.

Or

DISCUSS NPV. How is it calculated

Answer 1

In order to maximise the return to the shareholders of a company, it is important that the best or most profitable investment projects are selected. Results of making a bad long-term investment decision can be devastating in both financial and strategic terms. Proper care is required for investment project selection and evaluation.

There are a number of techniques available for appraisal of investment proposals and can be classified as presented below:

Organizations may use any one or more of capital investment evaluation techniques. Some organizations use different methods for different types of projects while others may use multiple methods for evaluating each project. The techniques discussed below are Payback Period, Accounting Rate of Return (ARR), Net Present Value (NPV), Profitability Index (PI), Internal Rate of Return (IRR), Discounted Payback Period and Modified Internal Rate of Return (MIRR).

Payback Period

Time required to recover the initial cash-outflow is called pay-back period. The payback period of an investment is the length of time required for the cumulative total net cash flows from the investment to equal the total initial cash outlays. At that point in time (payback period), the investor has recovered all the money invested in the project.

Uniform Cash Flows: When the cash inflows are uniform over the useful life of the project, the number of years in the payback period can be calculated using the following equation:

$$\text{Payback period} = \frac{\text{Total initial capital investment}}{\text{Annual expected after-tax net cash flow}}$$

Non-Uniform Cash Flows: When the annual cash inflows are not uniform, the cumulative cash inflow from operations must be calculated for each year. The payback period shall be corresponding period when total of cumulative cash inflows is equal to the initial capital investment. However, if exact sum does not match, then the period in which it lies should be identified. After that we need to compute the fraction of the year

Payback Reciprocal

As the name indicates, it is the reciprocal of payback period. A major drawback of the payback period method of capital budgeting is that it does not indicate any cut off period for the purpose of investment decision. It is, however, argued that the reciprocal of the payback would be a close approximation of the Internal Rate of Return (later discussed in detail) if the life of the project is at least twice the payback period and the project generates equal amount of the annual cash inflows. In practice, the payback reciprocal is a helpful tool for quick estimation of rate of return of a project provided its life is at least twice the payback period.

The payback reciprocal can be calculated as follows:

$$\text{Payback Reciprocal} = \frac{\text{Average annual cash in flow}}{\text{Initial investment}}$$

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Accounting (Book) Rate of Return (ARR) or Average Rate of Return (ARR)

The accounting rate of return of an investment measures the average annual net income of the project (incremental income) as a percentage of the investment.

The numerator is the average annual net income generated by the project over its useful life. The denominator can be either the initial investment (including installation cost) or the average investment over the useful life of the project. Average investment means the average amount of fund remained blocked during the lifetime of the project under consideration.

$$\text{Accounting rate of return (ARR)} = \frac{\text{Average annual net income}}{\text{Investment}}$$

Net Present Value Technique (NPV)

The net present value technique is a discounted cash flow method that considers the time value of money in evaluating capital investments. An investment has cash flows throughout its life, and it is assumed that an amount of cash flow in the early years of an investment is worth more than an amount of cash flow in a later year. The net present value method uses a specified discount rate to bring all subsequent cash inflows after the initial investment to their present values (the time of the initial investment is year 0).

The net present value of a project is the amount, in current value of amount, the investment earns after paying cost of capital in each period.

Net present value = Present value of net cash inflow - Total net initial investment

Since it might be possible that some additional investment may also be required during the life time of the project, then appropriate formula shall be:

Net present value = Present value of cash inflows - Present value of cash outflows It can be expressed as below:

$$NPV = \left[\frac{C_1}{1+k} + \frac{C_2}{(1+k)^2} + \frac{C_3}{(1+k)^3} + \dots + \frac{C_n}{(1+k)^n} \right] - I$$

$$NPV = \sum_{t=1}^n \frac{C_t}{(1+k)} - I$$

Where,

C = Cash flow of various years k = Discount rate

N = Life of the project

I = Investment

Profitability Index /Desirability Factor/Present Value Index Method (PI)

The students may have seen how with the help of discounted cash flow technique, the two alternative proposals for capital expenditure can be compared. In certain cases, we have to compare a number of proposals, each involving different amounts of cash inflows.

One of the methods of comparing such proposals is to work out what is known as the 'Desirability factor', or 'Profitability Index' or 'Present Value Index Method'.

Mathematically:

The Profitability Index (PI) is calculated as below:

$$\text{Profitability Index (PI)} = \frac{\text{Sum of discounted cash in flows}}{\text{Initial cash outlay or total discounted cash outflow (as the case may)}}$$

Internal Rate of Return Method (IRR)

The internal rate of return method considers the time value of money, the initial cash investment, and all cash flows from the investment. But unlike the net present value method, the internal rate of return method does not use the desired rate of return but estimates the discount

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rate that makes the present value of subsequent cash inflows equal to the initial investment. This discount rate is called IRR.

IRR Definition: Internal rate of return for an investment proposal is **the discount rate that equates the present value of the expected cash inflows with the initial cash outflow.**

This IRR is then compared to a criterion rate of return that can be the organization's desired rate of return for **evaluating capital investments.**

Calculation of IRR: The procedures for computing the internal rate of return vary with the pattern of net cash flows over the useful life of an investment.

Scenario 1: For an investment with uniform cash flows over its life, the following equation is used:

Step 1: Total initial investment = Annual cash inflow × Annuity discount factor of the discount rate for the number of periods of the investment's useful life

If A is the annuity discount factor, then:

$$A = \frac{\text{Total initial cash disbursements and commitments for the investment}}{\text{Annual (equal) cash inflows from the investment}}$$

Step 2: Once A is calculated, the interest rate corresponding to project's life, the value of A is searched in Present Value Annuity Factor (PVA) table. If exact value of 'A' is found the respective interest rate shall be IRR. However, it rarely happens therefore we follow the steps discussed below:

Step 1: Compute approximate payback period also called fake payback period.

Step 2: Locate this value in PVA table corresponding to period of life of the project. The value may be falling between two discounting rates.

Step 3: Discount cash flows using these two discounting rates.

Step 4: Use following Interpolation Formula:

$$LR = \frac{NPV \text{ at } LR}{NPV \text{ at } LR - NPV \text{ at } HR} \times (HR - LR)$$

$$R = \frac{PV \text{ at } LR - CI}{PV \text{ at } LR - PV \text{ at } HR} \times (HR - LR)$$

Where,

L = Lower Rate

HR = Higher Rate

CI = Capital Investment

Question 2

DISCUSS in detail the 'Capital Budgeting Process'.

Answer 2

The extent to which the capital budgeting process needs to be formalised and systematic procedures to be established depends on the size of the organisation; number of projects to be considered; direct financial benefit of each project considered by itself; the composition of the firm's existing assets and management's desire to change that composition; timing of expenditures associated with the projects that are finally accepted.

- (i) **Planning:** The capital budgeting process begins with the identification of potential investment opportunities. The opportunity then enters the planning phase when the potential effect on the firm's fortunes is assessed and the ability of the management of the firm to exploit the opportunity is determined. Opportunities having little merit are rejected and promising opportunities are advanced in the form of a proposal to enter

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the evaluation phase.

- (ii) **Evaluation:** This phase involves the determination of proposal and its investments, inflows and outflows. Investment appraisal techniques, ranging from the simple payback method and accounting rate of return to the more sophisticated discounted cash flow techniques, are used to appraise the proposals. The technique selected should be the one that enables the manager to make the best decision in the light of prevailing circumstances.
- (iii) **Selection:** Considering the returns and risks associated with the individual projects as well as the cost of capital to the organisation, the organisation will choose among projects which maximises the shareholders' wealth.
- (iv) **Implementation:** When the final selection is made, the firm must acquire the necessary funds, purchase the assets, and begin the implementation of the project.
- (v) **Control:** The progress of the project is monitored with the aid of feedback reports. These reports will include capital expenditure progress reports, performance reports comparing actual performance against plans set and post completion audits.
- (vi) **Review:** When a project terminates, or even before, the organisation should review the entire project to explain its success or failure. This phase may have implication for firm's planning and evaluation procedures. Further, the review may produce ideas for new proposals to be undertaken in the future.

Question 3

CLASSIFY various types of Capital Investment decisions known to you.

Answer 3

There are many ways to classify the capital budgeting decision. Generally capital investment decisions are classified in two ways. One way is to classify them on the basis of firm's existence. Another way is to classify them on the basis of decision situation.

On the basis of firm's existence

The capital budgeting decisions are taken by both newly incorporated firms as well as by existing firms. The new firms may require decision making in respect of selection of a plant to be installed. Whereas the existing firm may require taking decisions to meet the requirement of new environment or to face the challenges of competition. These decisions may be classified as follows: Replacement and Modernisation decisions: The replacement and modernization decisions aims to improve operating efficiency and reduce cost. Generally, all types of plant and machinery require replacement either because the economic life of the plant or machinery is over or because it has become technologically outdated. The former decision is known as replacement decision and latter is known as modernization decision. Both replacement and modernization decisions are called as cost reduction decisions.

- (i) **Expansion decisions:** Existing successful firms may experience growth in demand of their product line. If such firms experience shortage or delay in the delivery of their products due to inadequate production facilities, they may consider proposal to add capacity to existing product line.
- (ii) **Diversification decisions:** These decisions require evaluation of proposals to diversify into new product lines, new markets etc. for reducing the risk of failure by dealing in different products or by operating in several markets.

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Both expansion and diversification decisions are called revenue expansion decisions.

On the basis of decision situation

The capital budgeting decisions on the basis of decision situation are classified as follows:

- (i) **Mutually exclusive decisions:** The decisions are said to be mutually exclusive if two or more alternative proposals are such that the **acceptance of one proposal** will exclude the acceptance of the other alternative proposals. For instance, a firm may be considering proposal to install a semi-automatic or highly automatic machine. If the firm installs a semi-automatic machine, it excludes the acceptance of proposal to install highly automatic machine.
- (ii) **Accept-Reject decisions:** The accept-reject decisions occur when **proposals are independent** and do not compete with each other. The firm may accept or reject a proposal on the basis of a minimum return on the required investment. All those proposals which give a higher return than certain desired rate of return are accepted and the rest are rejected.
- (iii) **Contingent decisions:** The contingent decisions are made when the proposals are **dependable** proposals. The investment in one proposal requires investment in one or more other proposals. For example, if a company accepts a proposal to set up a factory in remote area, it will have to invest in infrastructure, like building of roads, houses for employees etc. also.

Question 4

DESCRIBE the advantages and disadvantages of profitability of index.

Answer 4

Advantages of PI

- The method also uses the **concept of time value of money**.
- In the PI method, since the present value of cash inflows is divided by the present value of cash outflow, it is a **relative measure** of a project's profitability.

Limitations of PI

- Profitability index **fails as a guide** in resolving capital rationing where projects are indivisible.
- Once a single large project with high NPV is selected, possibility of accepting several small projects which together may have higher NPV than the **single project is excluded**.
- Also, situations may arise where a project with a lower profitability index selected may generate cash flows in such a way that another project can be taken up one or two years later, the total NPV in such case being more than the one with a project with highest Profitability Index.

The Profitability Index approach thus **cannot be used indiscriminately** but all other type of alternatives of projects will have to be worked out

Question 5

DESCRIBE MIRR.

Answer 5

There are several limitations attached with the concept of the conventional Internal Rate of Return (IRR). The MIRR addresses some of these deficiencies e.g., it eliminates multiple IRR rates; it addresses the reinvestment rate issue and produces results which are consistent with the Net

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Present Value method. **This method is also called Terminal Value method.**

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 zeroth year and the terminal cash inflow as mentioned above. The discount rate which equates the present value of the terminal cash inflow to the zeroth year outflow is called the MIRR.**

The decision criterion of MIRR is same as IRR i.e. you accept an investment if MIRR is larger than required rate of return and reject if it is lower than the required rate of return.

Practical Problems

Question 1

Following data has been available for a capital project:

Annual cash inflows	₹ 1,00,000
Useful life	4 years
Salvage value	0
Internal rate of return	12%
Profitability index	1.064

You are required to **CALCULATE** the following for this project:

- Cost of project
- Cost of capital
- Net present value
- Payback period

PV factors at different rates are given below:

Discount factor	12%	11%	10%	9%
1 year	0.893	0.901	0.909	0.917
2 year	0.797	0.812	0.826	0.842
3 year	0.712	0.731	0.751	0.772
4 year	0.636	0.659	0.683	0.708

Answer 1

i. Cost of the Project

At 12% internal rate of return (IRR), the sum of total cash inflows = cost of the project i.e. initial cash outlay

Annual cash inflows = ₹ 1,00,000

Useful life = 4 years

Considering the discount factor table @ 12%, cumulative present value of cash inflows for 4 years is 3.038 (0.893 + 0.797 + 0.712 + 0.636).

Hence, Total Cash inflows for 4 years for the Project is:

₹ 1,00,000 × 3.038 = ₹ 3,03,800

Hence, Cost of the Project = ₹ 3,03,800

ii. Cost of Capital

Profitability index = $\frac{\text{Sum of Discounted Cash inflows}}{\text{Cost of the project}}$

1.064 = $\frac{\text{Sum of Discounted Cash inflows}}{₹ 3,03,800}$

∴ Sum of Discounted Cash inflows = ₹ 3,23,243.20

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Since, Annual Cash Inflows = ₹ 1,00,000

Hence, cumulative discount factor for 4 years = $\frac{₹ 3,23,243.20}{₹ 1,00,000} = 3.232$

From the discount factor table, at discount rate of 9%, the cumulative discount factor for 4 years is 3.239 (0.917 + 0.842 + 0.772 + 0.708).

Hence, Cost of Capital = 9% (approx.)

iii. Net Present Value (NPV)

NPV = Sum of Present Values of Cash inflows – Cost of the Project

= ₹ 3,23,243.20 – ₹ 3,03,800 = ₹ 19,443.20

iv. Payback Period

Payback period = $\frac{\text{Cost of the Project}}{\text{Annual Cash Inflows}} = \frac{₹ 3,03,800}{₹ 1,00,000} = 3.038 \text{ years}$

Question 2

Lockwood Limited 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 lakh. The utilities of the existing machine can be used if the company purchases model A. Additional cost of utilities to be purchased in this case will be ₹ 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:

Year	Cash inflows of A(₹)	Cash inflows of B(₹)	P.V. Factor@ 15%
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?

Answer 2

Working:

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

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			(₹)		(₹)
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

(Amount in ₹)				
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):

$$\text{Machine A} = 4 \text{ years} + \frac{(5,00,000 - 4,33,240)}{1,09,340} = 4.61 \text{ years}$$

$$\text{Machine B} = 4 \text{ years} + \frac{(5,80,000 - 5,48,440)}{49,700} = 4.63 \text{ years}$$

(c) Desirability Factor or Profitability Index:

$$\text{Profitability Index (PI)} = \frac{\text{Sum of present value of net cash inflow}}{\text{initial cash outflow}}$$

$$\text{Machine A} = \frac{₹ 5,42,580}{₹ 5,00,000} = 1.08; \quad \text{Machine B} = \frac{₹ 5,98,140}{₹ 5,80,000} = 1.03$$

- (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.

Question 3

Hindlever 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 even after year 10, the company prefers to be conservative and end all calculations at that time.

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- If the required rate of return is 15 per cent, COMPUTE net present value of the project. Is it acceptable?
- ANALYSE what would be the case if the required rate of return were 10 per cent?
- CALCULATE its internal rate of return.
- COMPUTE the project's payback period.

Answer 3

(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)
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 = ₹ 2,51,450 is positive, hence the project would be acceptable.

(c) Calculation of IRR:

$$\begin{aligned}
 \text{IRR} &= \text{LR} + \frac{\text{NPV}_{\text{at LR}}}{\text{NPV}_{\text{at LR}} - \text{NPV}_{\text{at HR}}} (\text{HR} - \text{LR}) \\
 &= 10\% + \frac{₹ 2,51,450}{₹ 2,51,450 - (-) 1,18,200} (15\% - 10\%) \\
 &= 10\% + 3.4012 \text{ or } 13.40\%
 \end{aligned}$$

(d) Computation of Pay-back period of the project:

Payback Period = 6 years:

$$\begin{aligned}
 &- ₹ 7,00,000 - ₹ 10,00,000 + ₹ 2,50,000 + ₹ 3,00,000 + ₹ 3,50,000 + ₹ \\
 &4,00,000 + ₹ 4,00,000 = 0
 \end{aligned}$$

Question 4

Elite Cooker Company is evaluating three investment situations: (1) Produce a new line of aluminium skillets, (2) Expand its existing cooker line to include several new sizes, and (3)

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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:

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 investments required and present values will simply be the sum of the parts. With projects 1 and 3, economies are possible in investment because one of the machines acquired can be used in both production processes. 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 hold. However, a ₹ 1,25,000 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?

Answer 4

Calculation of NPV

Project	Investment Required	Present value of Future Cash Flows	Present value
	₹	₹	₹
1	2,00,000	2,90,000	90,000
2	1,15,000	1,85,000	70,000
3	2,70,000	4,00,000	1,30,000
1 and 2	3,15,000	4,75,000	1,60,000
1 and 3	4,40,000	6,90,000	2,50,000
2 and 3	3,85,000	6,20,000	2,35,000
1, 2 and 3 (Refer Working note)	6,80,000*	9,10,000	2,30,000

Working Note:

(i) Total Investment required if all the three projects are undertaken simultaneously:

	(₹)
Project 1 & 3	4,40,000
Project 2	1,15,000
Plant extension cost	1,25,000
Total	6,80,000

(ii) Total of Present value of Cash flows if all the three projects are undertaken simultaneously:

	(₹)
Project 2 & 3	6,20,000
Project 1	2,90,000
Total	9,10,000

Projects 1 and 3 should be chosen, as they provide the highest net present value.

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Question 5

Cello Limited 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 per cent of the cost being payable at the start of the project and 20 per cent at the end of the first year. The machine would produce 50,000 units per annum of a new product with an estimated selling price of ₹ 3 per unit. Direct costs would be ₹ 1.75 per unit and annual fixed costs, including depreciation calculated on a 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 that the company's cost of capital is 10 percent.

Answer 5
Calculation of Net Cash flow

Contribution = $(3.00 - 1.75) \times 50,000 = ₹ 62,500$

Fixed costs = $40,000 - [(1,25,000 - 30,000)/5] = ₹ 21,000$

Year	Capital (₹)	Contribution (₹)	Fixed costs (₹)	Adverts (₹)	Net cash flow (₹)
0	(1,00,000)	-	-	-	(1,00,000)
1	(25,000)	62,500	(21,000)	(10,000)	6,500
2	-	62,500	(21,000)	(15,000)	26,500
3	-	62,500	(21,000)	-	41,500
4	-	62,500	(21,000)	-	41,500
5	30,000	62,500	(21,000)	-	71,500

Calculation of Net Present Value

Year	Net cash flow (₹)	10% discount factor	Present value (₹)
0	(1,00,000)	1.000	(1,00,000)
1	6,500	0.909	5,909
2	26,500	0.826	21,889
3	41,500	0.751	31,167
4	41,500	0.683	28,345
5	71,500	0.621	44,402
NPV			31,712

The net present value of the project is ₹ 31,712.

Question 6

Ae Bee Cee 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:

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

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The opportunity cost of capital is 9%. You are required to IDENTIFY the machine which 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

Answer 6

Statement Showing the Evaluation of Two Machines

Particulars	Machine 'X'	Machine 'Y'
(i) Purchase Cost	₹ 15,00,000	₹ 10,00,000
(ii) Life of Machine	3 years	2 years
(iii) Running Cost of Machine per year	₹ 4,00,000	₹ 6,00,000
(iv) PVIFA (0.09, 3)	2.531	
		1.759
(v) PV of Running Cost of Machine {(iii) × (iv)}	₹ 10,12,400	₹ 10,55,400
(vi) Cash outflows of Machine {(i) + (v)}	₹ 25,12,400	₹ 20,55,400
(vii) Equivalent PV of Annual Cash outflow {(vi)/(iv)}	₹ 9,92,651	₹ 11,68,505

Recommendation: Ae Bee Cee Ltd. should buy Machine 'X' since equivalent annual cash outflow is less than that of Machine 'Y'.

Question 7

Alley Pvt. 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 ₹ 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:

Year	0	1	2	3	4	5	6
PV Factor	1	0.9091	0.8264	0.7513	0.6830	0.6209	0.5645

Answer 7

Option I: Purchase Machinery and Service Part at the end of Year 1.

Net Present value of cash flow @ 10% per annum discount rate.

$$NPV \text{ (in ₹)} = -1,00,000 + \frac{36,000}{(1.1)} + \frac{36,000}{(1.1)^2} + \frac{36,000}{(1.1)^3} - \frac{20,000}{(1.1)} + \frac{25,000}{(1.1)^3}$$

$$= -1,00,000 + 36,000 (0.9091 + 0.8264 + 0.7513) - (20,000 \times 0.9091) + (25,000 \times 0.7513)$$

$$= -1,00,000 + (36,000 \times 2.4868) - 18,182 + 18,782.5$$

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$$= -1,00,000 + 89,524.8 - 18,182 + 18,782.5$$

$$\text{NPV} = -9,874.7$$

Since, Net Present Value is negative; therefore, this option is not to be considered.

If Supplier gives a discount of ₹ 10,000, then:

$$\text{NPV (in ₹)} = +10,000 - 9,874.7 = +125.3$$

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.

$$\begin{aligned} \text{NPV (in ₹)} &= -1,00,000 + \frac{36,000}{(1.1)} + \frac{36,000}{(1.1)^2} + \frac{36,000}{(1.1)^3} - \frac{30,800}{(1.1)^2} + \frac{54,000}{(1.1)^4} \\ &= -1,00,000 + 36,000 (0.9091 + 0.8264 + 0.7513) - (30,800 \times 0.8264) + \\ &\quad (54,000 \times 0.6830) \\ &= -1,00,000 + 36,000 (2.4868) - 25,453.12 + 36,882 \\ &= -1,00,000 + 89,524.8 - 25,453.12 + 36,882 \end{aligned}$$

$$\text{NPV} = +953.68$$

Net Present Value is positive, but very low as compared to the investment.

If the Supplier gives a discount of ₹ 10,000, then:

$$\text{NPV (in ₹)} = 10,000 + 953.68 = 10,953.68$$

Decision: Option II is worth investing as the net present value is positive and higher as compared to Option I.

Question 8

NavJeevani hospital is considering to purchase a machine for medical projectional radiography which is priced 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:

ANALYSE whether it would be profitable for the hospital to purchase the machine. Give your recommendation under:

- Net Present Value method
- Profitability Index method

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

Answer 8

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

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Less: Tax @ 30%	22,425
Earnings after Tax (EAT)	52,325
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 8 th 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 (₹)	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.

Question 9

XYZ 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 costing ₹ 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 eighth 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 per year	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 ₹ 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 per cent tax rate and considers 12 per cent to be an appropriate after-tax cost of capital for this project. The company follows straight line method of depreciation.

CALCULATE the net present value of the project and advise the management to take appropriate decision.

The PV factors at 12% are

Year	1	2	3	4	5	6	7	8

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PV Factor	0.893	0.797	0.712	0.636	0.567	0.507	0.452	0.404

Answer 9

Workings:

(a) Calculation of annual cash flows

(₹ in lakh)									
Year	Sales	VC	FC	Dep.	Profit	Tax	PAT	Dep.	Cash inflow
1	172.80	103.68	36	43.75	(10.63)	-	-	43.75	33.12
2	259.20	155.52	36	43.75	23.93	3.99*	19.94	43.75	63.69
3	624.00	374.40	36	43.75	169.85	50.955	118.895	43.75	162.645
4-5	648.00	388.80	36	48.25	174.95	52.485	122.465	48.25	170.715
6-8	432.00	259.20	36	48.25	88.55	26.565	61.985	48.25	110.235

(b) Calculation of Depreciation:

- On Initial equipment = $\frac{₹ 350 \text{ lakh}}{8 \text{ year}} = 43.75 \text{ lakh}$

On additional equipment = $\frac{(₹ 25 - ₹ 2.5) \text{ lakh}}{5 \text{ years}} = 4.5 \text{ lakh}$

(c) Calculation of tax in 2nd Year:

	₹ in lakh
Profit for the year	23.93
Less: Set off of unabsorbed depreciation in 1 st year	(10.63)
Taxable profit	13.30
Tax @30%	3.99

(d) Calculation of Initial cash outflow

	₹ in lakh
Cost of New Equipment	350
Add: Working Capital	40
Outflow	390

Calculation of NPV

(₹ in lakh)				
Year	Cashflows	PV factor @12%	PV of cash-flows	Remark
0	(390)	1.000	(390.00)	Initial equipment cost
1	33.12	0.893	29.57	
2	63.69	0.797	50.76	
3	162.645	0.712	115.80	
3	(25.00)	0.712	(17.80)	Additional equipment cost
4	170.715	0.636	108.57	
5	170.715	0.567	96.79	
6	110.235	0.507	55.89	
7	110.235	0.452	49.83	

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8	110.235	0.404	44.53	
8	40.00	0.404	16.16	Release of working capital
8	2.50	0.404	1.01	Additional equipment salvage value
Net Present Value			161.11	

Advise: Since the project has a positive NPV, therefore, it should be accepted.

Question 10

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 lakh 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 lakh 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 lakh. At the end of the 4th year, the machine can be sold for ₹ 60 lakh and the cost of dismantling and removal will be ₹ 45 lakh.

Sales and direct costs of the product emerging from waste processing for 4 years are estimated as under:

	(₹ In lakh)			
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 materials required before commencement of the processing operations is ₹ 60 lakh at the start of year 1. The stock levels of materials to be maintained at the end of year 1, 2 and 3 will be ₹ 165 lakh and the stocks at the end of year 4 will be nil. The storage of materials will utilise space which would otherwise have been rented out for ₹ 30 lakh per annum. Labour costs include wages of 40 workers, whose transfer to this process will reduce idle time payments of ₹ 45 lakh in the year- 1 and ₹ 30 lakh in the year- 2. Factory overheads include apportionment of general factory overheads except to the extent of insurance charges of ₹ 90 lakh per annum payable on this venture. The company's tax rate is 30%.

Consider cost of capital @ 14%, the present value factors of which is given below for four years:

Year	1	2	3	4
PV factors @14%	0.877	0.769	0.674	0.592

ADVISE the management on the desirability of installing the machine for processing the waste.

All calculations should form part of the answer.

Answer 10

Statement of Operating Profit from processing of waste

(₹ in lakh)

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Year	1	2	3	4
Sales (A)	966	966	1,254	1,254
Material consumption	90	120	255	255
Wages	180	195	255	300
Other expenses	120	135	162	210
Factory overheads (insurance only)	90	90	90	90
Depreciation (as per income tax rules)	150	114	84	63
Total cost (B)	630	654	846	918
Profit {(C)=(A) - (B)}	336	312	408	336
Less: Tax(30%)	100.8	93.6	122.4	100.8
Profit after Tax (PAT)	235.2	218.4	285.6	235.2
Less: Loss of rent on storage space (opportunity cost)	30	30	30	30
PAT after opportunity cost	205.2	188.4	255.6	205.2

Statement of Incremental Cash Flows

(₹ in lakh)					
Year	0	1	2	3	4
Cost of Machine	(600)				
Material stock	(60)	(105)	-	-	165
Compensation for contract	(90)	-	-	-	-
Contract payment saved	-	150	150	150	150
Tax on contract payment	-	(45)	(45)	(45)	(45)
Incremental profit	-	336	312	408	336
Depreciation added back	-	150	114	84	63
Tax on profits	-	(100.8)	(93.6)	(122.4)	(100.8)
Profit on sale of machinery (net)	-	-	-	-	15
Total incremental cash flows	(750)	385.2	437.4	474.6	583.2
Present value factor	1.00	0.877	0.769	0.674	0.592
Present value of cash flows	(750)	337.82	336.36	319.88	345.25
Net present value	589.32				

Advice: Since the net present value of cash flows is ₹ 589.32 lakh which is positive the management should install the machine for processing the waste.

Notes:

1. Material stock increases are taken in cash flows.
2. Idle time wages have also been considered.
3. Apportioned factory overheads are not relevant only insurance charges of this project are relevant.
4. Sale of machinery - Net income after deducting removal expenses taken. Tax on Capital gains is ignored.
5. Saving in contract payment and income tax thereon is considered in the cash flows.

Question 11

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Financial Management and Strategic Management

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Xavly 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:

	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 per cent and Xavly Ltd. does not make any investment, if it yields less than 12 per cent. ADVISE Xavly Ltd. whether the existing machine should be replaced or not. PV factors @12%:

Year	1	2	3	4	5
PVF	0.893	0.797	0.712	0.636	0.567

Answer 11

(i) Calculation of Net Initial Cash Outflows:

	₹
Cost of new machine	10,00,000
Less: Sale proceeds of existing machine	2,00,000
Net initial cash outflows	8,00,000

(ii) Calculation of Base for depreciation

Particulars	₹
WDV of Existing Machine	
Cost of existing machine	3,30,000
Less: Depreciation for year 1	66,000
Depreciation for Year 2	52,800
Depreciation for Year 3	42,240
WDV of Existing Machine (i)	1,68,960
Depreciation base of New Machine	
Cost of new machine	10,00,000
Add: WDV of existing machine	1,68,960
Less: Sales value of existing machine	2,00,000
Depreciation base of New Machine (ii)	9,68,960

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Base for incremental depreciation [(ii) – (i)]	8,00,000

(iii) Calculation of annual Profit Before Tax and depreciation

Particulars	Existing machine	New Machine	Differential
(1)	(2)	(3)	(4)=(3)–(2)
Annual output	30,000 units	75,000 units	45,000 units
	₹	₹	₹
(A) Sales revenue @ ₹ 15per unit	4,50,000	11,25,000	6,75,000
(B) Less: Cost of Operation			
Material @ ₹ 4 per unit	1,20,000	3,00,000	1,80,000
Labour			
Old = 3,000 × ₹ 40	1,20,000		90,000
New = 3,000 × ₹ 70		2,10,000	
Indirect cash cost	50,000	65,000	15,000
Total Cost (B)	2,90,000	5,75,000	2,85,000
Profit Before Tax and depreciation (PBT) (A – B)	1,60,000	5,50,000	3,90,000

(iv) Calculation of Incremental Net Present Value:

Year	PBT	Dep. @20%	PBT	Tax @30%	Net cashflow	VF @ 12%	PV
(1)	(2)	(3)	(4=2-3)	(5)	(6=4-5+3)	(7)	(8=6 x 7)
1	3,90,000	1,60,000	2,30,000	69,000.00	3,21,000.00	0.893	2,86,653.00
2	3,90,000	1,28,000	2,62,000	78,600.00	3,11,400.00	0.797	2,48,185.80
3	3,90,000	1,02,400	2,87,600	86,280.00	3,03,720.00	0.712	2,16,248.64
4	3,90,000	81,920	3,08,080	92,424.00	2,97,576.00	0.636	1,89,258.34
5	3,90,000	65,536	3,24,464	97,339.20	2,92,660.80	0.567	1,65,938.67
							11,06,284.45
Add: PV of Salvage Value of new machine (₹ 40,000 x 0.567)							22,680.00
Less: Initial Cash Outflow							8,00,000.00
NPV							3,28,964.45

Advice: Since the incremental NPV is positive, existing machine should be replaced.

Question 12

A & Co. is contemplating whether to replace an existing machine or to spend money on overhauling it. A & Co. 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

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The opportunity cost of capital for A & Co. is 15%.

REQUIRED:

When should the company replace the machine?

(Note: Present value of an annuity of Re. 1 per period for 8 years at interest rate of 15% : 4.4873; present value of Re. 1 to be received after 8 years at interest rate of 15% : 0.3269).

Answer 12

A & Co.

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)	<u>44,873</u>
		1,34,873
	Less: PV of salvage value at the end of 8 years (₹ 20,000 × 0.3269)	6,538
		<u>1,28,335</u>
	Equivalent annual cost (EAC) (₹ 1,28,335/4.4873)	<u>28,600</u>

PV of cost of replacing the old machine in each of 4 years

with new machine

Scenario	Year	CashFlow (₹)	PV @ 15%	PV (₹)
Replace Immediately	0	(28,600)	1.00	(28,600)
		40,000	1.00	<u>40,000</u>
				<u>11,400</u>
Replace in one year	1	(28,600)	0.870	(24,882)
	1	(10,000)	0.870	(8,700)
	1	25,000	0.870	<u>21,750</u>
				<u>(11,832)</u>
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	<u>11,340</u>
				<u>(34,102)</u>
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	<u>6,580</u>
				<u>(55,799)</u>
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)

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	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.

Question 13

A chemical company is presently paying an outside firm ₹ 1 per gallon to dispose off the waste 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 administrative 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.

There will be no losses in processing, and it is assumed that the total waste processed in a given year will be sold in the same year. Estimates indicate that 50,000 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 50% Tax on its income.

You should consider Present value of Annuity of ₹ 1 per year @ 15% p.a. for 10 years as 5.019.

Answer 13

Evaluation of Alternatives:

Savings in disposing off the waste

Particulars	(₹)
Outflow (50,000 × ₹ 1)	50,000
Less: tax savings @ 50%	25,000
Net Outflow per year	25,000

Calculation of Annual Cash inflows in Processing of waste Material

Particulars	Amount (₹)	Amount (₹)
Sale value of waste (₹ 10 × 50,000 gallon)		5,00,000
Less: Variable processing cost (₹ 5 × 50,000 gallon)	2,50,000	
Less: Fixed processing cost	30,000	
Less: Advertisement cost	20,000	
Less: Depreciation	60,000	(3,60,000)
Earnings before tax (EBT)		1,40,000
Less: Tax @ 50%		(70,000)
Earnings after tax (EAT)		70,000
Add: Depreciation		60,000
Annual Cash inflows		1,30,000

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Total Annual Benefits = Annual Cash inflows + Net savings (adjusting tax) in disposal cost
 = ₹ 1,30,000 + ₹ 25,000 = ₹ 1,55,000

Calculation of Net Present Value

Year	Particulars	Amount (₹)
0	Investment in new equipment	(6,00,000)
1 to 10	Total Annual benefits × PVAF (10 years, 15%)	
	₹ 1,55,000 × 5.019	7,77,945
	Net Present Value	1,77,945

Recommendation: Processing of waste is a better option as it gives a positive Net Present Value.

Note- Research cost of ₹ 60,000 is not relevant for decision making as it is sunk cost.

Question 14

Manoranjan 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 an 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:

- (1) Packets of Coffee beans at a cost of ₹ 90 per packet.
- (2) Packet of tea powder at a cost of ₹ 70 per packet.
- (3) Sugar at a cost of ₹ 50 per Kg.
- (4) Milk at a cost of ₹ 50 per litre.
- (5) 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 100 ml of milk.

The company anticipate 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 served 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

Answer 14

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(A) Computation of CFAT (Year 1 to 5)

Particulars	Amount (₹)
(a) Savings in existing Tea & Coffee charges $(120 \times 10 \times 3) + (40 \times 15 \times 3) + (40 \times 10 \times 1) \times 200$ days	11,60,000
(b) AMC of machine	(75,000)
(c) Electricity charges $500 \times 12 \times 12$	(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.) $1,37,280 \times 0.2$	(27,456)
(i) Depreciation $10,00,000/5$	(2,00,000)
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 = $[(120 \times 3 \times 200 \text{ days}) + (40 \times 1 \times 200 \text{ days}) \times 1.2 =$	96,000
No. of Coffee cups = $40 \times 3 \times 200 \text{ days} \times 1.2 =$	28,800
No. of coffee beans packet = $\frac{28,800}{200} =$	144
No. of Tea powder packets = $\frac{96,000}{200} =$	480
Qty of Sugar = $\frac{(96,000 + 28,800) \times 6,000}{1,000 \text{ g}} =$	1248 kgs
Qty of milk = $\frac{(96,000 + 28,800) \times 6,000}{1,000 \text{ g}} =$	12,480 litres
No. of Paper cups = $(96,000 + 28,800) \times 1.1 =$	1,37,280

Case Scenarios

1. Twigato Ltd is an all equity financed company in the food delivery business and is considering an expansion into quick grocery delivery business segment. It is the market leader in the current food delivery business with a valuation of ₹ 5750 crores. From the discussion in the recent fund-raising meeting with the venture capitalists, it has been noted that the quick delivery business is expected to be run for 6 years, after which it will be sold to another entity for a target valuation of 2 times of the investment made in the business segment. The new segment will be funded by debt, preference and

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equity shares in the ratio of 3:2:5. The quick grocery delivery would require ₹ 30 crores of investment to start with and subsequently it will require additional infusion of ₹ 20 crores in start of year 2 and ₹ 25 crores of fund infusion in start of year 4. The operating financials of the business is expected to be on following lines for the 1st year of operation.

No of quick orders = 10,000 per day No of overnight

orders = 2,000 per day

Ticket sizes quick orders: 5,000 orders below ₹ 500, 3,000 orders between ₹ 500 and ₹ 1,000 and 2,000 orders above ₹ 1000 with average ticket size being ₹ 700 per order.

Delivery charges are applicable for orders below ₹ 500, which is flat ₹ 40 per order.

The company would charge 5% of invoice value from the seller of the quick delivery products and 7% in case of overnight delivery.

Overnight deliveries would be available to only subscription-based customers and subscription charges are ₹ 5,000 p.a. Each overnight order is expected to be having an average ticket size of ₹ 750 per order. Each subscription-based customer is expected to place order every alternate day on an average.

The quantity of orders is expected to be growing at a rate of 20%, 15%, 10%, 5% for 1st 4 years of operations. Beyond this it is expected to be remaining constant. The proportion of orders is expected to remain unchanged.

To attract the prospective customers, it is likely to spend heavily on advertising in initial years. The advertising and promotional activities would cost ₹ 7 crores, ₹ 8 crores and ₹ 10 crores in year 1, 2 and 3 respectively.

Remuneration to delivery partners will be ₹ 15,000 p.m. fixed plus ₹ 20 per delivery. Each delivery partner can deliver an average of 30 orders per day. An additional provision of 50% of extra delivery partners to be made to consider the unexpected spike in orders on special occasions and holidays. The IT infrastructure and customer care expenses would amount to ₹ 8 crores each year. Income Tax allows 20% p.a. depreciation on straight line basis for any fresh investments. Applicable tax rate can be taken as 25%. The after-tax cost of debt, preference share, and equity share would amount to 10%, 11% and 15% respectively.

Assume 365 days in a year.

1. Which of the following is the best estimate of discounting rate for the project?

- (a) 12.00%
- (b) 11.55%
- (c) 12.70%
- (d) 13.75%

Ans: (c)

2. Which of the following is the best measure of delivery partners required in year 1?

- (a) 600
- (b) 720
- (c) 828
- (d) 911

Ans: (a)

3. Which of the following is the best measure of total revenue in year 3?

- (a) 30 crores
- (b) 25.78 crores

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- (c) 33.66 crores
 (d) 25.91 crores

Ans: (c)

4. Which of the following years best represents the years of loss?

- (a) Year 1 only
 (b) Year 1 and 2 only
 (c) Year 1,2 and 3 only
 (d) Year 1,2,3 and 4 only

Ans: (d)

5. Which of the following is the best measure of NPV of the project?

- (a) 39.35 crores
 (b) (25.63) crores
 (c) 23.76 crores
 (d) (35.67) crores

Ans: (a)

Calculation of cost of capital

Capital	Weight	Cost	Product
Debt	0.3	10%	3.00%
Preference	0.2	11%	2.20%
Equity	0.5	15%	7.50%
	Ko		12.70%

Calculation of CFAT

Year		1	2	3	4	5	6
A) No. of quick deliveries p.d		10,000	12,000	13,800	15,180	15,939	15,939
B) No. of overnight deliveries p.d		2,000	2,400	2,760	3,036	3,188	3,188
C) No. of quick deliveries p.a		36,50,000	43,80,000	50,37,000	55,40,700	58,17,735	58,17,735
D) No. of overnight deliveries p.a		7,30,000	8,76,000	10,07,400	11,08,140	11,63,547	11,63,547
E) Chargeable quick deliveries		18,25,000	21,90,000	25,18,500	27,70,350	29,08,868	29,08,868
F) No. of delivery partners	$1.5 \times (A+B)/30$	600	720	828	911	956	956
Revenue (₹ in crores)							
From quick deliveries (QD)	$(E \times 40)$	7.30	8.76	10.07	11.08	11.64	11.64
From QD seller commission	$(C \times 700 \times 5\%)$	12.775	15.330	17.630	19.392	20.362	20.362

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From overnight delivery subscription	(B/2 x 5000)	0.500	0.600	0.690	0.759	0.797	0.97
From OD seller commission	(C x 750 x 7%)	3.83	4.60	5.29	5.82	6.11	6.11
Total Revenue		24.41	29.29	33.68	37.05	38.90	38.90
Cost (in crores)							
Advertising		7	8	10	0	0	0
IT and customer care		8	8	8	8	8	8
Delivery partner salary	(F x 15000)	0.90	1.08	1.24	1.37	1.43	1.43
Delivery partner commission	(C + D) x 20	8.76	10.51	12.09	13.30	13.96	13.96
Depreciation	On investment in year 0	6	6	6	6	6	
	On investment in year 2		4	4	4	4	4
	On investment in year 4				5	5	5
Total cost		30.66	37.59	41.33	37.66	38.40	32.40
PBT		(6.25)	(8.30)	(7.65)	(0.61)	0.51	6.51
Less: Tax		1.56	2.08	1.91	0.15	(0.13)	(1.63)
PAT		(4.69)	(6.23)	(5.74)	(0.46)	0.38	4.88
Add: Depreciation		6.00	10.00	10.00	15.00	15.00	9.00
CFAT		1.31	3.77	4.26	14.54	15.38	13.88

Computation of NPV

Year	Particulars		Cash Flows (₹ in crores)	PVF @ 12.7%	PV (₹ in crores)
0	Investment		(30.00)	1.00	(30.00)
1	Investment		(20.00)	0.89	(17.75)
3	Investment		(25.00)	0.70	(17.46)
1	Operating CFAT		1.31	0.887	1.16
2	Operating CFAT		3.77	0.787	2.97
3	Operating CFAT		4.26	0.699	2.98
4	Operating CFAT		14.54	0.620	9.01
5	Operating CFAT		15.38	0.550	8.46
6	Operating CFAT		13.88	0.488	6.77
6	Sale Proceeds	(30+20+25)x 2	150	0.488	73.21
	NPV				39.35

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Chapter 8

Dividend Decisions

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ILLUSTRATION

Question 1 (Illustration)

AB Engineering 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 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 firm when dividends (i) are not paid (ii) are paid.

Answer 1

CASE 1: Value of the firm when dividends are not paid.

Step 1: Calculate price at the end of the period

$$K_e = 10\%, \quad P_0 = 100, \quad D_1 = 0$$

$$P_0 = \frac{P_1 + D_1}{1 + K_e}$$

$$100 = \frac{P_1 + 0}{1 + 0.10} \gg P_1 = 110$$

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

$$\text{No. of shares} = \frac{\text{Funds required}}{\text{Price at end}(P_1)}$$

$$\Delta n = \frac{1,00,000}{110}$$

Step 4: Calculation of value of firm

$$nP_0 = \frac{(n + \Delta n)P_1 - I + E}{1 + K_e}$$

$$nP_0 = \frac{\left[10,000 + \frac{1,00,000}{110}\right] \times ₹110 - ₹2,00,000 + ₹1,00,000}{(1 + 0.10)}$$

$$= ₹10,00,000$$

CASE 2: Value of the firm when dividends are paid.

Step 1: Calculate price at the end of the period

$$K_e = 10\%, \quad P_0 = 100, \quad D_1 = 5$$

$$P_0 = \frac{P_1 + D_1}{1 + K_e}$$

$$100 = \frac{P_1 + 5}{1 + 0.10} \gg P_1 = 105$$

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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

$$\text{No. of shares} = \frac{\text{Funds required}}{\text{Price at end}(P_1)}$$

$$\Delta n = \frac{₹ 1,50,000}{₹ 105}$$

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.

Question 2 (Illustration)

XYZ Ltd. earns ₹ 10/ 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

Answer 2

Since $r > K_e$, the optimum dividend pay-out ratio would 'Zero' (i.e. $D = 0$),

Accordingly, value of a share:

$$P = \frac{D + \frac{r}{K_e}(E - D)}{K_e}$$

$$P = \frac{0 + \frac{0.12}{0.10}(10 - 0)}{0.10} = ₹ 120$$

The optimality of the above payout ratio can be proved by using 25%, 50%, 75% and 100% as pay-out ratio:

At 25% pay-out ratio

$$P = \frac{2.5 + \frac{0.12}{0.10}(10 - 2.5)}{0.10} = ₹ 115$$

At 50% pay-out ratio

$$P = \frac{5 + \frac{0.12}{0.10}(10 - 5)}{0.10} = ₹ 110$$

At 75% pay-out ratio

$$P = \frac{7.5 + \frac{0.12}{0.10}(10 - 7.5)}{0.10} = ₹ 105$$

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At 100% pay-out ratio

$$P = \frac{10 + \frac{0.12}{0.10}(10 - 10)}{0.10} = ₹ 100$$

Question 3 (Illustration)

The following figures are collected from the annual report of XYZ Ltd.:

Net Profit	₹ 30 lakhs
Outstanding 12% preference shares	₹ 100 lakhs
No. of equity shares	3 lakhs
Return on Investment	20%
Cost of capital i.e. (K_e)	16%

COMPUTE the approximate dividend pay-out ratio so as to keep the share price at ₹ 42 by using Walter's model?

Answer 3

	₹ in lakhs
Net Profit	30
Less: Preference dividend	12
Earning for equity shareholders	18
Earning per share	$18/3 = ₹ 6.00$

Let, the dividend per share be D to get share price of ₹ 42

$$P = \frac{D + \frac{r}{K_e}(E - D)}{K_e}$$

$$₹ 42 = \frac{0 + \frac{0.20}{0.16}(6 - D)}{0.16}$$

$$6.72 = \frac{0.16D + 1.2 - 0.20D}{0.16}$$

$$0.04D = 1.2 - 1.0752$$

$$D = 3.12$$

$$D/P \text{ ratio} = \frac{DPS}{EPS} \times 100 = \frac{3.12}{6} \times 100 = 52\%$$

So, the required dividend payout ratio will be = 52%

Question 4 (Illustration)

The following figures are collected from the annual report of XYZ Ltd.:

Net Profit	₹ 30 lakhs
Outstanding 12% preference shares	₹ 100 lakhs
No. of equity shares	3 lakhs
Return on Investment	20%
Cost of capital i.e. (K_e)	16%

CALCULATE price per share using Gordon's Model when dividend pay-out is (i) 25%; (ii) 50% and (iii) 100%.

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Answer 4

	₹ in lakhs
Net Profit	30
Less: Preference dividend	12
Earning for equity shareholders	18
Earning per share	18/3 = ₹ 6.00

Price per share according to Gordon's Model is calculated as follows:

$$P_0 = \frac{E_1(1-b)}{K_e - br}$$

Here, $E_1 = 6$, $K_e = 16\%$

(i) When dividend pay-out is 25%

$$P_0 = \frac{6 \times 0.25}{0.16 - (0.75 \times 0.2)} = \frac{1.5}{0.16 - 0.15} = 150$$

(ii) When dividend pay-out is 50%

$$P_0 = \frac{6 \times 0.5}{0.16 - (0.5 \times 0.2)} = \frac{3}{0.16 - 0.10} = 50$$

(iii) When dividend pay-out is 100%

$$P_0 = \frac{6 \times 1}{0.16 - (0 \times 0.2)} = \frac{6}{0.16} = 37.50$$

Question 5 (Illustration)

X 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?

Answer 5

$$P_0 = \frac{D}{K_e} = \frac{5}{0.10} = ₹ 50$$

Question 6 (Illustration)

XYZ is a 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.

Answer 6

$$= \frac{D_0(1+g)}{K_e - g}$$

$$= \frac{2(1+0.02)}{0.15 - 0.02} = 15.69$$

Question 7 (Illustration)

A firm had paid dividend at ₹ 2 per share last year. The estimated growth of the dividends from the company is estimated to be 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%.

Answer 7

In the present situation, the current MPS is as follows:

$$P = \frac{D_0(1+g)}{K_e - g}$$

$$P = \frac{2(1+0.05)}{0.15 - 0.05} = ₹ 21$$

(i) The impact of changes in growth rate to 8% on MPS will be as follows:

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$$P = \frac{2(1+0.08)}{0.15-0.08} = ₹ 30.86$$

(ii) The impact of changes in growth rate to 3% on MPS will be as follows:

$$P = \frac{2(1+0.03)}{0.15-0.03} = ₹ 17.17$$

So, the market price of the share is expected to vary in response to change in expected growth rate of dividends.

Question 8 (Illustration)

RST 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

- dividend is not declared
- dividend is declared

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, CALCULATE number of new shares to be issued? Use the MM model.

Answer 8

Given,

Cost of Equity (K_e)	12%
Number of shares in the beginning (n)	10,000
Current Market Price (P_0)	₹ 100
Net Profit (E)	₹ 5,00,000
Expected Dividend (D_1)	₹ 10 per share
Investment (I)	₹ 10,00,000

Computation of market price per share, when:

(i) No dividend is declared:

$$P_0 = \frac{P_1 + D_1}{1 + K_e}$$

$$100 = \frac{P_1 + 0}{1 + 0.12}$$

$$P_1 = 112 - 0 = ₹ 112$$

(ii) Dividend is declared:

$$100 = \frac{P_1 + 10}{1 + 0.12}$$

$$P_1 = 112 - 10 = ₹ 102$$

Calculation of number of shares required for investment

	₹
Earning	5,00,000
Dividend distributed	1,00,000
Fund available for investment	4,00,000
Total Investment	10,00,000
Balance Funds required	10,00,000 - 4,00,000 = 6,00,000

$$\text{No. of shares} = \frac{\text{Funds required}}{\text{Price at end}(P_1)}$$

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$$\Delta n = \frac{6,00,000}{102} = 5,88,2.35 \text{ or } 5,883 \text{ shares}$$

Question 9 (Illustration)

The following information pertains to M/s XY Ltd.

Earnings of the Company	₹ 5,00,000
Dividend Payout ratio	60%
No. of shares outstanding	1,00,000
Equity capitalization rate	12%
Rate of return on investment	15%

CALCULATE:

- Market value per share as per Walter's model.
- Optimum dividend payout ratio according to Walter's model and the market value of Company's share at that payout ratio.

Answer 9

- As per Walter's model:

$$P = \frac{D + \frac{r}{K_e}(E - D)}{K_e}$$

Where,

P = Market price per share.

E = Earnings per share = ₹5

D = Dividend per share = ₹3

R = Return earned on investment = 15%

K_e = Cost of equity capital = 12%

$$P = \frac{3 + \frac{0.15}{0.12}(5 - 3)}{0.12} = \text{Rs. } 45.83$$

- 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 pay-out ratio of zero, the market value of the company's share will be:

$$P = \frac{0 + \frac{0.15}{0.12}(5 - 0)}{0.12} = ₹ 52.80$$

Question 10 (Illustration)

Taking an example of three different firms i.e. growth, normal and declining, CALCULATE the share price using Gordon's model.

Factors	Growth Firm $r > K_e$	Normal Firm $r = K_e$	Declining Firm $r < K_e$
r (rate of return on retained earnings)	15%	10%	8%
K_e (Cost of Capital)	10%	10%	10%
E (Earning Per Share)	₹ 10	₹ 10	₹ 10
b (Retained Earnings)	0.6	0.6	0.6
1 - b (Dividend Payout)	0.4	0.4	0.4

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Answer 10

$$P_0 = \frac{E_1(1-b)}{K_e - br}$$

(i) **Situation-1: Growth Firm $r > K_e$**

$$P_0 = \frac{10(1-0.6)}{0.10-0.15 \times 0.6} = \frac{4}{0.10-0.09} = ₹ 400$$

(ii) **Situation-2: Normal Firm $r = K_e$**

$$P_0 = \frac{10(1-0.6)}{0.10-0.10 \times 0.6} = \frac{4}{0.10-0.06} = ₹ 100$$

(iii) **Situation-2: Normal Firm $r < K_e$**

$$P_0 = \frac{10(1-0.6)}{0.10-0.08 \times 0.6} = \frac{4}{0.10-0.048} = ₹ 76.92$$

If the retention ratio (b) is changed from 0.6 to 0.4, the new share price will be as follows:

Growth Firm

$$P_0 = \frac{10(1-0.4)}{0.10-0.15 \times 0.4} = \frac{6}{0.10-0.06} = ₹ 150$$

Normal Firm

$$P_0 = \frac{10(1-0.4)}{0.10-0.10 \times 0.4} = \frac{6}{0.10-0.04} = ₹ 100$$

Declining Firm

$$P_0 = \frac{10(1-0.4)}{0.10-0.08 \times 0.4} = \frac{6}{0.10-0.032} = ₹ 88.24$$

From the above analysis, it can be concluded that:

When $r > k$, the market value increases with retention ratio.

When $r < k$, the market value of share stands to decrease.

When $r = k$, the market value is not affected by dividend policy.

The conclusion of the Gordon's model is similar to that of Walter's model.

Question 11 (Illustration)

The following information is given below in case of Aditya Ltd.: Earnings per share = ₹ 60

Capitalization rate = 15% Return on investment = 25% Dividend payout ratio = 30%

(i) **COMPUTE price per share using Walter's Model.**

(ii) **WHAT would be optimum dividend payout ratio per share under Gordon's Model.**

Answer 11

(i) **As per Walter's Model, Price per share is computed by using the following formula:**

$$P = \frac{D + \frac{r}{K_e}(E-D)}{K_e}$$

Where,

P = Market Price of the share.

E = Earnings per share.

D = Dividend per share.

K_e = Cost of equity/ rate of capitalization/ discount rate.

r = Internal rate of return/ return on investment

Applying the above formula, price per share

$$P = \frac{18 + \frac{0.25}{0.15}(60-18)}{0.15}$$

$$\text{Or, } P = \frac{18+70}{0.15} = ₹ 586.67$$

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(ii) As per Gordon's model, when $r > K_e$, optimum dividend payout ratio is 'Zero'.

Test Your Knowledge

Multiple Choice Questions

1. Which one of the following is the assumption of Gordon's Model?

- (a) $K_e > g$
- (b) Retention ratio, (b), once decide upon, is constant
- (c) Firm is an all equity firm
- (d) All of the above

Ans: (d)

2. What should be the optimum Dividend pay-out ratio, when $r = 15\%$ & $K_e = 12\%$:

- (a) 100%
- (b) 50%
- (c) Zero
- (d) None of the above.

Ans: (c)

3. Which of the following is the irrelevance theory?

- (a) Walter model
- (b) Gordon model
- (c) M.M. hypothesis
- (d) Linter's model

Ans: (c)

4. If the company's D/P ratio is 60% & ROI is 16%, what should be the growth rate?

- (a) 5%
- (b) 7%
- (c) 6.4%
- (d) 9.6%

Ans: (c)

5. If the shareholders prefer regular income, how does this affect the dividend decision:

- (a) It will lead to payment of dividend
- (b) It is the indicator to retain more earnings
- (c) It has no impact on dividend decision
- (d) Can't say

Ans: (a)

6. Mature companies having few investment opportunities will show high payout ratios, this statement is:

- (a) False
- (b) True
- (c) Partial true

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- (d) None of these

Ans: (b)

7. Which of the following is the limitation of Linter's model?

- (a) This model does not offer a market price for the shares.
 (b) The adjustment factor is an arbitrary number and not based on any scientific criterion or methods.
 (c) Both (a) & (b)
 (d) None of the above.

Ans: (c)

8. What are the different options other than cash used for distributing profits to shareholders?

- (a) Bonus shares
 (b) Stock split
 (c) Both (a) and (b)
 (d) None of the above

Ans: (a)

9. Which of the following statement is correct with respect to Gordon's model?

- (a) When IRR is greater than cost of capital, the price per share increases and dividend pay-out decreases.
 (b) When IRR is greater than cost of capital, the price per share decreases and dividend pay-out increases.
 (c) When IRR is equal to cost of capital, the price per share increases and dividend pay-out decreases.
 (d) When IRR is lower than cost of capital, the price per share increases and dividend pay-out decreases.

Ans: (a)

10. Compute EPS according to Graham & Dodd approach from the given information:

Market price	₹56
Dividend pay-out ratio	60%
Multiplier	2

- (a) ₹ 30
 (b) ₹ 56
 (c) ₹ 28
 (d) ₹ 84

Ans: (a)

11. Which among the following is not an assumption of Walter's Model?

- (a) Rate of return and cost of capital are constant
 (b) Information is freely available to all
 (c) There is discrimination in taxes
 (d) The firm has perpetual life

Ans: (c)

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Theoretical Questions

Question 1

STATE dividend decision? Briefly EXPLAIN the factors which govern this decision.

Answer 1

Dividend is that part of Profit After Tax (PAT) which is **distributed to the shareholders** of the company. Further, the profit earned by a company after paying taxes can be used for:

- i. Distribution of dividend, or
- ii. Retaining as surplus for future growth

Dividend policy of a firm is governed by:

(i) Long Term Financing Decision:

As we know that one of the financing options is 'Equity'. Equity can either be raised externally through issue of new equity shares or can be generated internally through retained earnings. For Equity, retained earnings are preferable because they do not involve any floatation costs (issue expenses).

But whether to retain or distribute the profits, forms the basis of this decision. Further, payment of cash dividend reduces the amount of funds required to finance profitable investment opportunities thereby restricting its financing options.

In this backdrop, the decision is based on the following:

1. Whether the organization has opportunities in hand to invest the profit, if retained?
2. Whether the return on such investment (ROI) will be higher than the expectations of shareholders i.e. K_e ?

(ii) Wealth Maximization Decision:

Under this decision, we are facing the problem as to what amount of dividend shall be distributed i.e. the Dividend Payout ratio (D/P) in relation to Market price of the shares (MPS)? This decision is based on the following:

1. Because of market imperfections and uncertainty, shareholders give more importance to near dividends than future dividends and capital gains. Payment of dividends influences the market price of the share directly. Higher dividends increase the value of shares and low dividends decrease it. A proper balance has to be struck between these two approaches.
2. When the firm increases its retained earnings, shareholders' dividends decreases and consequently market price is affected. Use of retained earnings to finance profitable investments increases the future earnings per share. This is because, shareholders expect that profitable investments made by the company may lead to higher return for them in future. On the other hand, increase in dividends may cause the firm to forego investment opportunities for lack of funds and thereby decrease the future earnings per share.

Thus, management should develop a dividend policy **which divides net earnings into dividends and retained earnings** in an optimum way so as to achieve the objective of wealth maximization for shareholders. Such a policy will be influenced by investment opportunities available to the firm and value of dividends as against capital gains to shareholders.

Question 2

EXPLAIN the advantages and disadvantages of the stock dividend.

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Answer 2
Advantages of Stock Dividend

There are many advantages both to the shareholders and company. Some of the main advantages are listed as under:

(1) To Shareholders:

- (a) No tax is payable by shareholders on stock dividend received from domestic company as it is not treated as dividend but capital asset under Income Tax Act, 1961.
- (b) Policy of paying fixed dividend per share and its continuation even after declaration of stock dividend will increase total cash dividend of the shareholders in future.

(2) To Company:

- (a) Conservation of cash for meeting profitable investment opportunities.
- (b) Suitable in case of cash deficiency and restrictions imposed by lenders to pay cash dividend.

Limitations of Stock Dividend

Limitations of stock dividend to shareholders and company are as follows:

- 1. To Shareholders:** Stock dividend does not affect the wealth of shareholders and therefore it has no value for them. This is because the declaration of stock dividend is a method of capitalising the past earnings of the shareholders and is a formal way of recognising earnings which the shareholders already own. It merely divides the company's ownership into a large number of share certificates. James Porterfield regards stock dividends as a division of corporate pie into a larger number of pieces. Stock dividend does not give any extra or special benefit to the shareholder. His proportionate ownership in the company does not change at all. Stock dividend creates a favourable psychological impact on the shareholders and is greeted by them on the ground that it gives an indication of the company's growth.
- 2. To Company:** Stock dividends are costlier to administer than cash dividends. It is disadvantageous if periodic small stock dividends are declared by the company as earnings.

Question 3

DISCUSS the practical considerations in dividend policy.

Answer 3

The practical considerations in dividend policy of a company are briefly discussed below:

- (a) **Financial Needs of a Company:** Retained earnings can be a source of finance for creating profitable investment opportunities. As we discussed earlier, when internal rate of return of a company is greater than return required by shareholders, it would be advantageous for the shareholders to re-invest their earnings.

Risk and financial obligations increase if a company raises capital through issue of new shares where floatation costs are involved.

In this respect, a comparison between growth companies and mature companies has been given as follows:

Mature Companies	Growth Companies
1. Mature companies having few investment opportunities will show high payout ratios;	1. Growth companies have low payout ratios. They are in need of funds to finance fast growing fixed assets.

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2. Share prices of such companies are sensitive to any changes in dividend payout.	2. Distribution of earnings reduces the funds of the company. They retain all the earnings and declare bonus share to offset the dividend requirements of the shareholders.
3. A small portion of the earnings is kept to meet emergent and occasional financial needs.	3. These companies increase the amount of dividends gradually as the profitable investment opportunities start falling.

(b) Constraints on Paying Dividends

- (i) **Legal:** Please see point no. (9) under the heading, “Determinants of Dividend Decisions”.
- (ii) **Liquidity:** Payment of dividends means outflow of cash. Ability to pay dividends depends on cash and liquidity position of the firm. A mature company does not have much investment opportunities, nor its funds tied up in permanent working capital and, therefore has a sound cash position. A growth oriented company in spite of having good profits need funds to expand its operations and permanent working capital and therefore it is less likely to declare dividends.
- (iii) **Access to the Capital Market:** By paying large dividends, cash position is affected. So, if new shares have to be issued to raise funds for financing investment programmes and if the existing shareholders cannot buy additional shares, then their control is diluted. In such a situation, payment of dividends may be withheld and earnings are utilised for financing firm’s investment opportunities.
- (iv) **Investment Opportunities:** If investment opportunities are inadequate, it is better to pay dividends and raise external funds whenever necessary for such opportunities.
- (c) **Desire of Shareholders:** The desire of shareholders (whether they prefer regular income by way of dividend or maximize their wealth by way of gaining on sale of the shares) is also an important point to be considered by the companies. The small shareholders are concerned with regular dividend income, hence, some select group of companies paying regular and liberal dividend. As compared to those shareholders who prefer regular dividend as source of income, there are shareholders who prefer to gain on sale of shares at times when shares command higher price in the market. However, capital gain on sale of shares attracts tax on such gain and rates vary on the basis of holding period. The dividend policy, thus pursued by the company should strike a balance on the desires of the shareholders. Also, the dividend policy once established should be continued as long as possible without interfering with the needs of the company to create a positive clientele effect.
- (d) **Stability of Dividends:** Stability in dividend can be maintained by fixing the amount or rate of dividend irrespective of the earnings of the company. The stable dividend policies may include:
 - (e) **Constant Dividend per Share:** Shareholders are given fixed amount of dividend irrespective of actual earnings. The amount of dividend may increase or decrease later on depending upon the financial health of the company but it is generally maintained for a considerable period of time.

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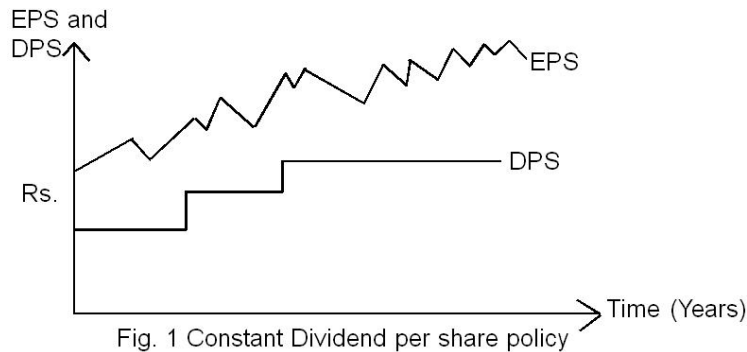
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To maintain a constant dividend amount, it is necessary to create a reserve like Dividend Equalisation Reserve Fund earmarked by marketable securities for accumulation of surplus earnings and to use it for paying dividends in those years where the company's performance is not good. This policy treats common shareholders at par with preference shareholders without giving them any preferred opportunities within the firm. It is preferred by persons and institutions that depend on dividend income to meet their living and operating expenses.

- (f) **Constant Percentage of Net Earnings:** The ratio of dividend to earnings is known as Payout ratio. Some companies follow a policy of constant Payout ratio i.e. paying fixed percentage on net earnings every year. To quote from Page 74 of the annual report 2011 of Infosys Technologies Limited, "The Dividend Policy is to distribute up to 30% of the Consolidated Profit after Tax (PAT) of the Infosys Group as Dividend."

Contrary to this, Warren Buffet (amongst the richest persons of the world) says: "We will either pay large dividends or none at all if we can't obtain more money through re-investment (of those funds). There is no logic to regularly paying out 10% or 20% of earnings as dividends every year."

Such a policy (as mentioned by Warren Buffet) envisages that the amount of dividend fluctuates in direct proportion to earnings. If a company adopts 40% payout ratio, then 40% of every rupee of net earnings will be paid out. If a

company earns ₹2 per share, dividend per share will be 80 paise and if it earns ₹1.50 per share, dividend per share will be 60 paise.

Hence, such a policy is related to company's ability to pay dividends. For losses incurred, no dividend shall be paid. Internal financing with retained earnings is automatic. At any given payout ratio, amount of dividend and any addition to retained earnings increase with increased earnings and decrease with decreased earnings. This policy has a conservative approach and provides a guarantee against over/underpayment. Management is not allowed to pay dividend if profits are not earned in current year. Conversely, dividend is not allowed to be foregone if profits are earned.

- (i) **Small Constant Dividend per Share plus Extra Dividend:** The amount of dividend is set at high level and the policy is adopted for companies with stable earnings. For companies with fluctuating earnings, the policy is to pay a minimum dividend per share with a step up feature. The small amount of dividend is fixed to reduce the possibility of missing dividend payment. By paying extra dividend in period of prosperity, it enables the company to pay constant amount of dividend

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regularly without default and allows flexibility for supplementing shareholders' income when company's earnings are higher than usual, without committing to make larger payments as part of further fixed dividend. This policy allows some shareholders to plan on set amounts of cash and at the same time be pleased when extra dividends are announced.

A firm following policy of stable dividend in Figure 1 will command higher market price for shares than the firm which varies dividend with cyclical fluctuation in earnings as in Figure 2.

There is, however, a danger for a company with a pattern of stable dividends missing dividend

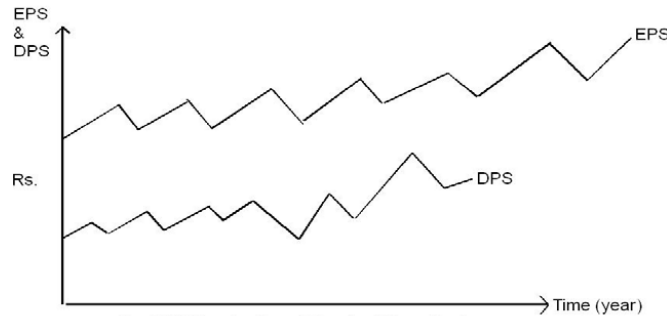


Fig. 2 Dividend policy at Constant Payout ratio

payment in a year as this break will have severe effect on investors than failure to pay dividend by a company with unstable dividend policy. It is prudent for companies to maintain stability of dividends during lean periods. The dividend rate is to be fixed at a conservative figure so that it can be maintained even in such periods. To give benefit of company's prosperity, extra dividend can be declared. If the company fails to pay extra dividend, it does not have a depressing effect on investors.

Question 4

LIST out the assumptions of irrelevance theory.

Answer 4

MM hypothesis is based on the following assumptions:

- **Perfect capital markets:** The firm operates in a market in which all investors are rational and information is freely available to all.
- **No taxes:** There are no taxes or no tax discrimination between dividend income and capital appreciation (capital gain). It means there is no difference in taxation of dividend income or capital gain. This assumption is necessary for the universal applicability of the theory, since the tax rates may be different in different countries.
- **Fixed investment policy:** It is necessary to assume that all investment should be financed through equity only, since implication after using debt as a source of finance may be difficult to understand. Further, the impact will be different in different cases.
- **No flotation or transaction cost:** Similarly, these costs may differ from country to country or market to market.
- **Risk of uncertainty does not exist.** Investors are able to forecast future prices and dividend with certainty and one discount rate is appropriate for all securities and all time periods.

Question 5

State the meaning of stock split. Explain its advantages and disadvantages.

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Answer 5

Stock split means splitting one share into many, say, one share of ₹ 500 in to 5 shares of ₹ 100.

Stock splits is a tool used by the companies to regulate the prices of shares i.e. if a share price increases beyond a limit, it may become less tradable, for e.g. suppose a company's share price increases from ₹ 50 to ₹ 1000 over the years, it is possible that it might go out of range of many investors.

Advantages of Stock Splits

1. It makes the **share affordable** to small investors.
2. **Number of shares may increase** the number of shareholders; hence the potential of investment may increase.

Limitations of Stock Splits

1. **Additional expenditure** needs to be incurred on the process of stock split.
2. **Low share price may attract speculators** or short term investors, which are generally not preferred by any company.

Practical Questions

Question 1

M 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.

M Ltd. requires to raise ₹ 5,00,000 for an approved investment expenditure. ILLUSTRATE, how the MM approach affects the value of M Ltd. if dividends are paid or not paid.

Answer 1

Given,

Cost of Equity (K_e)	10%
Number of shares in the beginning (n)	25,000
Current Market Price (P_0)	₹100
Net Profit (E)	₹2,50,000
Expected Dividend (D_1)	₹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

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Step 3 No. of shares required to be issued for balance fund $\text{No of Shares} = \frac{\text{Funds required}}{\text{Price at end (P}_1\text{)}}$ $\Delta n = \frac{3,75,000}{105} = 3,571.4285$	Step 3 No. of shares required to be issued for balance fund $\text{No of Shares} = \frac{\text{Funds required}}{\text{Price at end (P}_1\text{)}}$ $\Delta n = \frac{2,50,000}{110} = 2,272.73$
Step 4 Calculation of value of firm $V_f = \frac{(n + \Delta n)P_1 - I + E}{(1 + K_e)}$ $V_f = \frac{[25,000 + \frac{3,75,000}{105}]105 - 5,00,000 + 2,50,000}{(1 + .10)}$ $= ₹25,00,000$	Step 4 Calculation of value of firm $V_f = \frac{(n + \Delta n)P_1 - I + E}{(1 + K_e)}$ $V_f = \frac{[25,000 + \frac{2,50,000}{110}]110 - 5,00,000 + 2,50,000}{(1 + .10)}$ $= ₹25,00,000$

Question 2

The following information is supplied to you:

	₹
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:

- ANALYSE whether the company is following an optimal dividend policy.
- COMPUTE P/E ratio at which the dividend policy will have no effect on the value of the share.
- Will your decision change, if the P/E ratio is 8 instead of 12.5? ANALYSE.

Answer 2

The EPS of the firm is ₹10 (i.e., ₹2,00,000/ 20,000), $r = ₹2,00,000 / (20,000 \text{ shares} \times ₹100) = 10\%$. The P/E Ratio is given at 12.5 and the cost of capital (K_e) may be taken at the inverse of P/E ratio. Therefore, K_e is 8 (i.e., $1/12.5$). The firm is distributing total dividends of ₹1,50,000 among 20,000 shares, giving a dividend per share of ₹7.50. the value of the share as per Walter's model may be found as follows:

$$P = \frac{D + \frac{r}{K_e}(E - D)}{K_e} = \frac{7.5 + \frac{0.1}{0.08}(10 - 7.5)}{0.08} = ₹132.81$$

The firm has a dividend payout of 75% (i.e., ₹1,50,000) out of total earnings of ₹2,00,000. Since, the rate of return of the firm (r) is 10% and it is more than the K_e of 8%, therefore, by distributing 75% of earnings, the firm is not following an optimal dividend policy. The optimal dividend policy for the firm would be to pay zero dividend and in such a situation, the market price would be:

$$= \frac{0 + \frac{0.1}{0.08}(10 - 0)}{0.08} = ₹156.25$$

So, theoretically the market price of the share can be increased by adopting a zero payout.

- The P/E ratio at which the dividend policy will have no effect on the value of the share is such at which the K_e would be equal to the rate of return (r) of the firm. The K_e would be 10% ($= r$) at the P/E ratio of 10. Therefore, at the P/E ratio of 10, the dividend policy would have no effect on the value of the share.

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- (iii) If the P/E is 8 instead of 12.5, then the K_e which is the inverse of P/E ratio, would be 12.5 and in such a situation $k_e > r$ and the market price, as per Walter's model would be:

$$P = \frac{D + \frac{r}{K_e}(E - D)}{K_e} = \frac{7.5 + \frac{0.1}{0.125}(10 - 7.5)}{0.125} = ₹ 76$$

Question 3

With the help of following figures CALCULATE the market price of a share of a company by using:

- Walter's formula
- Dividend growth model (Gordon's formula)

Earnings per share (EPS)	₹10
Dividend per share (DPS)	₹6
Cost of capital (K_e)	20%
Internal rate of return on investment	25%
Retention Ratio	40%

Answer 3

Market price per share by

- Walter's model

$$P = \frac{D + \frac{r}{K_e}(E - D)}{K_e} = \frac{6 + \frac{0.25}{0.20}(10 - 6)}{0.20} = ₹ 55$$

- Gordon's model

$$\text{Present market price per share } (P_0) = \frac{E(1-b)}{k-br}$$

$$=(P_0) = \frac{10(1-0.40)}{0.20 - (0.4 \times 0.25)} = \frac{6}{0.1} = ₹ 60$$

Question 4

The annual report of XYZ Ltd. provides the following information

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. (K_e)	16%

CALCULATE price per share using Gordon's Model when dividend pay-out is:

- 25%;
- 50%;
- 100%.

Answer 4

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

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Price per share according to Gordon's Model is calculated as follows:

$$P_0 = \frac{E_1(1-b)}{K_e - br}$$

Here, $E_1 = 7$, $K_e = 16\%$

(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%

$$P_0 = \frac{7 \times 1}{0.16 - (0 \times 0.2)} = \frac{7}{0.16} = ₹ 43.75$$

Question 5

A&R 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 indefinite 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 of per share and state whether shares are overpriced or underpriced.

Answer 5

As per Dividend discount model, the price of share is calculated as follows:

$$P = \frac{D_1}{(1+K_e)^1} + \frac{D_2}{(1+K_e)^2} + \frac{D_3}{(1+K_e)^3} + \frac{D_4}{(1+K_e)^4} + \frac{D_5}{(K_e - g)} \times \frac{1}{(1+K_e)^4}$$

Where,

P = Price per share

K_e = Required rate of return on equity

g = Growth rate

$$= \frac{₹ 120 \times 1.15}{(1+0.2)^1} + \frac{₹ 138 \times 1.15}{(1+0.2)^2} + \frac{₹ 158.7 \times 1.15}{(1+0.2)^3} + \frac{₹ 182.5 \times 1.15}{(1+0.2)^4} + \frac{₹ 209.88 \times 1.05}{(0.2 - 0.05)^1} \times \frac{1}{(1+0.2)^4}$$

$$P = 115 + 110.2 + 105.6 + 101.2 + 708.51 = ₹ 1,140.51$$

Intrinsic value of share is ₹ 1,140.51 as compared to latest market price of ₹ 3,122. Market price of a share is overpriced by ₹ 1,981.49

Question 6

In the month of May of the current Financial Year, shares of RT Ltd. was sold for ₹ 1,460 per share. A long term earnings growth rate of 7.5% is anticipated. RT Ltd. is expected to pay dividend of ₹ 20 per share.

- 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?
- It is expected that RT 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?

Answer 6

- According to Dividend Discount Model approach, the firm's expected or required return on equity is computed as follows:

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$$K_e = \frac{D_1}{P_0} + g$$

$$K_e = \frac{20(1+0.075)}{1,460} + 7.5\%$$

$$= 0.0147 + 0.075 = 0.0897 \text{ or } 8.97\%$$

- (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:

$$0.075 = b_1 \times 0.10$$

$$b_1 = 0.75 \text{ and payout ratio} = 0.25$$

With 0.25 payout ratio the EPS will be as follows:

$$\frac{\text{₹ } 20}{0.25} = \text{₹ } 80$$

With new 0.40 ($1 - 0.60$) payout ratio, the new dividend will be

$$D_1 = \text{₹ } 80 \times 0.40 = \text{₹ } 32$$

Accordingly, new K_e will be

$$= K_e = \frac{32}{1,460} + 6.0\%$$

$$\text{or, } K_e = 8.19\%$$

Question 7

Aakash Ltd. has 10 lakh equity shares outstanding at the start of the accounting year. The existing market price per share is Rs.150. Expected dividend is Rs. 8 per share. The rate of capitalization appropriate to the risk class to which the company belongs is 10%.

- CALCULATE the market price per share when expected dividends are: (a) declared, and (b) not declared, based on the Miller – Modigliani approach.
- CALCULATE 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 Rs.3 crore, investment budget is Rs. 6 crores, when (a) Dividends are declared, and (b) Dividends are not declared.
- PROOF that the market value of the shares at the end of the accounting year will remain unchanged irrespective of whether (a) Dividends are declared, or (ii) Dividends are not declared.

Answer 7

- (i) Calculation of market price per share

According to Miller – Modigliani (MM) Approach:

$$P_0 = \frac{P_1 + D_1}{1 + K_e}$$

Where,

$$\text{Existing market price } (P_0) = \text{₹ } 150$$

$$\text{Expected dividend per share } (D_1) = \text{₹ } 8$$

$$\text{Capitalization rate } (K_e) = 0.10$$

$$\text{Market price at year end } (P_1) = \text{to be determined}$$

- (a) If expected dividends are declared, then

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$$₹ 150 = \frac{P_1 + ₹ 8}{1 + 0.10}$$

$$\therefore P_1 = ₹ 157$$

(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.

Question 8

Mr H is currently holding 1,00,000 shares of HM Ltd, and currently the share of HM Ltd is trading on Bombay Stock Exchange at ₹ 50 per share. Mr A have a policy to re-invest the amount of any dividend received into the shared back again of HM Ltd. If HM Ltd has declared a dividend of ₹ 10 per share, please determine the no of shares that Mr A would hold after he re-invests dividend in shares of HM Ltd.

Answer 8

Ex-dividend price is ₹ 40 (50-10).

The total amount of dividend received is ₹ 10,00,000 which is re-invested at the rate of ₹ 40 per share.

Hence additional shares purchased would be 25,000.

Total holding would be 1,25,000 shares (1,00,000 + 25,000)

Question 9

Following information is given pertaining to DG Ltd,

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No of shares outstanding	1 lakh shares
Earnings Per share	25 per share
P/E Ratio	20
Book Value per share	400 per share

If company decides to repurchase 25,000 shares, at the prevailing market price, what is the resulting book value per share after repurchasing.

Answer 9

Current Market price = $20 \times 25 = 500$ per share

Book value of the company before repurchase = ₹ 4 cr (400x1 lakh shares)

Amount paid for repurchase = 1.25 cr (25,000 shares x 500 per share)

Book Value of company after repurchase = ₹ 2.75 cr (4cr – 1.25cr)

No of shares after repurchase = 75,000 shares

Book value per share = 367 per share.

Case Scenarios

1. KGF Chemicals Ltd., a prominent player in the chemical industry, faces the challenge of determining its growth trajectory and dividend policy to maximize shareholder value. With expectations of significant growth in the near term and stabilization in the long run, the company must strategically manage its resources to align with investor expectations.

KGF Chemicals Ltd. is a leading manufacturer and supplier of specialty chemicals catering to diverse industries such as pharmaceuticals, agriculture, and manufacturing. Established with a commitment to innovation and quality, the company has garnered a strong market presence over the years.

The company is projected to experience robust growth at a rate of 14% per annum for the next four years. Subsequently, the growth rate is expected to stabilize at the national economy's rate of 7% indefinitely. This forecast reflects both the company's expansion plans and the broader economic landscape.

KGF Chemicals Ltd. paid a dividend of ₹ 2 per share last year ($D_0 = 2$). The management faces the crucial decision of balancing dividend payouts with reinvestment opportunities to sustain growth and meet shareholders' expectations. The dividend policy must strike a delicate balance between rewarding shareholders and retaining earnings for future investments.

The required rate of return on equity shares is 12%, indicating investors' expected return given the company's risk profile and market conditions. Management must carefully assess investment opportunities to ensure they meet or exceed this threshold, thereby generating value for shareholders over the long term.

In navigating the dynamic landscape of the chemical industry, KGF Chemicals Ltd. must adopt a proactive approach to managing growth and dividend policy. By aligning strategic decisions with investor expectations and market dynamics, the company can position itself for sustainable success while maximizing shareholder value. Continual evaluation and adaptation will be essential to capitalize on growth opportunities and maintain competitiveness in the evolving marketplace.

You are required to answer the following on the basis of above information:

1. What is the expected dividend at the end of 4th Year?

(a) ₹ 2.1097

(b) ₹ 2.1483

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- (c) ₹ 2.9631
 (d) ₹ 3.3779

Ans: (d)

2. What is the present value of Expected Dividends to be received in next four years?

- (a) ₹ 11.2202
 (b) ₹ 8.3655
 (c) ₹ 9.8423
 (d) ₹ 6.2176

Ans: (b)

3. Determine the Market Price of shares at the end of 4th Year?

- (a) ₹ 72.28
 (b) ₹ 67.55
 (c) ₹ 50.67
 (d) ₹ 77.34

Ans: (a)

4. Determine the Present Value of Market Price of shares at the end of 4th Year?

- (a) ₹ 49.18
 (b) ₹ 32.22
 (c) ₹ 45.79
 (d) ₹ 42.96

Ans: (c)

5. Calculate today's market price of the share.

- (a) ₹ 59.03
 (b) ₹ 54.33
 (c) ₹ 57.01
 (d) ₹ 57.54

Ans: (b)

As per Dividend discount model, the price of share is calculated as follows:

$P = \text{Sum of PV of Expected Dividends} + \text{PV of Share price at the end of the period}$

$$P = \frac{D_1}{(1+K_e)^1} + \frac{D_2}{(1+K_e)^2} + \frac{D_3}{(1+K_e)^3} + \frac{D_4}{(1+K_e)^4} + \frac{D_5}{(K_e - g)} \times \frac{1}{(1+K_e)^4}$$

Where,

P = Price Per Share

K_e = Required rate of return on equity

g = Growth rate

Year	$D_1 = D_0 (1+g)$	PV Discount Factor @ 12%	PV in ₹
1	$2(1+14\%) = 2.28$	0.893	2.0364
2	$2.28(1+14\%) = 2.5992$	0.797	2.0715
3	$2.5992(1+14\%) = 2.9631$	0.712	2.1097
4	$2.9631(1+14\%) = 3.3779$	0.636	2.1483
Total PV of Expected Dividend			₹ 8.3655

$$P_4 = \frac{D_5}{K_e - g} = \frac{D_4 (1+g)}{K_e - g} = \frac{3.3779(1+7\%)}{12\% - 7\%} = ₹ 72.28$$

$$\text{PV of share at the end of 4th year} = ₹ 72.28 \times 0.636 = ₹ 45.97$$

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Market Price of shares = ₹ 8.3655 + ₹ 45.97 = ₹ **54.33**



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Chapter 9.1

Management of Working capital

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Question 1 (Illustration)

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 levels. ANALYSE the effect of the three alternative current assets policies.

Answer 1

Effect of Alternative Current Assets Policies

	Conservative (₹)	Moderate (₹)	Aggressive (₹)
Sales	20,00,000	20,00,000	20,00,000
Earnings before Interest and Taxes (EBIT)	2,00,000	2,00,000	2,00,000
Current Assets	5,00,000	4,00,000	3,00,000
Fixed Assets	5,00,000	5,00,000	5,00,000
Total Assets	10,00,000	9,00,000	8,00,000
Return on Total Assets (EBIT ÷ Total Assets)	20%	22.22%	25%
Current Assets/Fixed Assets	1.00	0.80	0.60

The aforesaid calculation shows that the conservative policy provides greater liquidity (solvency) to the firm, but lower return on total assets. On the other hand, the aggressive policy gives higher return, but low liquidity and thus is very risky. The moderate policy generates return higher than Conservative policy but lower than aggressive policy. This is less risky than aggressive policy but riskier than conservative policy. It also reflects inverse relationship between Current Assets / Fixed Assets ratio and Return on Total Assets.

In determining the optimum level of current assets, the firm should balance the profitability – solvency tangle by minimizing total costs – Cost of liquidity and cost of illiquidity.

Question 2 (Illustration)

From the following information of XYZ Ltd., you are required to CALCULATE:

- Net operating cycle period.
- Number of operating cycles in a year.

		(₹)
(i)	Raw material inventory consumed during the year	6,00,000
(ii)	Average stock of raw material	50,000

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(iii)	Cost of Production for the year	5,00,000
(iv)	Average work-in-progress inventory	30,000
(v)	Cost of goods sold during the year	8,00,000
(vi)	Average finished goods stock held	40,000
(vii)	Average collection period from debtors	45 days
(viii)	Average credit period availed	30 days
(ix)	No. of days in a year	360 days

Answer 2
a) Calculation of Net Operating Cycle period of XYZ Ltd

Raw Material storage period (R)

$$= \frac{\text{Average stock of raw material}}{\text{Average Cost of Raw Material Consumption per day}}$$

$$= \frac{\frac{\text{₹ 50,000}}{\text{₹ 6,00,000} \div 360 \text{ days}}}{\frac{\text{₹ 50,000}}{1,667}} = 30 \text{ days}$$

Work-in-progress inventory holding period (W)

$$= \frac{\text{Average work-in-progress inventory}}{\text{Average Cost of production per day}}$$

$$= \frac{\frac{\text{₹ 30,000}}{\text{₹ 5,00,000} \div 360 \text{ days}}}{\frac{\text{₹ 30,000}}{1,389}} = 22 \text{ days}$$

Finished Goods storage period (F)

$$= \frac{\text{Average stock of finish goods}}{\text{Average Cost of Goods sold per day}}$$

$$= \frac{\frac{\text{₹ 40,000}}{\text{₹ 8,00,00} \div 360 \text{ days}}}{\frac{\text{₹ 40,000}}{2,222}} = 18 \text{ days}$$

Receivables (Debtors) collection period (D) = 45 days

Credit Period allowed by creditors (C) = 30 days

Net Operating Cycle = R + W + F + D - C = 30 + 22 + 18 + 45 - 30 = 85 days

b) Number of Operating Cycles in a year =

$$= \frac{\text{No of days in a year}}{\text{Operating cycle period}} = \frac{360 \text{ days}}{85 \text{ days}} = 4.23 \text{ times.}$$
Question 3 (Illustration)

On 1st January, the Managing Director of Naureen 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 materials 60%, Direct wages 10% and Overheads 20%.

Raw materials are expected to remain in store for an average of 2 months before issue 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 costs 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 material.

Credit allowed to debtors is 3 months from the date of dispatch.

Selling price is ₹ 5 per unit.

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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.

Answer 3

Working Notes:

1. Raw material inventory:

The cost of materials for the whole year is 60% of the Sales value.

Hence it is $60,000 \text{ units} \times ₹ 5 \times \frac{60}{100} = ₹ 1,80,000$. The monthly consumption of raw material would be ₹ 15,000. Raw material requirements would be for two months; hence raw materials in stock would be ₹ 30,000.

2. Work-in-process: (Students may give special attention to this point). It is stated that each unit of production is expected to be in process for one month).

		(₹)
(a)	Raw materials in work-in-process (being one month's rawmaterial requirements)	15,000
(b)	Labour costs in work-in-process (It is stated that it accrues evenly during the month. Thus, on the first day of each month it would be zero and on the last day of month the work-in-process would include one month's Labour costs. On an average therefore, it would be equivalent to $\frac{1}{2}$ of the month's Labour costs) $\left(\frac{10\% \text{ of } (60,000 \times ₹ 5)}{12 \text{ month}} \times 0.5 \text{ month} \right)$	1,250
(c)	Overheads (For $\frac{1}{2}$ month as explained above) $\left(\frac{20\% \text{ of } (60,000 \times ₹ 5)}{12 \text{ month}} \times 0.5 \text{ month} \right)$	2,500
	Total work-in-process	18,750

3. Finished goods inventory: (3 month's cost of production)

Raw Materials $\left(\frac{60\% \text{ of } (60,000 \times ₹ 5)}{12 \text{ month}} \times 3 \text{ month} \right)$	45,000
Labour $\left(\frac{10\% \text{ of } (60,000 \times ₹ 5)}{12 \text{ months}} \times 3 \text{ months} \right)$	
Overheads $\left(\frac{20\% \text{ of } (60,000 \times ₹ 5)}{12 \text{ months}} \times 3 \text{ months} \right)$	15,000
Total Finished goods inventory	67,500
Alternatively, $(60,000 \text{ units} \times ₹ 5 \times 90\%) \times 3/12$	67,500

4. Debtors: The total cost of sales = 2,70,000.

Therefore, debtors = $₹ 2,70,000 \times \frac{3}{12} = ₹ 67,500$

Where, Total Cost of Sales = RM + Wages + Overheads + Opening Finished goods inventory – Closing finished goods inventory.

= ₹ 1,80,000 + ₹ 30,000 + ₹ 60,000 + ₹ 67,500 – ₹ 67,500 = ₹ 2,70,000.

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5. **Creditors:** Suppliers allow a two months' credit period. Hence, the average amount of creditors would be two months' consumption of raw materials i.e.

$$\left[\frac{10\% \text{ of } (60,000 \times ₹ 5)}{12 \text{ months}} \times 2 \text{ months} \right] = ₹ 30,000$$

6. **Direct Wages payable** $\left[\frac{10\% \text{ of } (60,000 \times ₹ 5)}{12 \text{ months}} \times 1 \text{ month} \right] = ₹ 2,500$

7. **Overheads Payable** $\left[\frac{20\% \text{ of } (60,000 \times ₹ 5)}{12 \text{ months}} \times 1 \text{ month} \right] = ₹ 5,000$

Here it has been assumed that inventory level is uniform throughout the year, therefore opening inventory equals closing inventory.

Statement of Working Capital Required

	(₹)	(₹)
Current Assets or Gross Working Capital:		
Raw materials inventory (Refer to working note 1)	30,000	
Working-in-process (Refer to working note 2)	18,750	
Finished goods inventory (Refer to working note 3)	67,500	
Debtors (Refer to working note 4)	67,500	
Cash	20,000	2,03,750
Current Liabilities:		
Creditors (Refer to working note 5)	30,000	
Direct wages payable (Refer to working note 6)	2,500	
Overheads payable (Refer to working note 7)	5,000	(37,500)
Estimated working capital requirements		1,66,250

Question 4 (Illustration)

The following annual figures relate to XYZ Co.:

	(₹)
Sales (at two months' credit)	36,00,000
Materials 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 month's stock each 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.

Answer 4

Statement of Working Capital requirements (cash cost basis)

	(₹)	(₹)
A. Current Assets		
Inventory:		
-Raw materials $\left[\frac{₹ 9,00,000}{12 \text{ months}} \times 1 \text{ month} \right]$	75,000	

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-Finished Goods $\left[\frac{₹ 25,80,000}{12 \text{ months}} \times 1 \text{ month} \right]$	2,15,000	
Receivables(Debtors) $\left[\frac{₹ 29,40,000}{12 \text{ months}} \times 2 \text{ month} \right]$	4,90,000	
Sales Promotion expenses paid in advance $\left[\frac{₹ 1,20,000}{12 \text{ months}} \times 3 \text{ months} \right]$	30,000	
Cash balance	1,00,000	9,10,000
Gross Working Capital		9,10,000
B. Current Liabilities:		
Payables:		
- Creditors for materials $\left[\frac{₹ 9,00,000}{12 \text{ months}} \times 2 \text{ months} \right]$	1,50,000	
Wages outstanding $\left[\frac{₹ 7,20,000}{12 \text{ months}} \times 1 \text{ month} \right]$	60,000	
Manufacturing expenses outstanding $\left[\frac{₹ 9,60,000}{12 \text{ months}} \times 1 \text{ month} \right]$	80,000	
Administrative expenses outstanding $\left[\frac{₹ 2,40,000}{12 \text{ months}} \times 1 \text{ month} \right]$	20,000	3,10,000
Net working capital (A - B)		6,00,000
Add: Safety margin @ 20%		1,20,000
Total Working Capital requirements		7,20,000

Working Notes:

(i) Computation of Annual Cash Cost of Production	(₹)
Material consumed	9,00,000
Wages	7,20,000
Manufacturing expenses	9,60,000
Total cash cost of production	25,80,000
(ii) Computation of Annual Cash Cost of Sales:	(₹)
Total Cash cost of production as in (i) above	25,80,000
Administrative Expenses	2,40,000
Sales promotion expenses	1,20,000
Total cash cost of sales	29,40,000

Question 5 (Illustration)

Samreen Enterprises 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

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Selling Price	<u>18.00</u>
Sales during 2020-21 – ₹ 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.

Answer 5

This question can be solved using two approaches:

- To assess the impact of double shift for long term as a matter of production policy.
- To assess the impact of double shift to mitigate the immediate demand for next year only.

The first approach is more appropriate and fulfilling the requirement of the question.

(i) Assessment of impact of double shift for long term as a matter of production policy:

Comparative Statement of Working Capital Requirement

	Single Shift (24,000)			Double Shift (48,000)		
	Unit	Rate (₹)	Amount (₹)	Unit	Rate (₹)	Amount (₹)
Current Assets						
Inventories:						
Raw Materials	6,000	6.00	36,000	12,000	5.40	64,800
Work-in-Progress	2,000	11.00	22,000	2,000	9.40	18,800
Finished Goods	4,500	16.00	72,000	9,000	12.40	1,11,600
Sundry Debtors	6,000	16.00	96,000	12,000	12.40	1,48,800
Total Current Assets: (A)			2,26,000			3,44,000
Current Liabilities						
Creditors for Materials	4,000	6.00	24,000	8,000	5.40	43,200
Creditors for Wages	1,000	5.00	5,000	2,000	4.00	8,000
Creditors for Expenses	1,000	5.00	5,000	2,000	3.00	6,000
Total Current Liabilities: (B)			34,000			57,200
Working Capital: (A) – (B)			1,92,000			2,86,800

Additional Working Capital requirement = ₹ 2,86,800 – ₹ 1,92,000 = ₹ 94,800

Workings:

(1) Statement of cost at single shift and double shift working

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	24,000 units		48,000 Units	
	Per unit (₹)	Total (₹)	Per unit (₹)	Total (₹)
Raw materials	6.00	1,44,000	5.40	2,59,200
Wages - Variable	3.00	72,000	3.00	1,44,000
Fixed	2.00	48,000	1.00	48,000
Overheads - Variable	1.00	24,000	1.00	48,000
Fixed	4.00	96,000	2.00	96,000
Total cost	16.00	3,84,000	12.40	5,95,200
Profit	2.00	48,000	5.60	2,68,800
	18.00	4,32,000	18.00	8,64,000

$$(2) \text{ Sales in units } 2020-21 = \frac{\text{Sales}}{\text{Unit selling price}} = \frac{₹ 4,32,000}{₹ 18} = 24,000 \text{ units}$$

$$(3) \text{ Stock of Raw Materials in units on } 31.3.2021 = \frac{\text{Value of stock}}{\text{Cost per unit}} = \frac{₹ 36,000}{6} = 6,000 \text{ units}$$

$$(4) \text{ Stock of work-in-progress in units on } 31.3.2021 = \frac{\text{Value of work-in-progress}}{\text{Prime Cost per unit}} = \frac{₹ 22,000}{(₹ 6 + ₹ 5)} = 2,000 \text{ units}$$

$$(5) \text{ Stock of finished goods in units } 2020-21 = \frac{\text{Value of stock}}{\text{Total Cost per unit}} = \frac{₹ 72,000}{₹ 16} = 4,500 \text{ units.}$$

(ii) Assessment of the impact of double shift to mitigate the immediate demand for next year only & not as part of policy implementation.

In this approach, working capital shall be computed as if we are calculating the same for the next / second year with double production. Whereas, in the first approach to implement double-shift as part of policy implementation, we calculated comparative analysis of working capital requirement for single & double shift within the same year.

Workings:

(1) Calculation of no. of units to be sold:

No. of units to be Produced	48,000
Add: Opening stock of finished goods	4,500
Less: Closing stock of finished goods	(9,000)
No. of units to be Sold	43,500

(2) Calculation of Material to be consumed and materials to be purchased in units:

No. of units Produced	48,000
Add: Closing stock of WIP	2,000
Less: Opening stock of finished goods	(2,000)
Raw Materials to be consumed in units	48,000
Add: Closing stock of Raw material	12,000
Less: Opening stock of Raw material	(6,000)
Raw Materials to be purchased (in units)	54,000

(3) Credit allowed by suppliers:

$$= \frac{\text{No. of units to purchased} \times \text{Cost per unit}}{12 \text{ months}} \times 2 \text{ months} = \frac{54,000 \times ₹ 5.40}{12 \text{ months}} \times 2 \text{ months} = ₹ 48,600$$

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Comparative Statement of Working Capital Requirement

	Single Shift (Current Year – 24,000 units)			Double Shift (Next Year – 48,000 units)		
	Unit	Rate (₹)	Amount (₹)	Unit	Rate (₹)	Amount (₹)
Current Assets						
Inventories:						
Raw Materials	6,000	6.00	36,000	12,000	5.40	64,800
Work-in-Progress	2,000	11.00	22,000	2,000	9.40	18,800
Finished Goods	4,500	16.00	72,000	9,000	12.40	1,11,600
Sundry Debtors	6,000	16.00	96,000	12,000	12.40	1,48,800
Total Current Assets: (A)			2,26,000			3,44,000
Current Liabilities						
Creditors for Materials	4,000	6.00	24,000	9,000	5.40	48,600
Creditors for Wages	1,000	5.00	5,000	2,000	4.00	8,000
Creditors for Expenses	1,000	5.00	5,000	2,000	3.00	6,000
Total Current Liabilities: (B)			34,000			62,600
Working Capital: (A) – (B)			1,92,000			2,81,400

Additional Working Capital requirement = ₹ 2,81,400 – ₹ 1,92,000 = ₹ 89,400

Notes:

- The quantity of material in process will not change due to double shift working since work started in the first shift will be completed in the second shift.
- It is given in the question that the WIP is valued at prime cost hence, it is assumed that the WIP is 100% complete in respect of material and labor.
- In absence of any information on proportion of credit sales to total sales, debtor's quantity has been doubled for double shift. Hence, the units have been taken as 12,000 only.
- It is assumed that all purchases are on credit.
- The valuation of work-in-progress based on prime cost (i.e. material & labor) as per the policy of the company is as under.

	Single shift (₹)	Double shift (₹)
Materials	6.00	5.40
Wages – Variable	3.00	3.00
Fixed	2.00	1.00
	11.00	9.40

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Chapter 9.2

Treasury and cash management

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Question 1 (Illustration)

PREPARE monthly cash budget for six months beginning from April 2022 on the basis of the following information:

(i) Estimated monthly sales are as follows:

	(₹)		(₹)
January	1,00,000	June	80,000
February	1,20,000	July	1,00,000
March	1,40,000	August	80,000
April	80,000	September	60,000
May	60,000	October	1,00,000

(ii) Wages and salaries are estimated to be payable as follows: -

	(₹)		(₹)
April	9,000	July	10,000
May	8,000	August	9,000
June	10,000	September	9,000

- (iii) Of the sales, 80% is on credit and 20% for cash. 75% of the credit sales are collected within one month after sale and the balance in two months after sale. There are no bad debt losses.
- (iv) Purchases amount to 80% of sales and are made on credit and paid for in the month preceding the sales.
- (v) The firm has 10% debentures of ₹ 1,20,000. Interest on these has to be paid quarterly in January, April and so on.
- (vi) The firm is to make an advance payment of tax of ₹ 5,000 in July, 2022.
- (vii) The firm had a cash balance of ₹ 20,000 on April 1, 2022, which is the minimum desired level of cash balance. Any cash surplus/deficit above/below this level is made up by temporary investments/liquidation of temporary investments or temporary borrowings at the end of each month (interest on these to be ignored).

Answer 1

Workings:

Collection from debtors:

(Amount in ₹)								
	February	March	April	May	June	July	August	September
Total sales	1,20,000	1,40,000	80,000	60,000	80,000	1,00,000	80,000	60,000
Credit sales(80% of total sales)	96,000	1,12,000	64,000	48,000	64,000	80,000	64,000	48,000
Collections:								

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One month		72,000	84,000	48,000	36,000	48,000	60,000	48,000
Two months			24,000	28,000	16,000	12,000	16,000	20,000
Total collections			1,08,000	76,000	52,000	60,000	76,000	68,000

Monthly Cash Budget for Six months, April to September, 2022

	(Amount in ₹)					
	April	May	June	July	August	September
Receipts:						
Opening balance	20,000	20,000	20,000	20,000	20,000	20,000
Cash sales	16,000	12,000	16,000	20,000	16,000	12,000
Collection from debtors	1,08,000	76,000	52,000	60,000	76,000	68,000
Total cash available (A)	1,44,000	1,08,000	88,000	1,00,000	1,12,000	1,00,000
Payments:						
Purchases	48,000	64,000	80,000	64,000	48,000	80,000
Wages & salaries	9,000	8,000	10,000	10,000	9,000	9,000
Interest on debentures	3,000	---	---	3,000	---	---
Tax payment	---	---	---	5,000	---	---
Total payments (B)	60,000	72,000	90,000	82,000	57,000	89,000
Minimum cash balance desired	20,000	20,000	20,000	20,000	20,000	20,000
Total cash needed (C)	80,000	92,000	1,10,000	1,02,000	77,000	1,09,000
Surplus - deficit (A-C)	64,000	16,000	(22,000)	(2,000)	35,000	(9,000)
Investment/financing Temporary Investments	(64,000)	(16,000)	----		(35,000)	----
Liquidation of temporary investments or temporary borrowings	----	----	22,000	2,000	----	9,000
Total effect of investment/financing (D)	(64,000)	(16,000)	22,000	2,000	(35,000)	9,000
Closing cash balance (A+D-B)	20,000	20,000	20,000	20,000	20,000	20,000

Question 2 (Illustration)

From the following information relating to a departmental store, you are required to PREPARE for the three months ending 31st March, 2022:

(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, 2022 will be as follows:

	₹ in '000
Cash in hand and at bank	545
Short term investments	300
Debtors	2,570
Stock	1,300
Trade creditors	2,110
Other creditors	200
Dividends payable	485

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Tax due			320
Plant			800
Budgeted Profit Statement:	₹ in '000		
	January	February	March
Sales	2,100	1,800	1,700
Cost of sales	1,635	1,405	1,330
Gross Profit	465	395	370
Administrative, Selling and Distribution Expenses	315	270	255
Net Profit before tax	150	125	115

Budgeted balances at the end of each months	₹ in '000		
	31st Jan.	28th Feb.	31st March
Short term investments	700	---	200
Debtors	2,600	2,500	2,350
Stock	1,200	1,100	1,000
Trade creditors	2,000	1,950	1,900
Other creditors	200	200	200
Dividends payable	485	--	--
Tax due	320	320	320
Plant (depreciation ignored)	800	1,600	1,550

Depreciation amount to ₹ 60,000 is included in the budgeted expenditure for each month.

Answer 2

Workings:

		₹ in '000		
		Jan.	Feb.	March
(1)	Payments to creditors:			
	Cost of goods sold	1,635	1,405	1,330
	Add: Closing Stocks	1,200	1,100	1,000
		2,835	2,505	2,330
	Less: Opening Stocks	1,300	1,200	1,100
	Purchases	1,535	1,305	1,230
	Add: Trade Creditors, Opening balance	2,110	2,000	1,950
		3,645	3,305	3,180
	Less: Trade Creditors, closing balance	2,000	1,950	1,900
	Payment	1,645	1,355	1,280
(2)	Receipts from debtors:			
	Debtors, Opening balances	2,570	2,600	2,500
	Add: Sales	2,100	1,800	1,700
		4,670	4,400	4,200
	Less: Debtors, closing balance	2,600	2,500	2,350
	Receipt	2,070	1,900	1,850

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CASH BUDGET
(a) 3 months ending 31st March, 2022

	(₹ in 000)		
	January, 2022	February, 2022	March, 2022
Opening cash balances	545	315	65
Add: Receipts:			
From Debtors	2,070	1,900	1,850
Sale of Investments	---	700	----
Sale of Plant	---	---	50
Total (A)	2,615	2,915	1,965
Deduct: Payments			
Creditors	1,645	1,355	1,280
Expenses	255	210	195
Capital Expenditure	---	800	---
Payment of dividend	---	485	---
Purchase of investments	400	---	200
Total payments (B)	2,300	2,850	1,675
Closing cash balance (A-B)	315	65	290

(b) Statement of Sources and uses of Funds for the three-month period ending 31st March, 2022

	₹ '000	₹ '000
Sources:		
Funds from operation:		
Net profit (150+125+115)	390	
Add: Depreciation (60×3)	180	570
Sale of plant		50
		620
Decrease in Working Capital (Refer Statement of changes in working capital)		665
Total		1,285
Uses:		
Purchase of plant		800
Payment by dividends		485
Total		1,285

Statement of Changes in Working Capital

	January,22	March,22	Increase	Decrease
	₹' 000	₹' 000	₹' 000	₹' 000
Current Assets				
Cash in hand and at Bank	545	290		255
Short term Investments	300	200		100
Debtors	2,570	2,350		220
Stock	1,300	1,000		300
	4,715	3,840		
Current Liabilities				

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Trade Creditors	2,110	1,900	210	---
Other Creditors	200	200	---	---
Tax Due	320	320	---	---
	2,630	2,420		
Working Capital	2,085	1,420		
Decrease	-	665	665	
	2,085	2,085	875	875

Question 3 (Illustration)

You are given below the Profit & Loss Accounts for two years for a company:

Profit and Loss Account

	Year 1	Year 2		Year 1	Year 2
	₹	₹		₹	₹
To Opening stock	80,00,000	1,00,00,000	By Sales	8,00,00,000	10,00,00,000
To Raw materials	3,00,00,000	4,00,00,000	By Closing stock	1,00,00,000	1,50,00,000
To Stores	1,00,00,000	1,20,00,000	By Misc. Income	10,00,000	10,00,000
To Manufacturing Expenses	1,00,00,000	1,60,00,000			
To Other Expenses	1,00,00,000	1,00,00,000			
To Depreciation	1,00,00,000	1,00,00,000			
To Net Profit	1,30,00,000	1,80,00,000		-	-
	9,10,00,000	11,60,00,000		9,10,00,000	11,60,00,000

Sales are expected to be ₹ 12,00,00,000 in year 3.

As a result, other expenses will increase by ₹ 50,00,000 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.

Answer 3
Projected Profit and Loss Account for the year 3

	Year 2 Actual (₹ in lakhs)	Year 3 Projected (₹ in lakhs)		Year 2 Actual (₹ in lakhs)	Year 3 Projected (₹ in lakhs)
To Materials consumed	350	420	By Sales	1,000	1,200
To Stores	120	144	By Misc. Income	10	10
To Mfg. Expenses	160	192			
To Other expenses	100	150			
To Depreciation	100	100			
To Net profit	180	204			
	1,010	1,210		1,010	1,210

Cash Flow:

	(₹ in lakhs)

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Profit	204
Add: Depreciation	100
	304
Less: Cash required for increase in stock	50
Net cash inflow	254

Available for servicing the loan: 75% of ₹2,54,00,000 or ₹1,90,50,000

Working Notes:

- (i) Material consumed in year 2: 35% of sales.
 Likely consumption in year 3: $\text{₹ } 1,200 \times \frac{35}{100}$ or ₹ 420 (lakhs)
- (ii) Stores are 12% of sales, as in year 2.
- (iii) Manufacturing expenses are 16% of sales.
- Note:** The above also shows how a projected profit and loss account is prepared.

Question 4 (Illustration)

Prachi Ltd is a manufacturing company producing and selling a range of cleaning products to wholesale customers. It has three suppliers and two customers. Prachi 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 Saturday 9 August to Wednesday 13 August 20X2 inclusive. You have been provided with the following information:

(1) Receipts from customers

	Credit terms	Payment method	9 Aug 20X2 sales	9 Jul 20X2 sales
W Ltd	1 calendar month	BACS	₹ 150,000	₹ 130,000
X Ltd	None	Cheque	₹ 180,000	₹ 160,000

- (a) Receipt of money by BACS (Bankers' Automated Clearing Services) is instantaneous.
- (b) X Ltd's cheque will be paid into Prachi 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) Payments to suppliers

Supplier name	Credit terms	Payment method	9 Aug 20X2 purchases	9 Jul 20X2 purchases	9 Jun 20X2 purchases
A Ltd	1 calendar month	Standing order	₹ 65,000	₹ 55,000	₹ 45,000
B Ltd	2 calendar months	Cheque	₹ 85,000	₹ 80,000	₹ 75,000
C Ltd	None	Cheque	₹ 95,000	₹ 90,000	₹ 85,000

- (a) Prachi Ltd has set up a standing order for ₹ 45,000 a month to pay for supplies from A Ltd. This will leave Prachi's bank account on 9 August. Every few months, an adjustment is made to reflect the actual cost of supplies purchased (you do NOT need to make this adjustment).
- (b) Prachi Ltd will send out, by post, cheques to B Ltd and C Ltd on 9 August. The amounts will leave its bank account on the second day following this (excluding the day of posting).

(3) Wages and salaries

	July 20X2	August 20X2
Weekly wages	₹ 12,000	₹ 13,000
Monthly salaries	₹ 56,000	₹ 59,000

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- (a) Factory workers are paid cash wages (weekly). They will be paid oneweek's wages, on 13 August, for the last week's work done in July (i.e.they work a week in hand).
- (b) All the office workers are paid salaries (monthly) by BACS. Salaries forJuly will be paid on 9 August.
- (4) Other miscellaneous payments
- (a) Every Saturday morning, the petty cashier withdraws ₹ 200 from the company bank account for the petty cash. The money leaves Prachi'sbank account straight away.
- (b) The room cleaner is paid ₹ 30 from petty cash every Monday morning.
- (c) Office stationery will be ordered by telephone on Sunday 10 August to the value of ₹ 300. 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's will be ordered over the Internet on 12 August at atotal cost of ₹ 6,500. A cheque will be sent out on the same day. The amount will leave Prachi Ltd.'s bank account on the second day following this (excluding the day of posting).
- (5) Other information

The balance on Prachi's bank account will be ₹ 200,000 on 9 August 20X2. This represents both the book balance and the cleared funds.

PREPARE a cleared funds forecast for the period Saturday 7th August to Wednesday 13th August 20X2 inclusive using the information provided. Show clearly the uncleaned funds float each day.

Answer 4

Cleared Funds Forecast

	9 Aug (Saturday) ₹	10 Aug (Sunday) ₹	11 Aug (Monday) ₹	12 Aug (Tuesday) ₹	13 Aug (Wednesday) ₹
Receipts					
W Ltd	1,30,000	0	0	0	0
X Ltd	0	0	0	1,80,000	0
(a)	1,30,000	0	0	1,80,000	0
Payments					
A Ltd	45,000	0	0	0	0
B Ltd	0	0	75,000	0	0
C Ltd	0	0	95,000	0	0
Wages	0	0	0	0	12,000
Salaries	56,000	0	0	0	0
Petty Cash	200	0	0	0	0
Stationery	0	0	300	0	0
(b)	1,01,200	0	1,70,300	0	12,000
Cleared excess Receipts					
over payments (a) – (b)	28,800	0	(1,70,300)	1,80,000	(12,000)
Cleared balance b/f	2,00,000	2,28,800	2,28,800	58,500	2,38,500
Cleared balance c/f (c)	2,28,800	2,28,800	58,500	2,38,500	2,26,500
Uncleared funds float					

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Receipts	1,80,000	1,80,000	1,80,000	0	0
Payments	(1,70,000)	(1,70,300)	0	(6,500)	(6,500)
(d)	<u>10,000</u>	<u>9,700</u>	<u>180,000</u>	<u>(6,500)</u>	<u>(6,500)</u>
Total book balance c/f (c)+ (d)	2,38,800	2,38,500	2,38,500	2,32,000	2,20,000

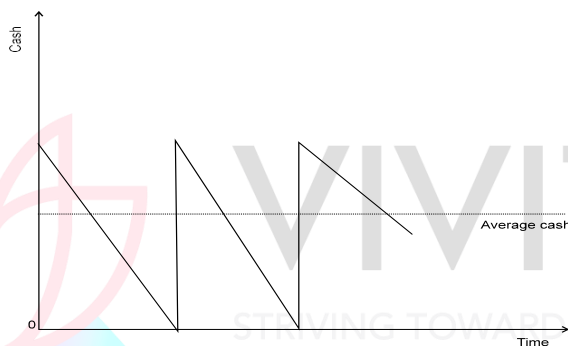
Question 5 (Illustration)

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 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.

Answer 5

$$\text{The optimum cash balance } C = \sqrt{\frac{2 \times ₹ 12,60,000 \times ₹ 20}{0.08}} = ₹ 25,100$$



The limitation of the Baumol's model is that it does not allow the cash flows to fluctuate. Firms in practice do not use their cash balance uniformly nor are they able to predict daily cash inflows and outflows. The Miller-Orr (MO) model, as discussed below, overcomes this shortcoming and allows for daily cash flow variation.

Question 6 (Illustration)

The following information is available in respect of Sai trading company:

- 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.
- The firm spends a total of ₹ 120 lakhs annually at a constant rate.
- It can earn 10 per cent on investments.

From the above information, you are required to CALCULATE:

- The cash cycle and cash turnover,
- Minimum amounts of cash to be maintained to meet payments as they become due,
- Savings by reducing the average inventory holding period by 30 days.

Answer 6

- Cash cycle = 45 days + 75 days – 30 days = 90 days (3 months)
Cash turnover = 12 months (360 days)/3 months (90 days) = 4.
- Minimum operating cash = Total operating annual outlay/cash turnover, that is,

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- ₹ 120 lakhs/4 = ₹ 30 lakhs.
- (c) Cash cycle = 45 days + 45 days – 30 days = 60 days (2 months).
 Cash turnover = 12 months (360 days)/2 months (60 days) = 6.
 Minimum operating cash = ₹ 120 lakhs/6 = ₹ 20 lakhs.
 Reduction in investments = ₹ 30 lakhs – ₹ 20 lakhs = ₹ 10 lakhs.
 Savings = $0.10 \times ₹ 10 \text{ lakhs} = ₹ 1 \text{ lakh}$.



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Chapter 9.3

Management of inventory

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Question 1: illustration

A company's requirements for ten days are 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.

Answer 1

The economic order quantity is:

$$EOQ = \sqrt{\frac{2 \times 6,300 \times 10}{0.26}} = \sqrt{\frac{1,26,000}{0.26}} = 700 \text{ units (approx).}$$

Question 2: illustration

Marvel Limited 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 weeks 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 Marvel Limited, and contrast it with the cost of the current policy.

Answer 2

The recommended policy should be based on the EOQ model.

F = ₹100 per order

S = 60,000 tonnes per year

H = ₹0.10 per tonne per year

$$\text{Substituting : } EOQ = \sqrt{\frac{2 \times 100 \times 60,000}{0.10}} = 10,954 \text{ tonnes per order}$$

$$\text{Number of orders per year} = 60,000 / 10,954 = 5.5 \text{ orders}$$

$$\text{Re-order level} = 2 \times 60,000 / 50 = 2,400 \text{ tonnes}$$

$$\begin{aligned} \text{Total cost of optimum policy} &= \text{holding costs} + \text{ordering costs} \\ &= (0.1 \times 10,954) / 2 + (100 \times 60,000) / 10,954 \\ &= 547.70 + 547.74 = ₹1,095 \end{aligned}$$

To compare the optimum policy with the current policy, the average level of stock under the current policy must be found. An order is placed when stock falls to 10,000 tonnes, but the lead time is two weeks. The stock used in that time is $(60,000 \times 2) / 50 = 2,400$ tonnes. Before delivery, inventory has fallen to $(10,000 - 2,400) = 7,600$ tonnes. Orders are made twice per year, and so the order size = $60,000 / 2 = 30,000$ tonnes. The order will increase stock level to $30,000 + 7,600 = 37,600$ tonnes. Hence the average stock level = $7,600 + (30,000 / 2) = 22,600$ tonnes. Total costs of current policy = $(0.1 \times 22,600) + (100 \times 2) = ₹2,460$ per year.

Advise: The recommended policy should be adopted as the costs are less than the current policy (by ₹1,365 per year).

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Question 3: illustration

Pureair 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.

- COMPUTE the optimal order quantity with respect to so many lot sizes?
- CALCULATE the optimal order quantity if the carrying cost were ₹ 0.05 a filter per month?
- COMPUTE the optimal order quantity if ordering costs were ₹ 10?

Answer 3

$$\text{a) } EOQ^* = \sqrt{\frac{2(20)(40)}{100}} = 4$$

Carrying costs = ₹ 0.10 X 1,000 = ₹ 100. The optimal order size would be 4,000 filters, which represents five orders a month.

$$\text{b) } EOQ^* = \sqrt{\frac{2(20)(40)}{50}} = 5.66$$

Since the lot size is 1,000 filters, the company would order 6,000 filters each time. The lower the carrying cost, the more important ordering costs become relatively, and the larger the optimal order size.

$$\text{c) } EOQ^* = \sqrt{\frac{2(20)(10)}{100}} = 2$$

The lower the order cost, the more important carrying costs become relatively and the smaller the optimal order size.

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Chapter 9.4

Management of receivables

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Question 1 (Illustration)

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: -

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?

Answer 1

A. Statement showing the Evaluation of Debtors Policies (Total Approach)

Particulars	Present Policy 30 days	Proposed Policy A 40 days	Proposed Policy B 50 days	Proposed Policy C 60 days	Proposed Policy D 75 days
	₹	₹	₹	₹	₹
A. Expected Profit:					
(a) Credit Sales	6,00,000	6,30,000	6,48,000	6,75,000	6,90,000
(b) Total Cost other than Bad Debts					
(i) Variable Costs [Sales × 2/ 3]	4,00,000	4,20,000	4,32,000	4,50,000	4,60,000
(ii) Fixed Costs	50,000	50,000	50,000	50,000	50,000
	4,50,000	4,70,000	4,82,000	5,00,000	5,10,000
(c) Bad Debts	6,000	9,450	12,960	20,250	27,600
(d) Expected Profit [(a) – (b) – (c)]	1,44,000	1,50,550	1,53,040	1,54,750	1,52,400
B. Opportunity Cost of Investments in Receivables	7,500	10,444	13,389	16,667	21,250
C. Net Benefits (A – B)	1,36,500	1,40,106	1,39,651	1,38,083	1,31,150

Recommendation: The Proposed Policy A (i.e. increase in collection period by 10 days or total 40 days)

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should be adopted since the net benefits under this policy are higher as compared to other policies.

Working Notes:

(i) Calculation of Fixed Cost

$$= [\text{Average Cost per unit} - \text{Variable Cost per unit}] \times \text{No. of Units sold}$$

$$= [₹2.25 - ₹2.00] \times (₹6,00,000/3)$$

$$= ₹0.25 \times 2,00,000 = ₹50,000$$

(ii) Calculation of Opportunity Cost of Average Investments

Opportunity Cost	=	Total Cost $\times \frac{\text{Collection Period}}{360} \times \frac{\text{Rate of Return}}{100}$
Present Policy	=	$4,50,000 \times \frac{30}{360} \times \frac{20}{100} = 7,500$
Policy A	=	$4,70,000 \times \frac{40}{360} \times \frac{20}{100} = 10,444$
Policy B	=	$4,82,000 \times \frac{50}{360} \times \frac{20}{100} = 13,389$
Policy C	=	$5,00,000 \times \frac{60}{360} \times \frac{20}{100} = 16,667$
Policy D	=	$5,10,000 \times \frac{75}{360} \times \frac{20}{100} = 21,250$

B. Another method of solving the problem is **Incremental Approach**. Here we assume that sales are all credit sales.

Particulars	Present Policy 30 days	Proposed Policy A 40 days	Proposed Policy B 50 days	Proposed Policy C 60 days	Proposed Policy D 75 days
	₹	₹	₹	₹	₹
A. Incremental Expected Profit:					
(a) Incremental Credit Sales	---	30,000	48,000	75,000	90,000
(b) Incremental Costs					
(i) Variable Costs	---	20,000	32,000	50,000	60,000
(ii) Fixed Costs	---	---	---	---	---
(c) Incremental Bad Debt Losses	---	3,450	6,960	14,250	21,600
(d) Incremental Expected Profit (a – b – c)		6,550	9,040	10,750	8,400
B. Required Return on Incremental Investments:					
(a) Cost of Credit Sales	4,50,000	4,70,000	4,82,000	5,00,000	5,10,000
(b) Collection period	30	40	50	60	75
(c) Investment in Receivable (a $\times$ b/360)	37,500	52,222	66,944	83,333	1,06,250
(d) Incremental Investment in Receivables	---	14,722	29,444	45,833	68,750
(e) Required Rate of Return (in %)		20	20	20	20
(f) Required Return on Incremental Investments (d $\times$ e)	---	2,944	5,889	9,167	13,750
C. Net Benefits (A – B)	---	3,606	3,151	1,583	- 5,350

Recommendation: The Proposed Policy A should be adopted since the net benefits under this policy are higher than those under other policies.

C. Another method of solving the problem is by computing the Expected Rate of Return.

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Expected Rate of Return. $\frac{\text{Incremental Expected Profit}}{\text{Incremental Investment in Receivables}} \times 100$

$$\text{For Policy A} = \frac{\text{Rs.6,550}}{\text{Rs.14,722}} \times 100 = 44.49\%$$

$$\text{For Policy B} = \frac{\text{Rs.9,040}}{\text{Rs.29,444}} \times 100 = 30.70\%$$

$$\text{For Policy C} = \frac{\text{Rs.10,750}}{\text{Rs.45,833}} \times 100 = 23.45\%$$

$$\text{For Policy D} = \frac{\text{Rs.8,400}}{\text{Rs.68,750}} \times 100 = 12.22\%$$

Recommendation: The Proposed Policy A should be adopted since the Expected Rate of Return (44.49%) is more than the Required Rate of Return (20%) and is highest among the given policies compared.

Question 2 (Illustration)

XYZ 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, IDENTIFY which is the better option?

(Amount in ₹)

	Present Policy	Policy Option I	Policy Option II
Annual credit sales	50,00,000	60,00,000	67,50,000
Accounts receivable turnover ratio	4 times	3 times	2.4 times
Bad debt losses	1,50,000	3,00,000	4,50,000

Answer 2

Statement showing the Evaluation of Debtors Policies

Particulars	Present Policy	Proposed Policy I	Proposed Policy II
	₹	₹	₹
A Expected Profit:			
(a) Credit Sales	50,00,000	60,00,000	67,50,000
(b) Total Cost other than Bad Debts:			
(i) Variable Costs	35,00,000	42,00,000	47,25,000
(c) Bad Debts	1,50,000	3,00,000	4,50,000
(d) Expected Profit [(a) – (b) – (c)]	13,50,000	15,00,000	15,75,000
B Opportunity Cost of Investments in Receivables	2,18,750	3,50,000	4,92,188
C Net Benefits (A – B)	11,31,250	11,50,000	10,82,812

Recommendation: The Proposed Policy I should be adopted since the net benefits under this policy

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are higher as compared to other policies.

Working Note: Calculation of Opportunity Cost of Average Investments

Opportunity Cost	= Total cost $\times \frac{\text{Collection period}}{12} \times \frac{\text{Rate of Return}}{100}$
Collection Period in months	= 12 / Accounts Receivable Turnover Ratio
Present Policy	= ₹35,00,000 $\times \frac{3}{12} \times 25\%$ = ₹2,18,750
Proposed Policy I	= ₹42,00,000 $\times \frac{4}{12} \times 25\%$ = ₹3,50,000
Proposed Policy II	= ₹47,25,000 $\times \frac{5}{12} \times 25\%$ = ₹4,92,188

Question 3 (Illustration)

A company is presently having credit sales of Rs. 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 per cent 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).

Answer 3

Working Notes:

(i) Calculation of Cash Discount

Cash Discount = Total credit sales $\times$ % of customers who take up discount $\times$ Rate

Present Policy = $\frac{12,00,000 \times 50 \times 0.01}{100}$ = ₹ 6,000

Proposed Policy = 16,00,000 $\times$ 0.80 $\times$ 0.02 = Rs. 25,600

(ii) Opportunity Cost of Investment in Receivables

Present Policy = 9,36,000 $\times \frac{(30/360) \times (70\% \text{ of } 15\%)}{100}$ = 78,000 $\times \frac{10.5}{100}$ = ₹ 8,190

Proposed Policy = 12,48,000 $\times \frac{(20/360) \times 10.50}{100}$ = ₹ 7,280

Statement showing Evaluation of Credit Policies

Particulars	Present Policy	Proposed Policy
Credit Sales	12,00,000	16,00,000
Variable Cost @ 78%* of sales	9,36,000	12,48,000
Bad Debts @ 1.5% and 2%	18,000	32,000
Cash Discount	6,000	25,600
Profit before tax	2,40,000	2,94,400
Tax @ 30%	72,000	88,320
Profit after Tax	1,68,000	2,06,080
Opportunity Cost of Investment in Receivables	8,190	7,280
Net Profit	1,59,810	1,98,800

*Only relevant or variable costs are considered for calculating the opportunity costs on the funds blocked in receivables. Since 22% is contribution, hence the relevant costs are taken to be 78% of the respective sales.

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Advise: Proposed policy should be adopted since the net benefit is increased by (Rs. 1,98,800 - 1,59,810) Rs. 38,990.

Question 4 (Illustration)

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 debtor's 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.

Answer 4

Working notes:

Average level of receivables = ₹360 lakhs $\times \frac{30}{360}$ = 30 lakh		
Factoring Commission = 1% of ₹30,00,000	=	₹ 30,000
Reserve = 10% of ₹30,00,000	=	₹ 3,00,000
Total (i)	=	₹ 3,30,000
Thus, the amount available for advance is Average level of receivables		₹ 30,00,000
Less: Total (i) from above		₹ 3,30,000
(ii)		₹ 26,70,000
Less: Interest @ 15% p.a. for 30 days		₹ 33,375
Net Amount of Advance available.		₹ 26,36,625

Evaluation of Factoring Proposal

	Particulars	₹	₹
A.	Savings (Benefit) to the firm		
	Cost of Credit administration	₹ 1,40,000	₹ 1,40,000
	Cost of bad-debt losses	(0.02 $\times$ 360 lakhs)	₹ 7,20,000
	Total		₹ 8,60,000
B.	Cost to the Firm:		
	Factoring Commission [Annual credit Sales $\times$ % of Commission (or calculated annually)]	₹ 30,000 $\times \frac{360}{30}$	₹ 3,60,000
	Interest Charges	₹ 33,375 $\times \frac{360}{30}$	₹ 4,00,500
	Total		₹ 7,60,500
C.	Net Benefits to the Firm: (A-B)		₹ 99,500

Advice: Since the savings to the firm exceeds the cost to the firm on account of factoring, therefore, the proposal is acceptable.

Question 5 (Illustration)

Mosaic Limited has current sales of ₹ 15 lakhs per year. Cost of sales is 75 per cent of sales and bad debts are one per cent of sales. Cost of sales comprises 80 per cent variable costs and 20 per cent

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fixed costs, while the company's required rate of return is 12 per cent. Mosaic 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 per cent, while bad debts will increase from one per cent to four per cent. It is not expected that the policy change will result in an increase in fixed costs and creditors and stock will be unchanged.

Should Mosaic Limited introduce the proposed policy? ANALYSE (Assume a 360 days' year)

Answer 5

New level of sales will be $15,00,000 \times 1.15 = ₹ 17,25,000$ Variable costs are $80\% \times 75\% = 60\%$ of sales

Contribution from sales is therefore 40% of sales

Fixed Cost are $20\% \times 75\% = 15\%$ of sales

Particulars	₹	₹
Proposed investment in debtors = Variable Cost + Fixed Cost* = $(17,25,000 \times 60\%) + (15,00,000 \times 15\%)$ = $(10,35,000 + 2,25,000) \times \frac{60}{360}$		2,10,000
Current investment in debtors = $[(15,00,000 \times 60\%) + (15,00,000 \times 15\%)] \times \frac{30}{360}$		93,750
Increase in investment in debtors		1,16,250
Increase in contribution = $15\% \times 15,00,000 \times 40\%$		90,000
New level of bad debts = $(17,25,000 \times 4\%)$	69,000	
Current level of bad debts $(15,00,000 \times 1\%)$	15,000	
Increase in bad debts		(54,000)
Additional financing costs = $1,16,250 \times 12\% =$		(13,950)
Savings by introducing change in policy		22,050

* Fixed Cost is taken at existing level in case of proposed investment as well

Advise: Mosaic Limited should introduce the proposed policy.

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Chapter 9.5

Management of payables (creditors)

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Question 1 (Illustration)

Suppose ABC Ltd. has been offered credit terms from its major supplier of 2/10, net 45. Hence the company has the choice of paying ₹ 10 per ₹ 100 or to invest ₹ 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. ANALYSE what should the company do?

Answer 1

If the company does not avail the cash discount and pays the amount after 45 days, the implied cost of interest per annum would be approximately:

$$\left[\frac{100}{100-2} \right]^{\frac{365}{35}} - 1 = 23.5\%$$

Now let us assume that ABC Ltd. can invest the additional cash and can obtain an annual return of 25% and if the amount of invoice is ₹10,000. The alternatives are as follows:

	Refuse discount	Accept discount
	₹	₹
Payment to supplier	10,000	9,800
Return from investing ₹ 9,800 between day 10 and day 45: $\frac{35}{365} \times ₹9,800 \times 25\%$	(235)	
Net Cost	9,765	9,800

Advise: Thus, it is better for the company to refuse the discount, as return on cash retained is more than the saving on account of discount.

Question 2 (Illustration)

The Dolce Company purchases raw materials on terms of 2/10, net 30. A review of the company's records by the owner, Mr. Gautam, 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. Rohit, replied that it cost only 2 per cent for these funds, whereas a bank loan would cost the company 12 per cent.

- ANALYSE what mistake is Rohit making?
- 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 Rohit that would reduce the annual interest cost? IDENTIFY.

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Answer 2

- (a) Rohit's argument of comparing 2% discount with 12% bank loan rate is not rational as 2% discount can be earned by making payment 5 days in advance i.e. within 10 days rather 15 days as payments are made presently. Whereas 12% bank loan rate is for a year.

Assume that the purchase value is ₹100, the discount can be earned by making payment within 10 days is ₹2, therefore, net payment would be ₹98 only. Annualized benefit

$$= \frac{₹2}{₹98} \times \frac{365 \text{ days}}{5 \text{ days}} \times 100 = 149\%$$

This means cost of not taking cash discount is 149%.

- (b) If the bank loan facility could not be available, then in this case the company should resort to utilise maximum credit period as possible. Therefore, payment should be made in 30 days to reduce the interest cost.



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Chapter 9.6

Financing of Working Capital

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Test Your Knowledge

Multiple Choice Questions

1. The credit terms may be expressed as “3/15 net 60”. This means that a 3% discount will be granted if the customer pays within 15 days, if he does not avail the offer, he must make payment within 60 days.

- (a) I agree with the statement
- (b) I do not agree with the statement
- (c) I cannot say.

Ans: (a)

2. The term ‘net 50’ implies that the customer will make payment:

- (a) Exactly on 50th day
- (b) Before 50th day
- (c) Not later than 50th day
- (d) None of the above.

Ans: (c)

3. Trade credit is a source of :

- (a) Long-term finance
- (b) Medium term finance
- (c) Spontaneous source of finance
- (d) None of the above.

Ans: (c)

4. The term float is used in:

- (a) Inventory Management
- (b) Receivable Management
- (c) Cash Management
- (d) Marketable securities.

Ans: (c)

5. William J Baumol’s model of Cash Management determines optimum cash level where the carrying cost and transaction cost are:

- (a) Maximum
- (b) Minimum
- (c) Medium

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- (d) None of the above.

Ans: (b)

6. In Miller – ORR Model of Cash Management:

- (a) The lower, upper limit, and return point of Cash Balances are set out
 (b) Only upper limit and return point are decided
 (c) Only lower limit and return point are decided
 (d) None of the above are decided.

Ans: (a)

7. Working Capital is defined as:

- (a) Excess of current assets over current liabilities
 (b) Excess of current liabilities over current assets
 (c) Excess of Fixed Assets over long-term liabilities
 (d) None of the above.

Ans: (a)

8. Working Capital is also known as “Circulating Capital, fluctuating Capital and revolving capital”. The aforesaid statement is;

- (a) Correct
 (b) Incorrect
 (c) Cannot say.

Ans: (a)

9. The basic objectives of Working Capital Management are:

- (a) Optimum utilization of resources for profitability
 (b) To meet day-to-day current obligations
 (c) Ensuring marginal return on current assets is always more than cost of capital
 (d) Select any one of the above statements.

Ans: (b)

10. The term Gross Working Capital is known as:

- (a) The investment in current liabilities
 (b) The investment in long-term liability
 (c) The investment in current assets
 (d) None of the above.

Ans: (c)

11. The term net working capital refers to the difference between the current assets minus current liabilities.

- (a) The statement is correct
 (b) The statement is incorrect
 (c) I cannot say.

Ans: (a)

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12. The term “Core current assets’ was coined by:

- (a) Chore Committee
- (b) Tandon Committee
- (c) Jilani Committee
- (d) None of the above.

Ans: (b)

13. The concept operating cycle refers to the average time which elapses between the acquisition of raw materials and the final cash realization. This statement is:

- (a) Correct
- (b) Incorrect
- (c) Partially True
- (d) I cannot say.

Ans: (a)

14. As a matter of self-imposed financial discipline can there be a situation of zero working capital now-a-days in some of the professionally managed organizations.

- (a) Yes
- (b) No
- (c) Impossible
- (d) Cannot say.

Ans: (a)

15. Over trading arises when a business expands beyond the level of funds available. The statement is

- (a) Incorrect
- (b) Correct
- (c) Partially correct
- (d) I cannot say.

Ans: (b)

16. A Conservative Working Capital strategy calls for high levels of current assets in relation to sales.

- (a) I agree
- (b) Do not agree
- (c) I cannot say.

Ans: (a)

17. The term Working Capital leverage refer to the impact of level of working capital on company’s profitability. This measures the responsiveness of ROCE for changes in current assets.

- (a) I agree
- (b) Do not agree
- (c) The statement is partially true.

Ans: (a)

18. The term spontaneous source of finance refers to the finance which naturally arise in the course of business operations. The statement is:

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- (a) Correct
- (b) Incorrect
- (c) Partially Correct
- (d) I cannot say.

Ans: (a)

19. Under hedging approach to financing of working capital requirements of a firm, each asset in the balance sheet assets side would be offset with a financing instrument of the same approximate maturity. This statement is:

- (a) Incorrect
- (b) Correct
- (c) Partially correct
- (d) I cannot say.

Ans: (b)

20. Trade credit is a:

- (a) Negotiated source of finance
- (b) Hybrid source of finance
- (c) Spontaneous source of finance
- (d) None of the above.

Ans: (c)

21. Factoring is a method of financing whereby a firm sells its trade debts at a discount to a financial institution. The statement is:

- (a) Correct
- (b) Incorrect
- (c) Partially correct
- (d) I cannot say.

Ans: (a)

22. A factoring arrangement can be both with recourse as well as without recourse:

- (a) True
- (b) False
- (c) Partially correct
- (d) Cannot say.

Ans: (a)

23. The Bank financing of working capital will generally be in the following form. Cash Credit, Overdraft, bills discounting, bills acceptance, line of credit; Letter of credit and bank guarantee.

- (a) I agree
- (b) I do not agree
- (c) I cannot say.

Ans: (a)

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24. When the items of inventory are classified according to value of usage, the technique is known as:

- (a) XYZ Analysis
- (b) ABC Analysis
- (c) DEF Analysis
- (d) None of the above.

Ans: (b)

25. When a firm advises its customers to mail their payments to special Post Office collection centers, the system is known as.

- (a) Concentration banking
- (b) Lock Box system
- (c) Playing the float
- (d) None of the above.

Ans: (b)

Theoretical Questions

Question 1

DISCUSS the factors to be taken into consideration while determining the requirement of working capital.

Answer 1

Some of the factors which need to be considered while planning for working capital requirement are:

1. **Cash:** Identify the cash balance which allows for the business to meet day- to-day expenses but reduces cash holding costs (example - loss of interest on long term investment had the surplus cash invested therein).
2. **Inventory:** Identify the level of inventory which allows for uninterrupted production but reduces the investment in raw materials and hence increases cash flow. The techniques like Just in Time (JIT) and Economic order quantity (EOQ) are used for this.
3. **Receivables:** Identify the **appropriate credit policy**, i.e., credit terms which will attract customers, such that any impact on cash flows and the cash conversion cycle will be offset by increased revenue and hence Return on Capital (or vice versa). The tools like Early Payment Discounts and allowances are used for this.
4. **Short-term Financing Options:** Inventory is ideally financed by credit granted by the supplier. However, depending on the cash conversion cycle, it may be necessary to utilize a bank loan (or overdraft), or to “convert debtors to cash” through “factoring” in order to finance working capital requirements.
5. **Nature of Business:** For e.g. in a business of restaurant, most of the sales are in Cash. Therefore, need for working capital is very less. On the other hand, there would be a higher inventory in case of a pharmacy or a bookstore.
6. **Market and Demand Conditions:** For e.g. if an item’s demand far exceeds its production, the working capital requirement would be less as investment in finished goods inventory would be very less with continuous sales.
7. **Technology and Manufacturing Policies:** For e.g. in some businesses the **demand for goods is seasonal**, in that case a business may follow a policy for steady production throughout the whole year or rather may choose a policy of production only during the demand season.
8. **Operating Efficiency:** A company can reduce the working capital requirement by **eliminating waste, improving coordination, process improvements** etc.

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- 9. Price Level Changes & Exchange Rate Fluctuations:** For e.g. rising prices necessitate the use of more funds for maintaining an existing level of activity. For the same level of current assets, higher cash outlays are required. Therefore, the effect of rising prices is that a higher amount of working capital is required. Another example would be unfavorable exchange rate movement in case of imported raw materials would warrant additional cost of same.

Question 2

DISCUSS the liquidity vs. profitability issue in management of working capital.

Answer 2

For uninterrupted and smooth functioning of the day to day business of an entity, it is important to maintain liquidity of funds evenly. As we have already learnt in previous chapters that each rupee of capital bears some cost. So, while maintaining liquidity the cost aspect needs to be borne in mind. Also, a higher working capital may be intended to increase the revenue & hence profitability, but at the same time unnecessary tying up of funds in idle assets not only reduces the liquidity but also reduces the opportunity to earn better return from a productive asset. Hence, a trade-off is required between the liquidity and profitability which increases the profitability without disturbing the day to day functioning. This requires **3Es** as discussed above i.e. **economy in financing, efficiency in utilisation and effectiveness in achieving** the intended objectives.

The trade-off between the components of working capital can be summarised as follows:

Component of Working Capital	Advantages of higher side (Profitability)	Trade-off (between Profitability and Liquidity)	Advantages of lower side (Liquidity)
Inventory	Fewer stock-outs increase the profitability.	Use techniques like EOQ, JIT etc. to carry optimum level of inventory.	Lower inventory requires less capital but endangers stock-out and loss of goodwill.
Receivables	Higher Credit Period attract customers and increase revenue	Evaluate the credit policy; use the services of debt management (factoring) agencies.	Cash sales provide liquidity but fails to boost sales and revenue (due to lower credit period)
Pre- payment of expenses	Reduces uncertainty and profitable in inflationary environment.	Cost-benefit analysis required	Improves or maintains liquidity.
Cash and Cash equivalents	Payables are honored in time, improves the goodwill and helpful in getting future discounts.	Cash budgets and other cash management techniques can be used	Cash can be invested in some other investment avenues
Payables and Expenses	Capital can be used in some other investment avenues	Evaluate the credit policy and related cost.	Payables are honored in time, improves the goodwill and helpful in getting future discounts.

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Question 3

DISCUSS the estimation of working capital need based on operating cycle process.

Answer 3

Operating cycle is one of the most reliable methods of Computation of Working Capital. However, other methods like ratio of sales and ratio of fixed investment may also be used to determine the Working Capital requirements. These methods are briefly explained as follows:

- (i) **Current Assets Holding Period:** To estimate working capital needs based on the average holding period of current assets and relating them to costs based on the company's experience in the previous year. This method is essentially based on the Operating Cycle Concept.
- (ii) **Ratio of Sales:** To estimate working capital needs as a ratio of sales on the assumption that current assets change with changes in sales.
- (iii) **Ratio of Fixed Investments:** To estimate Working Capital requirements as a percentage of fixed investments.

A number of factors will, however, be impacting the choice of method of estimating Working Capital. Factors such as seasonal fluctuations, accurate sales forecast, investment cost and variability in sales price would generally be considered. The production cycle and credit and collection policies of the firm will have an impact on Working Capital requirements. Therefore, they should be given due weightage in projecting Working Capital requirements.

Question 4

EXPLAIN briefly the functions of Treasury Department

Answer 4

The treasury department have evolved in importance over number of years from being responsible for only cash handling issues to technical areas revolving around hedging forex risks, composition of capital structure etc. The fundamental tasks for which treasury department of any enterprise is responsible are :-

1. **Cash Management:** It involves efficient cash collection process and managing payment of cash both inside the organisation and to third parties.
There may be complete centralization within a group treasury or the treasury may simply advise subsidiaries and divisions on policy matter viz., collection/payment periods, discounts, etc.
Treasury will also manage surplus funds in an investment portfolio. Investment policy will consider future needs for liquid funds and acceptable levels of risk as determined by company policy.
2. **Currency Management:** The treasury department manages the foreign currency risk exposure of the company. In a large multinational company (MNC) the first step will usually be to set off intra-group indebtedness. The use of matching receipts and payments in the same currency will save transaction costs and also will save the organization from any unfavorable exchange movements. Accordingly, Treasury might advise on the currency to be used when invoicing overseas sales.
The treasury will manage any net exchange exposures in accordance with company policy. If risks are to be minimized then forward contracts can be used either to buy or sell currency forward.
3. **Fund Management:** Treasury department is responsible for planning and sourcing the company's short, medium and long-term cash needs. They also facilitate temporary investment of surplus funds by mapping the time gap between funds inflow and outflow. Treasury department will also participate in the decision on capital structure and forecast future interest and foreign currency rates.
4. **Banking:** It is important that a company maintains a good relationship with its bankers. Treasury department carry out negotiations with bankers with respect to interest rates, foreign exchange rates

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etc. and act as the initial point of contact with them. Short-term finance can come in the form of bank loans or through the sale of commercial paper in the money market.

- 5. Corporate Finance:** Treasury department is involved with both acquisition and divestment activities within the group. In addition, it will often have responsibility for investor relations. The latter activity has assumed increased importance in markets where share-price performance is regarded as crucial and may affect the company's ability to undertake acquisition activity or, if the price falls drastically, render it vulnerable to a hostile bid.

Question 5

EXPLAIN Baumol's Model of Cash Management.

Or

EXPLAIN with example the formula used for determining optimum cash balance according to Baumol's cash management model.

Answer 5

William J. Baumol's Economic Order Quantity Model, (1952)

According to this model, optimum cash level is that level of cash where the carrying costs and transactions costs are the minimum.

The carrying costs refer to the cost of holding cash, namely, the opportunity cost or interest foregone on marketable securities. The transaction costs refer to the cost involved in getting the marketable securities converted into cash. This happens when the firm falls short of cash and has to sell the securities resulting in clerical, brokerage, registration and other costs.

The optimum cash balance according to this model will be that point where these two costs are minimum. The formula for determining optimum cash balance is:

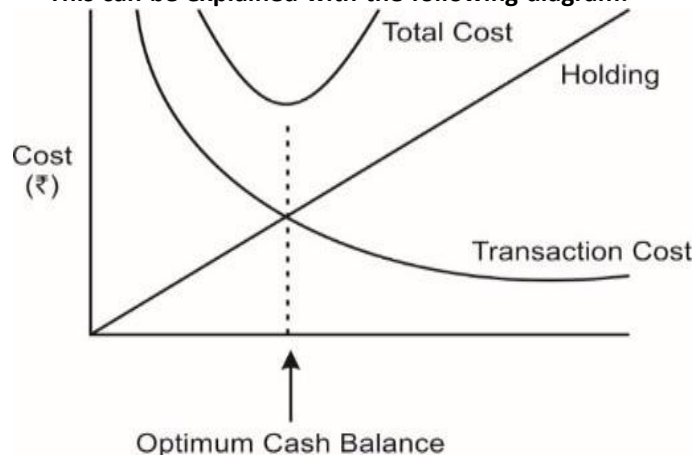
Where, C = Optimum cash balance

U = Annual (or monthly) cash disbursement

P = Fixed cost per transaction

S = Opportunity cost of one rupee p.a. (or p.m.)

This can be explained with the following diagram:



The model is based on the following assumptions:

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- (i) Cash needs of the firm are known with certainty.
- (ii) The cash is used uniformly over a period of time and it is also known with certainty.
- (iii) The holding cost is known and it is constant.
- (iv) The transaction cost also remains constant.

Question 6

STATE the advantage of Electronic Cash Management System.

Answer 6

Electronic-scientific cash management results in:

- Significant saving in time.
- Increase in interest earned & decrease in interest expense.
- Reduces paper-work & hence manpower.
- Greater accounting accuracy as it allows easy detection of book-keeping errors.
- More control over time and funds.
- Supports electronic payments.
- Faster transfer of funds from one location to another, where required.
- Speedy conversion of various instruments into cash.
- Making available funds wherever required, whenever required.
- Reduction in the amount of 'idle float' to the maximum possible extent.
- Ensures no idle funds are placed at any place in the organization.
- It makes inter-bank balancing of funds much easier.
- It is a true form of centralized 'Cash Management'.
- Produces faster electronic reconciliation.
- Reduces the number of cheques issued.

Question 7

DISCUSS Miller-Orr Cash Management model.

Answer 7

Miller-Orr Cash Management Model (1966)

According to this model the net **cash flow is completely stochastic.**

When changes in cash balance occur randomly the application of control theory serves a useful purpose. The Miller-Orr model is one of such control limit models.

This model is designed to determine the time and size of transfers between an investment account and cash account. In this model control limits are set for cash balances. These limits may consist of h as upper limit, z as the return point; and zero as the lower limit.

- When the cash balance reaches the upper limit, the transfer of cash equal to $h - z$ is invested in marketable securities account.
- When it touches the lower limit, a transfer from marketable securities account to cash account is made.
- During the period when cash balance stays between (h, z) and $(z, 0)$ i.e. high and low limits no transactions between cash and marketable securities account is made.

The high and low limits of cash balance are set up on the basis of fixed cost associated with the securities transactions, the opportunity cost of holding cash and the degree of likely fluctuations in cash balances. These limits satisfy the demands for cash at the lowest possible total costs. The

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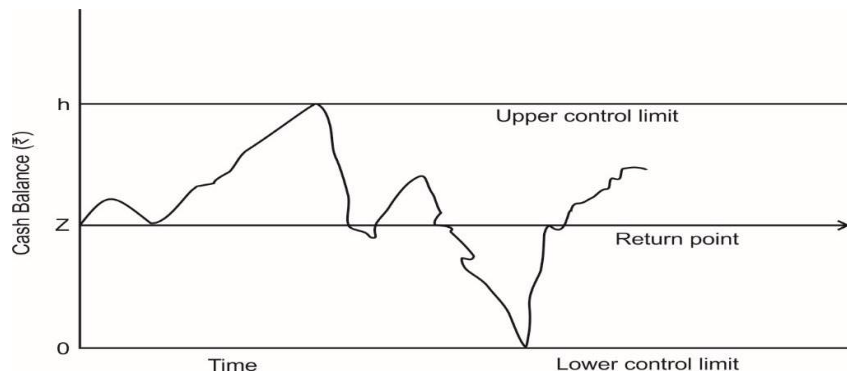
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following diagram illustrates the Miller-Orr model.

The MO Model is more realistic since it allows variations in cash balance within lower and upper limits. The finance manager can set the limits according to the firm's liquidity requirements i.e., maintaining minimum and maximum cash balance.



Question 8

EXPLAIN briefly the accounts receivable systems

Answer 8

Technological developments now-a-days provides an opportunity for improvement in accounts receivables process. The major innovations available are the integration of systems used in the management of accounts receivables, the automation and the use of e-commerce.

- **E-commerce** refers to the use of computer and electronic telecommunication technologies, particularly on an inter-organisational level, to support trading in goods and services. It uses technologies such as Electronic Data Inter-change (EDI), Electronic Mail, Electronic Funds Transfer (EFT) and Electronic Catalogue Systems to allow the buyer and seller to transact business by exchange of information between computer application systems such as Amazon, Flipkart etc.

(a) Automated Accounts Receivable Management Systems: Now-a-days all the big companies develop and maintain automated receivable management systems. Manual systems of recording the transactions and managing receivables are not only cumbersome but ultimately costly also. These integrated systems automatically update all the accounting records affected by a transaction. For example, if a transaction of credit sale is to be recorded, the system increases the amount the customer owes to the firm, reduces the inventory for the item purchased, and records the sale. This system of a company allows the application and tracking of receivables and collections, using the automated receivables system allows the company to store important information for an unlimited number of customers and transactions, and accommodate efficient processing of customer payments and adjustments.

Question 9

DESCRIBE Factoring.

Answer 9

Factoring is a relatively new concept in financing of accounts receivables. This refers to outright sale of accounts receivables to a factor or a financial agency. A factor is a firm that acquires the receivables of

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other firms. The factoring lays down the conditions of the sale in a factoring agreement. The factoring agency bears the risk of collection and services the accounts for a fee.

Factoring arrangement can be either on a recourse basis or on a non-recourse basis:

- **Recourse:** In case factor is unable to collect the amount from receivables then, factor can turn back the same to the organization for resolution (which generally is by replacing those receivables with new receivables)
- **Non-Recourse:** The factor bears the ultimate risk of loss in case of default and hence in such cases they charge higher commission.

There are a number of financial institutions providing factoring services in India. Some commercial banks and other financial agencies provide this service. The biggest advantages of factoring are the immediate conversion of receivables into cash and predicted pattern of cash flows. Financing receivables with the help of factoring can help a company having liquidity **without creating a net liability on its financial condition** and hence no impact on debt equity ratio. Besides, factoring is a flexible financial tool providing timely funds, efficient record keepings and effective management of the collection process. This is not considered as a loan. There is no debt repayment and hence no compromise to balance sheet, no long-term agreements or delays associated with other methods of raising capital. Factoring allows the firm to use cash for the growth needs of business.

Question 10

DESCRIBE the various forms of bank credit in financing the working capital of a business organization

Answer 10

The bank credit will generally be in the following forms:

- **Cash Credit:** This facility will be given by the banker to the customers by giving certain amount of credit facility on continuous basis. The borrower will not be allowed to exceed the limits sanctioned by the bank.
- **Bank Overdraft:** It is a short-term borrowing facility made available to the companies in case of urgent need of funds. The banks will impose limits on the amount they can lend. When the borrowed funds are no longer required they can quickly and easily be repaid. The banks issue overdrafts with a right to call them in at short notice.
- **Bills Discounting:** The Company which sells goods on credit will normally draw a bill on the buyer who will accept it and sends it to the seller of goods. The seller, in turn discounts the bill with his banker. The banker will generally earmark the discounting bill limit.
- **Bills Acceptance:** To obtain finance under this type of arrangement a company draws a bill of exchange on bank. The bank accepts the bill thereby promising to pay out the amount of the bill at some specified future date.
- **Line of Credit:** Line of Credit is a commitment by a bank to lend a certain amount of funds on demand specifying the maximum amount.
- **Letter of Credit:** It is an arrangement by which the issuing bank on the instructions of a customer or on its own behalf undertakes to pay or accept or negotiate or authorizes another bank to do so against stipulated documents subject to compliance with specified terms and conditions.
- **Bank Guarantees:** Bank guarantee is one of the facilities that the commercial banks extend on behalf of their clients in favour of third parties who will be the beneficiaries of the guarantees.

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Practical Problems

Question 1

Following information is forecasted by R Limited for the year ending 31st March, 2022:

	Balance as at 31 st March, 2022	Balance as at 31 st March, 2021
	(₹ in lakh)	(₹ in lakh)
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:

- Net operating cycle period.
- Number of operating cycles in the year.
- Amount of working capital requirement.

Answer 1

1. Working Notes:

1. Raw Material Storage Period (R)

$$= \frac{\text{Average Stock of Raw Material}}{\text{Annual Consumption of Raw Material}} \times 365$$

$$= \frac{\frac{₹ 45 + ₹ 65}{2}}{₹ 380} \times 365 = 52.83 \text{ or } 53 \text{ days}$$

Annual Consumption of Raw Material = Opening Stock + Purchases – Closing Stock
 = ₹ 45 + ₹ 400 - ₹ 65 = ₹ 380 Lakh

2. Work – in – Progress (WIP) Conversion Period (W)

$$= \frac{\text{Average Stock of WIP}}{\text{Annual Cost of Production}} \times 365$$

$$= \frac{\frac{₹ 35 + ₹ 51}{2}}{₹ 450} \times 365 = 34.87 \text{ or } 35 \text{ days}$$

3. Finished Stock Storage Period (F)

$$= \frac{\text{Average Stock of Finished Goods}}{\text{Cost of Goods sold}} \times 365$$

$$= \frac{\frac{₹ 60 + ₹ 70}{2}}{₹ 525} \times 365 = 45.19 \text{ or } 45 \text{ days.}$$

4. Receivables (Debtors) Collection Period (D)

$$= \frac{\text{Average Receivables}}{\text{Annual Credit Sales}} \times 365$$

$$= \frac{\frac{₹ 112 + ₹ 135}{2}}{₹ 585} \times 365 = 77.05 \text{ or } 77 \text{ days}$$

5. Payables (Creditors) Payment Period (C)

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$$= \frac{\text{Average Payables for material}}{\text{Annual credit purchases}} \times 365$$

$$= \frac{\frac{₹ 68 + ₹ 71}{2}}{₹ 400} \times 365 = 63.41 \text{ or } 64 \text{ days}$$

- (i) Net Operating Cycle Period
 $= R + W + F + D - C$
 $= 53 + 35 + 45 + 77 - 64 = 146 \text{ days}$
- (ii) Number of Operating Cycles in the year
 $= \frac{365}{\text{Operating Cycle Period}} = \frac{365}{146} = 2.5 \text{ times}$
- (iii) Amount of working Capital Required
 $= \frac{\text{Annual Operating Cost}}{\text{Number of Operating Cycles}} = \frac{₹ 325}{2.50} = ₹ 130 \text{ Lakh}$

Question 2

The following data relating to an auto component manufacturing company is available for the year 2021-22:

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:

- Each item of current assets and current liabilities,
- The working capital requirement, if the company wants to maintain a cash balance of ₹ 10 lakhs at all times.

Answer 2

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	For Raw Material	For Other Costs	Total
Cash Operating expenses	$\frac{75}{100} \times 800 = 600$	$\frac{25}{100} \times 800 = 200$	800.00
Raw Material Stock Holding	$\frac{20}{360} \times 600 = 33.33$	-	33.33
WIP Conversion	$\frac{10}{360} \times 600 = 16.67$	$\frac{5}{360} \times 200 = 2.78$	19.45
Finished Goods Stock Holding	$\frac{45}{360} \times 600 = 75$	$\frac{45}{360} \times 200 = 25$	100.00

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Receivable Collection Period	$\frac{30}{360} \times 600 = 50$	$\frac{30}{360} \times 200 = 16.67$	66.67
Advance to suppliers	$\frac{5}{360} \times 600 = 8.33$	-	8.33
Credit Period from suppliers	$\frac{60}{360} \times 600 = 100$	-	100.00

Computation of working capital

	₹ in lakhs
Raw Material Stock	33.33
WIP	19.45
Finished Goods stock	100.00
Receivables	66.67
Advance to Suppliers	8.33
Cash	10.00
	237.78
Less: Payables (Creditors)	100.00
Working capital	133.78

Question 3

The following figures and ratios are related to a company:

(i) Sales for the year (all credit)	₹ 90,00,000
(ii) Gross Profit ratio	35 percent
(iii) Fixed assets turnover (based on cost of goods sold)	1.5
(iv) Stock turnover (based on cost of goods sold)	6
(v) Liquid ratio	1.5:1
(vi) Current ratio	2.5:1
(vii) Receivables (Debtors) collection period	1 month
(viii) Reserves and surplus to Share capital	1:1.5
(ix) Capital gearing ratio	0.7875
(x) Fixed assets to net worth	1.3 : 1

You are required to PREPARE:

- Balance Sheet of the company on the basis of above details.
- The statement showing working capital requirement, if the company wants to make a provision for contingencies @15 percent of net working capital.

Answer 3

- Cost of Goods Sold
 - = Sales – Gross Profit (35% of Sales)
 - = ₹ 90,00,000 – ₹ 31,50,000
 - = ₹ 58,50,000
- Closing Stock
 - = Cost of Goods Sold / Stock Turnover
 - = ₹ 58,50,000/6 = ₹ 9,75,000
- Fixed Assets
 - = Cost of Goods Sold / Fixed Assets Turnover
 - = ₹ 58,50,000/1.5
 - = ₹ 39,00,000
- Current Assets and Current Liabilities

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- Current Ratio = 2.5 and Liquid Ratio = 1.5
 CA / CL = 2.5 ... (i)
 (CA – Inventories) / CL = 1.5 ... (ii)
 By subtracting equation (ii) from (i), we get
 Inventories / CL = 1
 Current Liabilities = Inventories (stock) = ₹ 9,75,000
 ∴ Current Assets = ₹ 9,75,000 × 2.5 = ₹ 24,37,500
- Or
- Current Ratio / Quick Ratio = Current Assets / Quick Assets
 2.5 / 1.5 = Current Assets / (Current Assets – Inventory)
 2.5/1.5 Current Assets – 2.5/1.5 × ₹ 9,75,000 = Current Assets
 Hence, Current Assets = ₹ 24,37,500
- (v) Liquid Assets (Receivables and Cash)
- = Current Assets – Inventories (Stock)
 = ₹ 24,37,500 – ₹ 9,75,000
 = ₹ 14,62,500
- (vi) Receivables (Debtors)
- = Sales × Debtors Collection period / 12
 = ₹ 90,00,000 × 1/12
 = ₹ 7,50,000
- (vii) Cash
- = Liquid Assets – Receivables (Debtors)
 = ₹ 14,62,500 – ₹ 7,50,000 = ₹ 7,12,500
- (viii) Net worth
- = Fixed Assets / 1.3
 = ₹ 39,00,000 / 1.3 = ₹ 30,00,000
- (ix) Reserves and Surplus
- Reserves and Surplus / Share Capital = 1/1.5
 Share Capital = 1.5 Reserves and Surplus ... (i)
 Now, Reserves and Surplus + Share Capital = Net worth ... (ii)
 From (i) and (ii), we get,
 2.5 Reserves and Surplus = Net worth
 Reserves and Surplus = ₹ 30,00,000 / 2.5 = ₹ 12,00,000
- (x) Share Capital
- = Net worth – Reserves and Surplus
 = ₹ 30,00,000 – ₹ 12,00,000
 = ₹ 18,00,000
- (xi) Long-term Debts
- Capital Gearing Ratio = Long-term Debts / Equity Shareholders' Fund
 Long-term Debts = ₹ 30,00,000 × 0.7875 = ₹ 23,62,500

(a) Balance Sheet of the Company

Particulars	Figures as the end of 31-03-2021 (₹)	Figures as the end of 31-03-2020 (₹)
I. EQUITY AND LIABILITIES		
Shareholders' funds		
(a) Share capital	18,00,000	-
(b) Reserves and surplus	12,00,000	-

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Non-current liabilities		
(a) Long-term borrowings	23,62,500	-
Current liabilities	9,75,000	-
TOTAL	63,37,500	-
II. ASSETS		
Non-current assets		
Fixed assets	39,00,000	-
Current assets		
Inventories	9,75,000	-
Trade receivables	7,50,000	-
Cash and cash equivalents	7,12,500	-
TOTAL	63,37,500	-

(b) Statement Showing Working Capital Requirement

	(₹)	(₹)
A. Current Assets		
(i) Inventories (Stocks)		9,75,000
(ii) Receivables (Debtors)		7,50,000
(iii) Cash in hand & at bank		7,12,500
Total Current Assets		24,37,500
B. Current Liabilities:		
Total Current Liabilities		9,75,000
Net Working Capital (A – B)		14,62,500
Add: Provision for contingencies (15% of Net Working Capital)		2,19,375
Working capital requirement		16,81,875

Question 4

PQ Ltd., a company newly commencing business in 2021-22 has the following projected Profit and Loss Account:

	(₹)	(₹)
Sales		2,10,000
Cost of goods sold		<u>1,53,000</u>
Gross Profit		57,000
Administrative Expenses	14,000	
Selling Expenses	<u>13,000</u>	<u>27,000</u>
Profit before tax		30,000
Provision for taxation		<u>10,000</u>
Profit after tax		<u>20,000</u>
The cost of goods sold has been arrived at as under:		
Materials used	84,000	
Wages and manufacturing Expenses	62,500	
Depreciation	<u>23,500</u>	
	<u>1,70,000</u>	

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Less: Stock of Finished goods (10% of goods produced not yet sold)	17,000	
	<u>1,53,000</u>	

The figure given above relate only to finished goods and 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 extend 1-1/2 months credit. Sales will be 20% for cash and the rest at two months' credit. 70% of the Income tax will be paid in advance in quarterly instalments. The company wishes to keep ₹ 8,000 in cash. 10% has to be added to the estimated figure for unforeseen contingencies.

PREPARE an estimate of working capital.

Note: All workings should form part of the answer.

Answer 4

Statement showing the requirements of Working Capital

Particulars	(₹)	(₹)
A. Current Assets:		
Inventory:		
Stock of Raw material ($₹ 96,600 \times 2/12$)	16,100	
Stock of Work-in-progress (As per Working Note)	16,350	
Stock of Finished goods ($₹ 1,46,500 \times 10/100$)	14,650	
Receivables (Debtors) ($₹ 1,27,080 \times 2/12$)	21,180	
Cash in Hand	8,000	
Prepaid Expenses:		
Wages & Mfg. Expenses ($₹ 66,250 \times 1/12$)	5,521	
Administrative expenses ($₹ 14,000 \times 1/12$)	1,167	
Selling & Distribution Expenses ($₹ 13,000 \times 1/12$)	1,083	
Advance taxes paid $\{(70\% \text{ of } ₹ 10,000) \times 3/12\}$	1,750	
Gross Working Capital	85,801	85,801
B. Current Liabilities:		
Payables for Raw materials ($₹ 1,12,700 \times 1.5/12$)	14,088	
Provision for Taxation (Net of Advance Tax) ($₹ 10,000 \times 30/100$)	3,000	
Total Current Liabilities	17,088	17,088
C. Excess of CA over CL		68,713
Add: 10% for unforeseen contingencies		6,871
Net Working Capital requirements		75,584

Working Notes:

(i) Calculation of Stock of Work-in-progress

Particulars	(₹)
Raw Material ($₹ 84,000 \times 15\%$)	12,600
Wages & Mfg. Expenses ($₹ 62,500 \times 15\% \times 40\%$)	3,750
Total	16,350

(ii) Calculation of Stock of Finished Goods and Cost of Sales

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Particulars	(₹)
Direct material Cost [₹ 84,000 + ₹ 12,600]	96,600
Wages & Mfg. Expenses [₹62,500 + ₹ 3,750]	66,250
Depreciation	0
Gross Factory Cost	1,62,850
Less: Closing W.I.P	(16,350)
Cost of goods produced	1,46,500
Add: Administrative Expenses	14,000
	1,60,500
Less: Closing stock	(14,650)
Cost of Goods Sold	1,45,850
Add: Selling and Distribution Expenses	13,000
Total Cash Cost of Sales	1,58,850
Debtors (80% of cash cost of sales)	1,27,080

(iii) Calculation of Credit Purchase

Particulars	(₹)
Raw material consumed	96,600
Add: Closing Stock	16,100
Less: Opening Stock	-
Purchases	1,12,700

Question 5

M.A. 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:

	Costs per unit (₹)
Materials	40.00
Direct labour and variable expenses	20.00
Fixed manufacturing expenses	6.00
Depreciation	10.00
Fixed administration expenses	4.00
	80.00

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-process	Nil
(c)	Debtors	1 month's average sales
(d)	Cash balance	₹ 10,000

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(e)	Creditors for supply of materials	1 month's average purchase during the year
(f)	Creditors for expenses	1 month's average of all expenses during the year.

PREPARE, for the two years:

- A projected statement of Profit/Loss (Ignoring taxation); and
- A projected statement of working capital requirements.

Answer 5

M.A. Limited
Projected Statement of Profit / Loss (Ignoring Taxation)

	Year 1	Year 2
Production (Units)	6,000	9,000
Sales (Units)	5,000	8,500
	(₹)	(₹)
Sales revenue (A) (Sales unit × ₹ 96)	4,80,000	8,16,000
Cost of production:		
Materials cost (Units produced × ₹ 40)	2,40,000	3,60,000
Direct labour and variable expenses (Units produced × ₹ 20)	1,20,000	1,80,000
Fixed manufacturing expenses (Production Capacity: 12,000 units × ₹ 6)	72,000	72,000
Depreciation (Production Capacity : 12,000 units × ₹ 10)	1,20,000	1,20,000
Fixed administration expenses (Production Capacity : 12,000 units × ₹ 4)	48,000	48,000
Total Costs of Production	6,00,000	7,80,000
Add: Opening stock of finished goods (Year 1 : Nil; Year 2 : 1,000 units)	---	1,00,000
Cost of Goods available for sale (Year 1: 6,000 units; Year 2: 10,000 units)	6,00,000	8,80,000
Less: Closing stock of finished goods at average cost (year 1: 1000 units, year 2 : 1500 units) (Cost of Production × Closing stock/ units produced)	(1,00,000)	(1,32,000)
Cost of Goods Sold	5,00,000	7,48,000
Add: Selling expenses – Variable (Sales unit × ₹ 4)	20,000	34,000
Add: Selling expenses - Fixed (12,000 units × ₹ 1)	12,000	12,000
Cost of Sales : (B)	5,32,000	7,94,000
Profit (+) / Loss (-): (A - B)	(-) 52,000	(+) 22,000

Note: Value of closing stock valued at average cost of goods available for sale.

Working Notes:

- Calculation of creditors for supply of materials:

	Year 1 (₹)	Year 2 (₹)
Materials consumed during the year	2,40,000	3,60,000
Add: Closing stock (2.25 month's average consumption)	45,000	67,500

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	2,85,000	4,27,500
Less: Opening Stock	---	45,000
Purchases during the year	2,85,000	3,82,500
Average purchases per month (Creditors)	23,750	31,875

2. Creditors for expenses:

	Year 1 (₹)	Year 2 (₹)
Direct labour and variable expenses	1,20,000	1,80,000
Fixed manufacturing expenses	72,000	72,000
Fixed administration expenses	48,000	48,000
Selling expenses (variable + fixed)	32,000	46,000
Total (including	2,72,000	3,46,000
Average per month	22,667	28,833

(ii) Projected Statement of Working Capital requirements

	Year 1 (₹)	Year 2 (₹)
Current Assets:		
Inventories:		
- Stock of materials (2.25 month's average consumption)	45,000	67,500
- Finished goods	1,00,000	1,32,000
Debtors (1 month's average sales) (including profit)	40,000	68,000
Cash	10,000	10,000
Total Current Assets/ Gross working capital (A)	1,95,000	2,77,500
Current Liabilities:		
Creditors for supply of materials (Refer to working note 1)	23,750	31,875
Creditors for expenses (Refer to working note 2)	22,667	28,833
Total Current Liabilities: (B)	46,417	60,708
Estimated Working Capital Requirements: (A-B)	1,48,583	2,16,792

Projected Statement of Working Capital Requirement (Cash Cost Basis)

	Year 1 (₹)	Year 2 (₹)
(A) Current Assets		
Inventories:		
- Stock of Raw Material (6,000 units × ₹ 40 × 2.25/12); (9,000 units × ₹ 40 × 2.25 /12)	45,000	67,500
- Finished Goods (Refer working note 3)	80,000	1,11,000
Receivables (Debtors) (Refer working note 4)	36,000	56,250
Minimum Cash balance	10,000	10,000
Total Current Assets/ Gross working capital (A)	1,71,000	2,44,750
(B) Current Liabilities		
Creditors for raw material (Refer working note 1)	23,750	31,875
Creditors for Expenses (Refer working note 2)	22,667	28,833
Total Current Liabilities	46,417	60,708
Net Working Capital (A – B)	1,24,583	1,84,042

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Working Note:
3. Cash Cost of Production:

	Year 1 (₹)	Year 2 (₹)
Cost of Production as per projected Statement of P&L	6,00,000	7,80,000
Less: Depreciation	1,20,000	1,20,000
Cash Cost of Production	4,80,000	6,60,000
Add: Opening Stock at Average Cost:	--	80,000
Cash Cost of Goods Available for sale	4,80,000	7,40,000
Less : Closing Stock at Avg. Cost	(80,000)	(1,11,000)
$\left(\frac{₹ 4,80,000 \times 1,000}{6,000}\right) ; \left(\frac{₹ 7,40,000 \times 1,500}{10,000}\right)$		
Cash Cost of Goods Sold	4,00,000	6,29,000

4. Receivables (Debtors)

	Year 1 (₹)	Year 2 (₹)
Cash Cost of Goods Sold	4,00,000	6,29,000
Add : Variable Expenses @ ₹ 4	20,000	34,000
Add : Total Fixed Selling expenses (12,000 units × ₹1)	12,000	12,000
Cash Cost of Debtors	4,32,000	6,75,000
Average Debtors	36,000	56,250

Question 6

Aneja Limited, a newly formed company, has applied to a 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) is expected to be ₹ 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.

Answer 6

Calculation of Net Working Capital requirement:

	(₹)	(₹)

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A. Current Assets:		
Inventories:		
- Raw material stock (Refer to Working note 3)	6,64,615	
- Work in progress stock (Refer to Working note 2)	5,00,000	
- Finished goods stock (Refer to Working note 4)	13,60,000	
Receivables (Debtors) (Refer to Working note 5)	25,10,769	
Cash and Bank balance	25,000	
Gross Working Capital	50,60,384	50,60,384
B. Current Liabilities:		
Creditors for raw materials (Refer to Working note 6)	7,15,740	
Creditors for wages (Refer to Working note 7)	91,731	
	8,07,471	8,07,471
Net Working Capital (A - B)		42,52,913

Working Notes:
1. Annual cost of production

	(₹)
Raw material requirements {(1,04,000 units × ₹ 80) + ₹3,20,000}	86,40,000
Direct wages {(1,04,000 units × ₹ 30) + ₹60,000}	31,80,000
Overheads (exclusive of depreciation) {(1,04,000 × ₹ 60) + ₹1,20,000}	63,60,000
Gross Factory Cost	1,81,80,000
Less: Closing W.I.P	(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)
Total Cash Cost of Sales	1,63,20,000

2. Work in progress stock

	(₹)
Raw material requirements (4,000 units × ₹ 80)	3,20,000
Direct wages (50% × 4,000 units × ₹ 30)	60,000
Overheads (50% × 4,000 units × ₹ 60)	1,20,000
	5,00,000

3. Raw material stock

It is given that raw material in stock is average 4 weeks consumption. Since, the company is newly formed, the raw material requirement for production and work in progress will be issued and consumed during the year.

Hence, the raw material consumption for the year (52 weeks) is as follows:

	(₹)
For Finished goods (1,04,000 × ₹ 80)	83,20,000
For Work in progress (4,000 × ₹ 80)	3,20,000
	86,40,000

Raw material Stock $\frac{₹ 86,40,000}{52 \text{ weeks}} \times 4 \text{ weeks}$ i.e. ₹ 6,64,615

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4. **Finished goods stock:** 8,000 units @ ₹ 170 per unit = ₹ 13,60,000

5. **Debtors for sale:** $1,63,20,000 \times \frac{8}{52} = ₹ 25,10,769$

6. **Creditors for raw material:**

Material Consumed (₹ 83,20,000 + ₹ 3,20,000) ₹ 86,40,000

Add: Closing stock of raw material ₹ 6,64,615

Purchases of Raw Material ₹ 93,04,615

Credit allowed by suppliers = $\frac{₹ 93,04,615}{52 \text{ weeks}} \times 4 \text{ weeks} = ₹ 7,15,740$

7. **Creditors for wages**

Outstanding wage payment = $\frac{₹ 31,80,000}{52 \text{ weeks}} \times 1.5 \text{ weeks} = ₹ 91,731$

Question 7

The management of Trux Company Ltd. is planning to expand its business and consults you to prepare an estimated working capital statement. The records of the company reveals the following annual information:

	(₹)
Sales – Domestic at one month's credit	18,00,000
Export at three month's credit (sales price 10% below domestic price)	8,10,000
Materials used (suppliers extend two months credit)	6,75,000
Lag in payment of wages – ½ 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 installments, 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.

Answer 7

Preparation of Statement of Working Capital Requirement for Trux Company Ltd.

	(₹)	(₹)
A. Current Assets		
(i) Inventories:		
Material (1 Month) $\left(\frac{₹ 6,75,000}{12 \text{ Months}} \times 1 \text{ month} \right)$	56,250	
Finished goods (1 month) $\left(\frac{₹ 21,60,000}{12 \text{ Months}} \times 1 \text{ month} \right)$	1,80,000	2,36,250
(ii) Receivables (Debtors)		

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For Domestic Sales $\left(\frac{₹ 15,17,586}{12 \text{ Months}} \times 1 \text{ month}\right)$	1,26,466	
For Export Sales $\left(\frac{₹ 7,54,914}{12 \text{ Months}} \times 3 \text{ month}\right)$	1,88,729	3,15,195
(iii) Prepayment of Selling expenses 2 Months $\times$ 3 month		28,125
(iii) Cash in hand & at bank (net of overdraft)		1,75,000
Total Current Assets		7,54,570
B. Current Liabilities:		
(i) Payables (Creditors) for materials (2 months)		
$\left(\frac{₹ 6,75,000}{12 \text{ Months}} \times 2 \text{ month}\right)$		1,12,500
(ii) Outstanding wages (0.5 months)		
$\left(\frac{₹ 5,40,000}{12 \text{ Months}} \times 0.5 \text{ month}\right)$		22,500
(iii) Outstanding manufacturing expenses $\left(\frac{₹ 7,65,000}{12 \text{ Months}} \times 1 \text{ month}\right)$		63,750
(iv) Outstanding administrative expenses $\left(\frac{₹ 1,80,000}{12 \text{ Months}} \times 1 \text{ month}\right)$		15,000
(v) Income tax payable		42,000
Total Current Liabilities		2,55,750
Net Working Capital (A – B)		4,98,820
Add: 10% contingency margin		49,882
Total Working Capital required		5,48,702

Working Notes:
1. Calculation of Cost of Goods Sold and Cost of Sales

	Domestic (₹)	Export (₹)	Total (₹)
Domestic Sales	18,00,000	8,10,000	26,10,000
Less: Gross profit @ 20% on domestic sales and 11.11% on export sales (Working note-2)	3,60,000	90,000	4,50,000
Cost of Goods Sold	14,40,000	7,20,000	21,60,000
Add: Selling expenses (Working note-3)	77,586	34,914	1,12,500
Cash Cost of Sales	15,17,586	7,54,914	22,72,500

2. Calculation of gross profit on Export Sales

Let domestic selling price is ₹ 100. Gross profit is ₹ 20, and then cost per unit is ₹ 80

Export price is 10% less than the domestic price i.e. ₹ 100 – (1 – 0.1) = ₹ 90 Now, gross profit will be = ₹ 90 – ₹ 80 = ₹ 10

So, Gross profit ratio at export price will be = $\frac{₹ 10}{₹ 90} \times 100 = 11.11\%$

3. Apportionment of Selling expenses between Domestic and Exports sales:
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Apportionment on the basis of sales value:

$$\text{Domestic Sales} = \frac{₹ 1,12,500}{₹ 26,10,000} \times ₹ 18,00,000 = ₹ 77,586$$

$$\text{Export Sales} = \frac{₹ 1,12,500}{₹ 26,10,000} \times 8,10,000 = ₹ 34,914$$

4. Assumptions

- (i) It is assumed that administrative expenses is related to production activities.
- (ii) Value of opening and closing stocks are equal.

Question 8

The following information relates to Zeta Limited, 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)

The sales manager has forecasted the following volumes:

Month	No. of Books
November	1,000
December	1,000
January	1,000
February	1,250
March	1,500
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 2021, of ₹ 1,500.

You are required to PREPARE a cash budget for the six months from January to June, 2022.

Answer 8

Workings:

1. Sale 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

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	₹	₹	₹	₹	₹	₹	₹	₹
S×15	15,000	15,000	15,000	18,750	22,500	30,000	28,500	33,000
Debtors pay:								
1month 40%		6,000	6,000	6,000	7,500	9,000	12,000	11,400
2month 60%		-	9,000	9,000	9,000	11,250	13,500	18,000
	-	-	15,000	15,000	16,500	20,250	25,500	29,400

2. Payment for materials – books produced two months before sale

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 months 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. overhead (Q×2)	2,000	2,500	3,000	4,000	3,800			
Var. overhead (Q×2.50)						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 payments

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% this month		1,250	1,500	2,000	2,138	2,475	2,475
		5,750	7,500	8,412	9,563	9,900	10,237

Cash budget – six months ended June

	Jan	Feb	Mar	Apr	May	Jun
	₹	₹	₹	₹	₹	₹
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. overheads	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	29,912	23,363	34,900	26,737

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Net cash flow	1,750	(1,750)	(13,412)	(3,113)	15,600	2,663
Balance b/f	1,500	3,250	1,500	(11,912)	(15,025)	575
Cumulative cash flow	3,250	1,500	(11,912)	(15,025)	575	3,238

Question 9

From the information and the assumption that the cash balance in hand on 1st January 2022 is ₹ 72,500, PREPARE a cash budget.

Assume that 50 per cent 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.

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 per cent on sales is paid to the salesman each month.

Month	Sales (₹)	Materials Purchases (₹)	Salaries & Wages (₹)	Production Overheads (₹)	Office and Selling Overheads (₹)
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

Answer 9
Cash Budget

	Jan	Feb	Mar	Apr	May	June	Total
	₹	₹	₹	₹	₹	₹	₹
Receipts							
Cash sales	36,000	48,500	43,000	44,300	51,250	54,350	2,77,400
Collections from debtors	-	36,000	48,500	43,000	44,300	51,250	2,23,050
Bank loan	-	-	-	-	30,000	-	30,000
Total	36,000	84,500	91,500	87,300	1,25,550	1,05,600	5,30,450
Payments							
Materials	-	25,000	31,000	25,500	30,600	37,000	1,49,100
Salaries and wages	10,000	12,100	10,600	25,000	22,000	23,000	1,02,700
Production overheads	-	6,000	6,300	6,000	6,500	8,000	32,800
Office & selling overheads	-	5,500	6,700	7,500	8,900	11,000	39,600
Sales commission	2,160	2,910	2,580	2,658	3,075	3,261	16,644
Capital expenditure	-	8,000	-	25,000	-	-	33,000
Dividend	-	-	-	-	-	35,000	35,000
Total	12,160	59,510	57,180	91,658	71,075	1,17,261	4,08,844
Net cash flow	23,840	24,990	34,320	(4,358)	54,475	(11,661)	1,21,606

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Balance, beginning of month	72,500	96,340	1,21,330	1,55,650	1,51,292	2,05,767	72,500
Balance, end of month	96,340	1,21,330	1,55,650	1,51,292	2,05,767	1,94,106	1,94,196

Question 10

Consider the balance sheet of Maya Limited as on 31 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 per cent of its sales in the month of sale, 70 per cent in the subsequent month, and 10 per cent in the second month after the sale. All sales are credit sales.

Equity & liabilities	Amount (₹ in 000)	Assets	Amount (₹ in '000)
Equity shares 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

Purchases of raw materials are made in the month prior to the sale and amounts to 60 per cent 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:

- 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.
- PREPARE a pro forma balance sheet for March 31.

Answer 10
(a) Cash Budget
(in thousands)

	Nov.	Dec.	Jan.	Feb.	Mar.
	₹	₹	₹	₹	₹
Opening Balance (A)			50	50	50
Sales	500	600	600	1,000	650
Receipts:					
Collections, current month's sales			120	200	130
Collections, previous month's sales			420	420	700
Collections, previous 2 month's sales			50	60	60
Total (B)			590	680	890
Purchases		360	600	390	450

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Payments:				
Payment for purchases		360	600	390
Labour costs		150	200	160
Other expenses		100	100	100
Total (C)		610	900	650
Surplus/Deficit (D) = (A + B - C)		30	(170)	290
Minimum cash balance (E)		50	50	50
Additional borrowings (F) = (E - D)		20	220	(240)

	Jan.	Feb.	Mar.
	₹	₹	₹
Additional borrowings	20	220	(240)
Cumulative borrowings (Opening balance of 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 shares 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 receivable	=	Sales in March $\times$ 0.8 + Sales in February $\times$ 0.1
	=	₹ 650 $\times$ 0.8 + ₹ 1,000 $\times$ 0.1 = ₹ 620
Inventories	=	₹ 545 + Total purchases from January to March $\times$ Total sales from January to March $\times$ 0.6
	=	₹ 545 + (₹ 600 + ₹ 390 + ₹ 450) $\times$ (₹ 600 + ₹ 1000 + ₹ 650) $\times$ 0.6 = ₹ 635
Accounts payable	=	Purchases in March = ₹ 450
Retained earnings	=	₹ 1,439 + Sales - Payment for purchases - Labour costs and - Other expenses, all for January to March
	=	₹ 1,439 + (₹ 600 + ₹ 1000 + ₹ 650) - (₹ 360 + ₹ 600 + ₹ 390) - (₹ 150 + ₹ 200 + ₹ 160) - (₹ 100 + ₹ 100 + ₹ 100) = ₹ 1,529

Question 11

PQR 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.

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The alternative policies are as under:

	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.

Answer 11

Evaluation of Alternative Collection Programmes

	Present Policy	Alternative I	Alternative II
	₹	₹	₹
Sales Revenues	30,00,000	30,00,000	30,00,000
Average Collection Period (ACP) (days)	50	40	30
Receivables (₹) $\left(\text{Sales} \times \frac{\text{ACP}}{360} \right)$	4,16,667	3,33,333	2,50,000
Reduction in Receivables from Present Level (₹)	—	83,334	1,66,667
Savings in Interest @ 10% p.a. (A)	—	₹ 8,333	₹ 16,667
% of Bad Debt Loss	5%	4%	3%
Amount (₹)	1,50,000	1,20,000	90,000
Reduction in Bad Debts from Present Level (B)	—	30,000	60,000
Incremental Benefits from Present Level (C) = (A) + (B)	—	38,333	76,667
Collection Expenses (₹)	30,000	60,000	95,000
Incremental Collection Expenses from Present Level (D)	—	30,000	65,000
Incremental Net Benefit (C – D)	—	₹ 8,333	₹ 11,667

Conclusion: From the analysis it is apparent that Alternative I has a benefit of ₹ 8,333 and Alternative II has a benefit of ₹ 11,667 over present level. Alternative II has a benefit of ₹ 3,334 more than Alternative I. Hence Alternative II is more viable.

(Note: In absence of Cost of Sales, sales has been taken for purpose of calculating investment in receivables. 1 year = 360 days.)

Question 12

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

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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%.

Answer 12

Statement showing the Evaluation of Proposal

Particulars		₹
A.	Expected Profit:	
	Net Sales	1,00,000
	Less: Production and Selling Expenses @ 80%	(80,000)
	Profit before providing for Bad Debts	20,000
	Less: Bad Debts @10%	(10,000)
	Profit before Tax	10,000
	Less: Tax @ 50%	(5,000)
	Profit after Tax	5,000
B.	Opportunity Cost of Investment in Receivables	(2,500)
C.	Net Benefits (A – B)	2,500

Advise: The sales manager's proposal should be accepted.

Working Note: Calculation of Opportunity Cost of Funds

$$\text{Opportunity Cost} = \text{Total Cost of Credit Sales} \times \frac{\text{Collection period}}{12} \times \frac{\text{Required Rate of Return}}{100}$$

$$= ₹ 80,000 \times \frac{1.5}{12} \times \frac{25}{100} = ₹ 2,500$$

Statement showing the Acceptable Degree of Risk of Non-payment

Particulars	Required Rate of Return		
	30%	40%	60%
Sales	1,00,000	1,00,000	1,00,000
Less: Production and Sales Expenses	80,000	80,000	80,000
Profit before providing for Bad Debts	20,000	20,000	20,000
Less: Bad Debts (assume X)	X	X	X
Profit before tax	20,000 – X	20,000 – X	20,000 – X
Less: Tax @ 50%	(20,000 – X) 0.5	(20,000 – X) 0.5	(20,000 – X) 0.5
Profit after Tax	10,000 – 0.5X	10,000 – 0.5X	10,000 – 0.5X
Required Return (given)	30% of 10,000*	40% of 10,000*	60% of 10,000*
	= ₹ 3,000	= ₹ 4,000	= ₹ 6,000

$$\begin{aligned} * \text{Average Debtors} &= \text{Total Cost of Credit Sales} \times \frac{\text{Collection period}}{12} \\ &= ₹ 80,000 \times \frac{1.5}{12} = ₹ 10,000 \end{aligned}$$

Computation of the value and percentage of X in each case is as follows:

$$\begin{aligned} \text{Case I} \quad 10,000 - 0.5x &= 3,000 \\ 0.5x &= 7,000 \\ X &= 7,000/0.5 = ₹ 14,000 \\ \text{Bad Debts as \% of sales} &= ₹ 14,000/₹ 1,00,000 \times 100 = 14\% \end{aligned}$$

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Case II

$$10,000 - 0.5x = 4,000$$

$$0.5x = 6,000$$

$$x = 6,000/0.5 = ₹ 12,000$$

Bad Debts as % of sales = ₹ 12,000/₹1,00,000 × 100 = 12%

Case III

$$10,000 - 0.5x = 6,000$$

$$0.5x = 4,000$$

$$x = 4,000/0.5 = ₹ 8,000$$

Bad Debts as % of sales = ₹ 8,000/₹1,00,000 × 100 = 8%

Thus, it is found that the Acceptable Degree of risk of non-payment is 14%, 12% and 8% if required rate of return (after tax) is 30%, 40% and 60% respectively.

Question 13

Slow Payers are regular customers of Goods Dealers Ltd. and have approached the sellers for extension of credit facility for enabling them to purchase goods. On an analysis of past performance and on the basis of information supplied, the following pattern of payment schedule emerges in regard to Slow Payers:

Pattern of Payment Schedule	
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

Slow Payers want to enter into a firm commitment for purchase of goods of ₹ 15 lakhs in 2021-22, 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 Goods Dealers 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 Goods Dealers is 24% per annum, would you as the finance manager of the seller recommend the grant of credit to Slow Payers? ANALYSE. Workings should form part of your answer. Assume year of 365 days.

Answer 13

Statement showing the Evaluation of Debtors Policies

Particulars	Proposed Policy ₹
A. Expected Profit:	
(a) Credit Sales	15,00,000
(b) Total Cost	
(i) Variable Costs	14,50,000
(ii) Recurring Costs	5,000
	14,55,000
(c) Bad Debts	15,000
(d) Expected Profit [(a) – (b) – (c)]	30,000
B. Opportunity Cost of Investments in Receivables	68,787
C. Net Benefits (A – B)	(38,787)

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Recommendation: The Proposed Policy should not be adopted since the net benefits under this policy are negative

Working Note: Calculation of Opportunity Cost of Average Investments

$$\text{Opportunity Cost} = \text{Total Cost} \times \frac{\text{Collection period}}{365} \times \frac{\text{Rate of Return}}{100}$$

Particulars	15%	34%	30%	20%	Total
A. Total Cost	2,18,250	4,94,700	4,36,500	2,91,000	14,40,450
B. Collection period	30/365	60/365	90/365	100/365	
C. Required Rate of Return	24%	24%	24%	24%	
D. Opportunity Cost (A × B × C)	4,305	19,517	25,831	19,134	68,787

Question 14

PREPARE a working capital estimate to finance an activity level of 52,000 units a year (52 weeks) based on the following data:

Raw Materials	- ₹ 400 per unit
Direct Wages	- ₹ 150 per unit
Overheads (Manufacturing)	- ₹200 per unit
Overheads (Selling & Distribution)	- ₹100 per unit

Selling Price - ₹ 1,000 per unit, Raw materials & Finished Goods remain in stock for 4 weeks, Work in process takes 4 weeks. Debtors are allowed 8 weeks for payment whereas creditors allow us 4 weeks. Finished goods are valued at cost of sales.

Minimum cash balance expected is ₹ 50,000. Receivables are valued at Selling Price.

Answer 14

Cost Structure for 52,000 units	
Particulars	Amount (₹)
Raw Material @ ₹ 400P	2,08,00,000
Direct Wages @ ₹ 150	78,00,000
Manufacturing Overheads @ ₹ 200	1,04,00,000
Selling and Distribution OH @ ₹ 100	52,00,000
Total Cost	4,42,00,000
Sales @ ₹ 1,000	5,20,00,000

Particulars	Calculation	Amount (₹)
A. Current Assets:		
Raw Material Stock	$2,08,00,000 \times \frac{4}{52}$	16,00,000
Work in Progress (WIP) stock**	$2,08,00,000 + \frac{(78,00,000+1,04,00,000)}{2} \times \frac{4}{52}$	23,00,000
Finished Goods Stock	$4,42,00,000 \times \frac{4}{52}$	34,00,000
Receivables	$5,20,00,000 \times \frac{8}{52}$	80,00,000
Cash		50,000
	Total Current Assets	1,53,50,000
B. Current Liabilities:		

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Creditors	$2,08,00,000 \times \frac{4}{52}$	16,00,000
C. Working Capital Estimates(A-B)		1,37,50,000

** Assuming that labour and overhead are incurred evenly throughout the year.

Case Scenarios

ArMore LLP is a newly established startup dealing in manufacture of a revolutionary product HDHMR which is a substitute to conventional wood and plywood. It is an economical substitute for manufacture of furniture and home furnishing. It has been asked by a venture capitalist for an estimated amount of funds required for setting up plant and also the amount of circulating capital required. A consultant hired by the entity has advised that the cost of setting up the plant would be ₹ 5 Crores and it will require 1 year to make the plant operational. The anticipated revenue and associated cost numbers are as follows:

Units to be sold = 3 lakh sq metres p.a. Sale Price of

each sq mtr = ₹ 1000 Raw Material cost = ₹ 200 per

sq mtr Labour cost = ₹ 50 per hour

Labour hours per sq mtr = 3 hours

Cash Manufacturing Overheads = ₹ 75 per machine hour Machine hours per sq mtr = 2 hours

Selling and credit administration Overheads = ₹ 250 per sq mtr

Being a new product in the industry, the firm will have to give a longer credit period of 3 months to its customers. It will maintain a stock of raw material equal to 15% of annual consumption. Based on negotiation with the creditors, the payment period has been agreed to be 1 month from the date of purchase. The entity will hold finished goods equal to 2 months of units to be sold. All other expenses are to be paid one month in arrears. Cash and Bank balance to the tune of ₹ 25,00,000 is required to be maintained.

The entity is also considering reducing the working capital requirement by either of the two options: a) reducing the credit period to customers by a month which will lead to reduction in sales by 5%. b) Engaging with a factor for managing the receivables, who will charge a commission of 2% of invoice value and will also advance 65% of receivables @ 12% p.a. This will lead to savings in administration and bad debts cost to the extent of ₹ 20 lakhs and 16 lakhs respectively.

The entity is also considering funding a part of working capital by bank loan. For this purpose, bank has stipulated that it will grant 75% of net current assets as advance against working capital. The bank has quoted 16.5% rate of interest with a condition of opening a current account with it, which will require 10% of loan amount to be minimum average balance.

You being an finance manager, has been asked the following questions:

1. The anticipated profit before tax per annum after the plant is operational is

- (a) ₹ 750 Lakhs
- (b) ₹ 570 Lakhs
- (c) ₹ 370 Lakhs
- (d) ₹ 525 Lakhs

Ans: (a)

2. The estimated current assets requirement in the first year of operation (debtors calculated at cost) is

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- (a) ₹ 9,42,50,000
- (b) ₹ 2,17,08,333
- (c) ₹ 7,25,41,667
- (d) ₹ 67,08,333

Ans: (a)

3. The net working capital requirement for the first year of operation is

- (a) ₹ 9,42,50,000
- (b) ₹ 2,17,08,333
- (c) ₹ 7,25,41,667
- (d) ₹ 67,08,333

Ans: (c)

4. The annualised % cost of two options for reducing the working capital is

- (a) 18.18% and 16.92%
- (b) 18.33% and 16.92%
- (c) 18.59% and 18.33%
- (d) 16.92% and 19.05%

Ans: (a)

5. What will be the Maximum Permissible Bank Finance by the bank and annualised % cost of the same?

- (a) ₹ 4,55,03,630 and 18.33%
- (b) ₹ 5,44,06,250 and 18.33%
- (c) ₹ 4,45,86,025 and 18.59%
- (d) ₹ 3,45,89,020 and 19.85%

Ans: (b)

1. (i)

	Units	Per unit (₹)	Amount (₹)
Raw Material consumption	3,50,000	200	7,00,00,000
labour cost	3,50,000	150	5,25,00,000
Production Overheads	3,50,000	150	5,25,00,000
Cost of Production	3,50,000	500	17,50,00,000
Less: Stock of FG	50,000	500	2,50,00,000
COGS	3,00,000	500	15,00,00,000
Selling and admin exp	3,00,000	250	7,50,00,000
Cost of Sales	3,00,000	750	22,50,00,000
Sales	3,00,000	1000	30,00,00,000
Profit	3,00,000	250	7,50,00,000

Stock of FG (sq. mtr.)	=	30,00,000x2/12 = 50,000
Units sold	=	3,00,000
Raw material consumed (sq. mtr.)	=	3,50,000

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$$\begin{aligned}
 \text{Raw Material Purchases} &= \text{Consumption} + \text{RM stock (15\%)} \\
 &= 7,00,00,000 + 1,05,00,000 \\
 &= ₹ 8,05,00,000
 \end{aligned}$$

(ii)

$$\begin{aligned}
 \text{Stock of Raw Material (15\% of 7,00,00,000)} &= 1,05,00,000 \\
 \text{Stock of finished goods} &= 2,50,00,000 \\
 \text{Debtors (22,50,00,000 x 3/12)} &= 5,62,50,000 \\
 \text{Cash} &= 25,00,000 \\
 \text{Total Current Assets} &= \mathbf{9,42,50,000}
 \end{aligned}$$

(iii) Working Capital Statement

	Amount (₹)
Stock of Raw Material (15% of 7,00,00,000)	1,05,00,000
Stock of finished goods	2,50,00,000
Debtors (22,50,00,000 x 3/12)	5,62,50,000
Cash	25,00,000
Total Current Assets	9,42,50,000
Creditors (8,05,00,000 x 1/12)	67,08,333
O/s Exp (18,00,00,000 x 1/12)	1,50,00,000
Total Current Liabilities	2,17,08,333
Net Working Capital	7,25,41,667

(iv) Cost reducing debtors credit period

$$\begin{aligned}
 \text{Debtors credit period} &= 2 \text{ months} \\
 \text{Debtors balance} &= 21,37,50,000 (2,85,000 \text{ units}) \times \\
 &\quad 2/12 = ₹ 3,56,25,000 \\
 \text{Debtors credit period} &= 3 \text{ months} \\
 \text{Debtors balance} &= 22,50,00,000 \times 3/12 \\
 &= ₹ 5,62,50,000 \\
 \text{Amount released from debtors} &= ₹ 2,06,25,000 \\
 \text{reduction in profit (15,000 units x ₹ 250)} &= ₹ 37,50,000 \\
 \% \text{ p.a. cost (37,50,000/2,06,25,000)} &= \mathbf{18.18\%}
 \end{aligned}$$

Costs of factoring

$$\begin{aligned}
 \text{Commission (2\% of 30 crores)} &= 60,00,000 \\
 \text{Interest} &= ₹ 58,50,000 \\
 \text{(30cr x 65\% x 12\% x 3/12)} & \\
 \text{savings} &= ₹ 36,00,000 \\
 \text{Net cost of factoring } \frac{82,50,000}{65\% \text{ of } 30\text{cr i.e. } 19,50,00,000} \times \frac{12}{3} &= ₹ 82,50,000 \\
 \% \text{ p.a. cost} &= 16.92\%
 \end{aligned}$$

(v) 5,44,06,250 and 18.3 %

$$\begin{aligned}
 \text{Maximum Permissible Bank Finance} &= 75\% \text{ of } 7,25,41,667 \\
 &= ₹ 5,44,06,250 \\
 \text{Annualised cost of bank loan} &= 16.5/90\% = 18.33\%
 \end{aligned}$$

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Chapter 1

Introduction to strategic management

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Test Your Knowledge

Multiple Choice Questions

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

Ans: (d)

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

Ans: (b)

3 Strategy is-

- (a) Proactive in action
- (b) Reactive in action
- (c) A blend of proactive and reactive actions
- (d) None of the above

Ans: (c)

4 Reactive strategy can also be termed as-

- (a) Planned strategy
- (b) Adaptive strategy
- (c) Sound strategy
- (d) Dynamic strategy

Ans: (b)

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

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Ans: (d)

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

Ans: (d)

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

Ans: (b)

8 Which statement should be created first and foremost?

- (a) Strategy
- (b) Vision
- (c) Objectives
- (d) Mission

Ans: (b)

9 Strategic management enables an organization 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

Ans: (a)

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)

Ans: (a)

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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

Ans: (d)

12 Strategic management allows an organization to be more

- (a) Authoritative
- (b) Participative
- (c) Commanding
- (d) Proactive

Ans: (d)

Descriptive Questions

Question 1

What is Strategic Management? What benefits accrue by following a strategic approach to managing?

Answer 1

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 overall objective of strategic management is twofold:

- To create competitive advantage, so that the company can outperform the competitors in order to have dominance over the market.
- To guide the company successfully through all changes in the environment.

The following are the benefits of strategic approach to managing:

- Strategic management helps organizations to be more proactive instead of reactive in shaping its future. Organizations are able to analyse and take actions instead of being mere spectators. Thereby they are able to control their own destiny in a better manner. It helps them in working within vagaries of environment and shaping it, instead of getting carried away by its turbulence or uncertainties.
- Strategic management provides framework for all the major decisions of an enterprise such as decisions on businesses, products, markets, manufacturing facilities, investments and organizational structure. It provides better guidance to entire organization on the crucial point - what it is trying to do.
- Strategic management is concerned with ensuring a good future for the firm. It seeks to prepare the corporation to face the future and act as pathfinder to various business opportunities. Organizations are able to identify the available opportunities and identify ways and means as how to reach them.
- Strategic management serves as a corporate defense mechanism against mistakes and pitfalls. It helps organizations to avoid costly mistakes in product market choices or investments. Over a period of time strategic management helps organization to evolve certain core competencies and competitive

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advantages that assist in its fight for survival and growth.

Question 2

Are there any limitations attached to strategic management in organizations? Discuss.

Answer 2

The presence of strategic management cannot counter all hindrances and always achieve success. 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.
- 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. 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.
- In a competitive scenario, where all organisations are trying to move strategically, it is difficult to clearly estimate the competitive responses to a firm's strategies.

Question 3

Explain the difference between three levels of strategy formulation.

Answer 3

A typical large organization is a multidivisional organisation that competes in several different businesses. It has separate self-contained divisions to manage each of these. There are three levels of strategy in management of business - corporate, business, and functional.

The corporate level of management consists of the chief executive officer and other top-level executives. These individuals occupy the apex of decision making within the organization. The role of corporate-level managers is to oversee the development of strategies for the whole organization. This role includes defining the mission and goals of the organization, determining what businesses it should be in, allocating resources among the different businesses and so on rests at the Corporate Level.

The development of strategies for individual business areas is the responsibility of the general managers in these different businesses or business level managers. A business unit is a self-contained division with its own functions - **For example**, finance, production, and marketing. The strategic role of business-level manager, head of the division, is to translate the general statements of direction and intent that come from the corporate level into concrete strategies for individual businesses.

Functional-level managers are responsible for the specific business functions or operations such as human resources, purchasing, product development, customer service, and so on. Thus, a functional manager's sphere of responsibility is generally confined to one organizational activity, whereas general managers oversee the operation of a whole company or division.

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Question 4

“Strategy is partly proactive and partly reactive.” Discuss.

Answer 4

Strategy is partly proactive and partly reactive. In proactive strategy, organizations will analyze 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 behavior, 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 and take advantage of emerging opportunities.

Scenario Based Questions
Question 1

Swati is the marketing manager at a software company. She is responsible for developing and implementing marketing strategies for the company's products. Swati leads a team of marketing professionals and works closely with the product development and sales teams to ensure that the company's products are effectively promoted in the market. She also analyzes market trends and customer feedback to refine the marketing strategies. Which level is she working at, discuss the roles and responsibilities of this level in organization?

Answer 1

Swati operates at the functional level of management, specifically as the marketing manager at a software company. Functional managers like Swati oversee specific departments or functions within an organization, such as marketing, finance, or operations. Their primary responsibilities include implementing corporate strategies and policies within their area of expertise and ensuring that daily operations are conducted efficiently and effectively.

In Swati's case, as a marketing manager, her role involves developing and executing marketing strategies for the company's products. This includes leading a team of marketing professionals, collaborating with product development and sales teams, and analyzing market trends and customer feedback to refine strategies. By working closely with these teams, Swati ensures that the company's products are effectively promoted in the market and that marketing efforts align with overall business goals.

Functional managers like Swati play a critical role in the organization by bridging the gap between corporate strategy and daily operations. They are responsible for translating high-level strategic goals into actionable plans for their departments and ensuring that these plans are executed effectively. Additionally, they are often key decision-makers within their areas of responsibility, making strategic choices that impact on the company's success. Overall, Swati's role as a marketing manager exemplifies the importance of functional managers in driving the success of their organizations.

Question 2

ABC retail chain regularly monitors consumer trends and supply chain flexibility. The retail chain tracks consumer trends to adjust its offerings, ensuring they meet customer needs. Simultaneously,

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it maintains a flexible supply chain to respond swiftly to demand fluctuations. This strategy enables ABC retail chain to anticipate market shifts and adapt to them effectively, ensuring its competitiveness and customer satisfaction. Which type of strategy is the retail chain employing?

Answer 2

The retail chain is employing a strategy that combines both proactive and reactive elements. Monitoring consumer trends and adjusting product offerings accordingly demonstrates a proactive approach to anticipate and meet customer needs. On the other hand, maintaining a flexible supply chain to respond quickly to changes in demand reflects a reactive strategy to address unforeseen shifts in the market.

This combination allows the retail chain to both anticipate future trends and react effectively to immediate market changes, making its strategy partly proactive and partly reactive. This dual strategy of proactive trend monitoring and reactive supply chain flexibility enables the retail chain to anticipate market shifts and adapt to them effectively, ensuring its competitiveness and customer satisfaction.

Question 3

ABC Pharmaceuticals, a leading pharmaceutical company, is in the process of formulating its strategic intent. The top management of ABC Pharmaceuticals wants to define the company's future direction, objectives, and goals. Their aim is to create a vision that sets the organization apart and provides a roadmap for future growth. ABC Pharmaceuticals aspires to enrich the lives of people by producing high-quality pharmaceutical products at competitive prices and wants to become the world's leading pharmaceutical company by 2030." Based on this context, draft a vision and mission statement that could be formulated by the top management of ABC Pharmaceuticals.

Answer 3

ABC Pharmaceuticals 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. ABC Pharmaceuticals may have vision "To be the globally recognized leader in pharmaceutical innovation and enriching the lives of people worldwide by providing high-quality, affordable, and accessible pharmaceutical products."

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 society. It is designed to help potential shareholders and investors understand the purpose of the company.

ABC Pharmaceuticals may identify mission in the following lines:

- To improve the well-being of individuals and communities by relentlessly pursuing excellence in pharmaceutical research, development, and manufacturing.
- Committed to producing safe, effective, and sustainable medicines that address unmet medical needs and enhance the quality of life for patients.
- Through innovation, collaboration, and ethical practices, we aim to make a positive impact on global healthcare and become the trusted partner of healthcare providers and patients alike

Question 4

Imagine you are a strategic consultant advising a retail company that is facing increasing competition from online retailers. The company is considering several strategic options to improve its market position. Using the concept that strategy is partly proactive and partly reactive, explain how the company can develop a strategic approach to address this challenge.

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Answer 4

The retail company can develop a strategic approach that is both proactive and reactive to address the challenge of increasing competition from online retailers. To achieve this, the company can:

- **Proactive Strategy:** The company can proactively analyze market trends and customer preferences to identify opportunities for growth. For example, it can invest in market research to understand what customers value in a retail experience and tailor its offerings to meet those needs. This proactive approach can help the company stay ahead of competitors and attract new customers.
- **Reactive Strategy:** In addition to proactive measures, the company should also be prepared to react to changes in the market environment. For example, if a competitor launches a new online shopping platform, the company should quickly assess the impact on its business and develop a response. This reactive strategy can help the company adapt to changing market conditions and maintain its competitiveness.

By combining proactive and reactive strategies, the retail company can develop a comprehensive approach to addressing the challenge of increasing competition from online retailers. This approach will allow the company to capitalize on opportunities for growth while also mitigating risks and responding to threats in the market.

Question 5

Tech Innovators Inc., a rapidly expanding technology company, aims to lead in artificial intelligence (AI) and machine learning (ML). With recent growth, the company is evaluating which organizational structure will best support its vision for innovation and leadership in AI technologies. They are considering three options: the Functional and Divisional Relationship for specialization, the Horizontal Relationship for flat, collaborative management, and the Matrix Relationship for cross-functional teams. Which of these relationships—Functional and Divisional, Horizontal, or Matrix—will most effectively achieve Tech Innovators Inc.'s strategic goals, and why?

Answer 5

The Matrix Relationship is the most effective structure for Tech Innovators Inc. to achieve its vision of leadership in AI technologies. This structure promotes cross-functional collaboration, essential for managing complex AI projects and fostering innovation. By integrating expertise from various departments into temporary, task-based teams, the Matrix Relationship supports dynamic project management and aligns well with the company's strategic goals for advancing AI technologies. Despite its complexity, this approach provides the flexibility and collaboration necessary for a leading-edge AI and ML focus.

Relationship	Benefits	Drawbacks	Suitability for AI Leadership
Functional and Divisional	Specialization, clear management of Functions and products.	Potential for departmental isolation, limited collaboration.	Less effective for cross-functional AI projects.
Horizontal	Open communication, encourages innovation and fast idea sharing.	Hard to scale, unclear roles and responsibilities.	Suitable for startups, less for large AI initiatives.

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Matrix	Facilitates cross-functional collaboration, flexible resource management for complex Projects.	Complex structures, conflicts.	reporting potential	Ideal for managing diverse, innovative AI projects.

Question 6

Mr. Raj has been hired as a CEO by 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.

Answer 6

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: 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. 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.

Question 7

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 good 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?

Answer 7

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.

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Question 8

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.

Answer 8

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 complex and 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.

Question 9

Dharam 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 but have never involved him in decision making for the company. Do you think this is the right approach? Validate your answer with logical reasoning around management levels and decision making.

Answer 9

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 managers 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 Cyclix Corporate management

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is not right. They should involve Dharam Singh, as well as other functional managers too in strategic management.

Question 10

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 as 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.

Question 10

The role of Chief Executive Officer pertains to corporate level.

The corporate level of management consists of the Chief Executive Officer (CEO) and other top-level executives. These individuals occupy the apex of decision making within the organization.

The role of Chief Executive Officer (Top Management/Corporate Level Managers) is to:

1. oversee the development of strategies for the whole organization;
2. defining the mission and goals of the organization;
3. determining what businesses it should be in;
4. allocating resources among the different businesses;
5. formulating, and implementing strategies that span individual businesses;
6. providing leadership for the organization;
7. ensuring that the corporate and business level strategies which company pursues are consistent with maximizing shareholders wealth; and
8. managing the divestment and acquisition process

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Chapter 2

Strategic analysis external environment

284

Test Your Knowledge

Multiple Choice Questions

1. KSFs stand for:

- (a) Key strategic factors
- (b) Key supervisory factors
- (c) Key success factors
- (d) Key sufficient factors

Ans: (c)

2. Competitive landscape requires the application of-

- (a) Competitive advantage
- (b) Competitive strategy
- (c) Competitive acumen
- (d) Competitive intelligence

Ans: (d)

3. The term PESTLE analysis is used to describe a framework for analyzing:

- (a) Macro Environment
- (b) Micro Environment
- (c) Both Macro and Micro Environment
- (d) None of above

Ans: (a)

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

Ans: (a)

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

Ans: (c)

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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

Ans: (b)

7. All are elements of Macro environment except:

- (a) Society
- (b) Government
- (c) Competitors
- (d) Technology

Ans: (c)

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

Ans: (b)

Scenario Based Questions

Question 1

ABC Corp, a multinational consumer electronics company, is planning to expand its operations into a new country. The company's senior management is evaluating the potential risks and opportunities of entering this new market. As part of their analysis, they decide to use the PESTLE framework to assess the external factors that could impact their decision. How can the PESTLE framework help ABC Corp assess the external factors affecting its decision to expand into a new country?

Answer 1

The PESTLE framework can help ABC Corp assess the external factors affecting its decision to expand into a new country by considering the following aspects:

- **Political Factors:** These include the stability of the government, government policies on foreign investment, trade agreements, and regulatory frameworks. By analyzing these factors, ABC Corp can assess the political risks associated with entering the new market.
- **Economic Factors:** Economic factors such as GDP growth rate, inflation rate, exchange rates, and economic stability can impact ABC Corp's decision. By analyzing these factors, the company can understand the economic environment of the new market and its potential impact on business operations.
- **Social Factors:** Social factors such as cultural norms, demographics, and lifestyle trends can influence consumer behavior and demand for ABC Corp's products. Understanding these factors can help the company tailor its marketing strategies to the new market.

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- **Technological Factors:** Technological factors such as infrastructure, technological advancements, and the level of technology adoption in the new market can impact ABC Corp's operations. By assessing these factors, the company can determine the technological requirements for entering the new market.
- **Legal Factors:** Legal factors such as laws and regulations related to foreign investment, intellectual property rights, and labor laws can impact ABC Corp's decision. By analyzing these factors, the company can ensure compliance with legal requirements in the new market.
- **Environmental Factors:** Environmental factors such as climate change, environmental regulations, and sustainability practices can impact ABC Corp's operations and reputation. By considering these factors, the company can assess the environmental risks and opportunities in the new market.

Overall, the PESTLE framework can provide ABC Corp with a comprehensive analysis of the external factors that could impact its decision to expand into a new country, helping the company make informed and strategic decisions.

Question 2

You are a strategic manager for a tech company launching a new smartphone model. The company wants to target tech-savvy consumers who value innovation and cutting-edge technology. Using the concept of customer behavior, develop a marketing strategy to promote the new smartphone.

Answer 2

To target tech-savvy consumers for the new smartphone model, the tech company can develop a marketing strategy based on customer behavior. Consumer behaviour may be influenced by a number of things. These elements can be categorised into the following conceptual domains:

- **External Influences:** Utilize online platforms and tech forums to generate buzz around the new smartphone. Partner with tech influencers and bloggers to review the product and create awareness among tech-savvy consumers.
- **Internal Influences:** Appeal to the desire for innovation and advanced features among tech-savvy consumers. Highlight the unique selling points of the new smartphone, such as its cutting-edge technology, performance, and design.
- **Decision Making:** Recognize that tech-savvy consumers are early adopters who value functionality and performance. Provide detailed specifications and comparisons with other smartphones to help them make an informed decision.
- **Post-decision Processes:** Offer excellent customer service and support to address any technical issues or concerns. Encourage customers to provide feedback and reviews to build credibility and trust among tech-savvy consumers.

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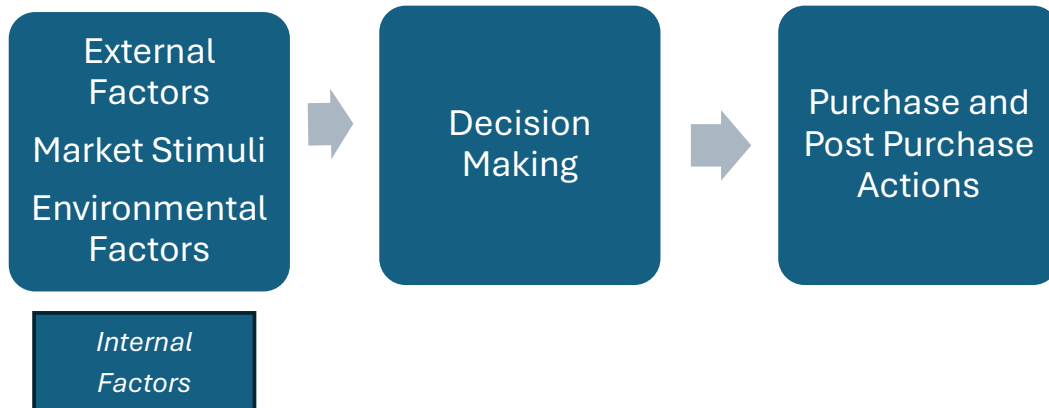


Figure: Process of consumer behaviour

By understanding the behavior of tech-savvy consumers and aligning the marketing strategy with their preferences, the tech company can effectively promote the new smartphone and attract this demographic.

Question 3

GreenThrift Inc., a sustainable clothing retailer, is experiencing a surge in popularity due to the growing awareness of environmental issues among consumers. The company specializes in selling second-hand clothing and upcycled garments, offering an eco-friendly alternative to traditional fast fashion.

A major concern for **GreenThrift Inc.** is the emergence of new sustainable fashion brands in the market. These brands focus on using organic and recycled materials, as well as ethical manufacturing practices, which align with the values of environmentally conscious consumers.

Answer 3

Competition from new sustainable fashion brands falls under the "Threat of New Entrants" category of Porter's Five Forces Model for Competitive Analysis. These new entrants pose a threat to existing sustainable clothing retailers like **GreenThrift Inc.** by increasing competition and potentially eroding market share. The emergence of these brands, focusing on using organic and recycled materials along with ethical manufacturing practices, aligns with the values of environmentally conscious consumers, making them strong competitors in the sustainable fashion market.

Question 4

Reshuffle Corp is a company that manufactures and sells office furniture. They offer a range of products, from desks and chairs to cabinets and shelves. Recently, the company has been facing increased competition from online retailers offering similar products at lower prices. Analyzing the characteristics of products in the furniture industry, discuss how **Reshuffle Corp** can differentiate its products to maintain a competitive edge in the market

Answer 4

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To maintain a competitive edge in the face of increased competition, Reshuffle Corp can differentiate its products in several ways:

- **Tangible and Intangible Aspects:** Reshuffle Corp can focus on the tangible aspects of its products, such as using high-quality materials and innovative designs to create furniture that is both functional and aesthetically pleasing. Additionally, they can emphasize the intangible aspects of their products, such as excellent customer service and a strong brand reputation for reliability and durability.
- **Pricing Strategies:** While market prices are often dictated by competition, Reshuffle Corp can work on cost optimization to maintain profitability. They can also consider offering value-added services, such as free installation or extended warranties, to justify a higher price point.
- **Product Features:** By continually optimizing their product features based on customer feedback and market trends, Reshuffle Corp can ensure that their products deliver maximum satisfaction to their target customers. This may include features that enhance functionality, design, quality, and overall user experience.
- **Product Centric Approach:** Reshuffle Corp should keep their products at the center of their strategic activities, ensuring that all business processes, from production to sales and marketing, are aligned to meet customer needs and expectations.
- **Product Life Cycle Management:** Reshuffle Corp should be aware of the life cycle of their products and plan for reinvention or replacement accordingly. They can introduce new product lines or upgrade existing ones to keep up with changing customer preferences and market trends.

Question 5

Riya Sharma owns a confectionery business in Jaipur, specializing in homemade chocolates and candies. Despite holding a substantial market share in the central region, her business has experienced declining sales of these products over the last few years. Concerned about the market dynamics, Riya consults a management expert for guidance. The consultant recommends a comprehensive understanding of the competitive landscape. Explain the steps to be followed by Riya Sharma to understand the competitive landscape to address the sales decline.

Answer 5

Steps to understand the competitive landscape are as follows:

- Identify the competitor:** The first step to understanding the competitive landscape is to identify the competitors in the firm's industry and have actual data about their respective market share.
- 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.
- 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?
- Determine the weaknesses of the competitors:** Weaknesses (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 services are either great or very poor.

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- (v) 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 strengthened by the firm.

Question 6

A company has recently launched a new product in the market. Initially, it faced slow sales growth, limited markets, and high prices. However, over time, the demand for the product expanded rapidly, prices fell, and competition increased. Identify the stages of the product life cycle (PLC) that the company went through.

Answer 6

The company went through the following stages of the product life cycle (PLC):

Introduction stage: Initially, the company faced slow sales growth, limited markets, and high prices, which are characteristic of the introduction stage. During this stage, competition is almost negligible, and customers have limited knowledge about the product.

Growth stage: Over time, the demand for the product expanded rapidly, prices fell, and competition increased. These are typical features of the growth stage in the PLC. In this stage, the product gains market acceptance, and customers become more aware of the product's benefits and show interest in purchasing it.

Question 7

Rajiv Arya owns an electrical appliance company specializing in the manufacture of domestic vacuum cleaners. The market is competitive, with four other manufacturers offering similar products and achieving comparable sales volumes. Additionally, these rival firms hold several patents related to the vacuum cleaner technology. The supplier base for raw materials is extensive, with multiple suppliers available. Identify and explain the significant forces from Porter's Five Forces framework that are relevant to Rajiv Arya's company.

Answer 7

The competitive rivalry will be a significant force in case of company of Rajiv Arya as all the rivals are similar in sizes and are manufacturing similar products. It is difficult for any single manufacturer to dominate the market. Large number of patents will make it difficult for new entrants to break into the market. Further, as there are a large number of small suppliers the power that suppliers can exert will also be low.

There is no information relating to substitutes and bargaining power of customers in the information given in scenario. However, a domestic vacuum cleaner will directly compete with other options such as house maids. Availability of house maids at low cost can significantly disturb the sales of products. Further, as the products are similar customers can easily shift from one company to another. This will only enhance competitive rivalry.

Question 8

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.

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Answer 8

Steps to understand the competitive landscape

- (i) **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.
- (ii) **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.
- (iii) **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?
- (iv) **Determine the weaknesses of the competitors:** Weaknesses (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 services are either great or very poor.
- (v) **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 strengthened by the firm.

Question 9

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?

Answer 9

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 plastic 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.

Question 10

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

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experience due to above setup and what are major factors that create such pressure for a product? Do you think Baby Shark has an advantage in some way to fight off this pressure?

Answer 10

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:

1. Their products are crucial to the buyer and substitutes to the material required for production are not available.
2. 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.

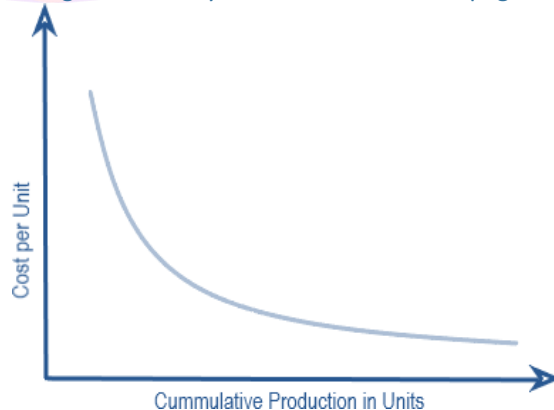
Descriptive Questions

Question 1

Explain the concept of Experience Curve and highlight its relevance in strategic management.

Answer 1

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 in the next page.



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

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industry. It is also used to build market share and discourage competition.

Question 2

Write a short note on Product Life Cycle (PLC) and its significance in portfolio diagnosis.

Answer 2

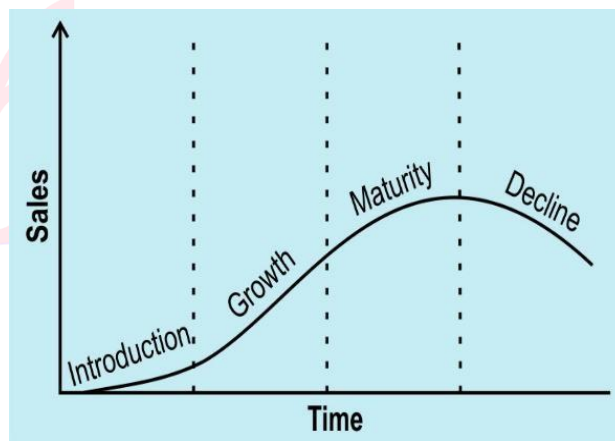
Product Life Cycle is an important concept in strategic choice and S-shaped curve which exhibits the relationship of sales with respect of time for a product that passes through the four successive stages.

The first stage of PLC is the introduction stage in which competition is almost negligible, prices are relatively high and markets are limited. The growth in sales is also at a lower rate.

The second stage of PLC is the growth stage, in which the demand expands rapidly, prices fall, competition increases and market expands.

The third stage of PLC is the maturity stage, where in the competition gets tough and market gets stabilized. Profit comes down because of stiff competition.

The fourth stage is the declining stage of PLC, in which the sales and profits fall down sharply due to some new product replaces the existing product.



Product Life Cycle

PLC 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. In this way, a balanced portfolio of businesses may be built up by exercising a strategic choice based on the PLC concept.

Question 3

Explain Porter's five forces model as to how businesses can deal with the competition.

Answer 3

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To gain a deep understanding of a company's industry and competitive environment, managers do not need to gather all the information they can find and waste a lot of time digesting it. Rather, the task is much more focused. A powerful and widely used tool for systematically diagnosing the significant competitive pressures in a market and assessing the strength and importance of each is the Porter's five-forces model of competition. This 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.



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Chapter 3

Strategic Analysis: Internal Environment

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Test Your Knowledge

Multiple Choice Questions

1. The goal of SWOT analysis is to ____ the organization's opportunities and strengths while ____ its threats and ____ its weaknesses.

- (a) avoid; neutralizing; correcting
- (b) exploit; neutralizing; correcting
- (c) avoid; capitalizing; neutralizing
- (d) exploit; avoiding; ignoring

Ans: (b)

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

Ans: (d)

3. External opportunities and threats are usually:

- (a) the minor cause of organizational demise or success
- (b) least important for CEOs and the board of directors
- (c) not as important as internal strengths and weaknesses
- (d) largely uncontrollable activities outside the organization

Ans: (d)

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

Ans: (b)

5. Internal ____ are activities in an organization that are performed especially well.

- (a) Opportunities
- (b) Competencies

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- (c) Strengths
- (d) Management

Ans: (c)

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

Ans: (c)

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 benefit

Ans: (c)

8. Differentiation Strategy can be achieved by following measures:

1. Match products with tastes and preferences of customers.
2. Elevate the performance of the product.
3. Rapid product innovation

Which of the above is true:

- (a) (1) and (2)
- (b) (1) and (3)
- (c) (2) and (3)
- (d) (1), (2) and (3)

Ans: (d)

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

Ans: (d)

10. A firm successfully implementing a differentiation strategy would expect:

- (a) Customers to be sensitive to price increases.
- (b) To charge premium prices.
- (c) Customers to perceive the product as standard.
- (d) To automatically have high levels of power over suppliers.

Ans: (b)

Scenario based Questions

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Question 1

A beverage company is launching a new line of energy drinks targeted at health-conscious consumers. The strategic manager wants to study the market position of rival companies in the energy drink segment. Which tool can be used for this analysis, and what is the procedure to implement it effectively?

Answer 1

1. To study the market position of rival companies in the energy drink segment, the strategic manager can use strategic group mapping. This tool helps identify strategic groups, which consist of rival firms with similar competitive approaches and positions in the market. The procedure for implementing strategic group mapping effectively is as follows:
 1. **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).
 2. **Plot the firms on a two-variable map** using pairs of these differentiating characteristics.
 3. **Assign firms that fall in about the same strategy space** to the same strategic group.
 4. **Draw circles around each strategic group** making the circles proportional to the size of the group's respective share of total industry sales revenues.

By following these steps, the strategic manager can gain valuable insights into the competitive landscape of the energy drink segment and identify potential positioning strategies for the new line of energy drinks targeted at health-conscious consumers

Question 2

EasyLife Corporation, a leading manufacturer of consumer electronics, is considering launching a new line of smart home devices. As a strategic manager, conduct a SWOT analysis for EasyLife Corporation to assess the feasibility and potential success of this new venture. Consider both internal and external factors that could impact the success of the new product line.

Answer 2

SWOT Analysis for *EasyLife Corporation's* New Smart Home Devices Venture:

Strengths	Weaknesses
- Strong brand reputation in consumer electronics. - Established distribution network. - Access to technological expertise for product development. - Financial resources to support product launch and marketing.	- Limited experience in the smart home devices market. - May require additional investments in research and development. - Potential challenges in integrating a new product line with existing offerings. - Lack of established customer base for smart home devices.

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Opportunities	Threats
• Growing market for smart home devices due to increasing consumer interest in home automation. • Possibility of partnering with existing smart home platform providers. • Potential to leverage brand loyalty from existing customers. • Ability to differentiate through innovative features and design.	• Intense competition from established players in the smart home devices market. • Rapid technological advancements lead to short product life cycles. • Potential for cybersecurity threats in connected devices. • Economic factors impacting consumer spending on discretionary items.

The SWOT analysis highlights that while *EasyLife Corporation* has several strengths that can support the launch of a new smart home devices line, there are also significant weaknesses and threats to consider. To maximize the chances of success, *EasyLife Corporation* should focus on leveraging its brand reputation and distribution network while carefully addressing the weaknesses and threats identified. Additionally, staying informed about technological developments and consumer trends will be essential for maintaining competitiveness in the dynamic smart home devices market.

Question 3

ABC Ltd. is a beverage manufacturing company. It chiefly manufactures soft drinks. The products are priced on the lower side, which has made the company a leader in the business. Currently it holds 35 percent of the market share. The R & D of the company developed a formula for manufacturing sugar-free beverages. On successful trial and approval by the competent authorities, the company was granted to manufacture sugar free beverages. This company is the pioneer to launch sugar free beverages which are sold at a relatively higher price. This new product has been accepted widely by a class of customers. These products have proved profitable for the company. Identify the strategy employed by the company ABC Ltd. and mention what measures could be adopted by the company to achieve the employed strategy.

Answer 3

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.

ABC Ltd. has opted for the Differentiation Strategy. The company has invested a huge amount in R & D and developed a formula for manufacturing sugar-free beverages to give the customer value and quality. They are pioneers and serve specific customer needs that are not met by other companies in the industry. The new product has been accepted by a class of customers. Differentiated and unique sugar-free beverages enable ABC Ltd. to charge relatively higher for its products, hence making higher profits and maintaining its competitive position in the market.

Sugar free beverage of ABC Ltd. is being accepted widely by a class of customers. Differentiation strategy is aimed at a 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, and dealer network or customer service.

Achieving Differentiation Strategy

To achieve differentiation, following strategies are generally adopted by an organization:

1. Offer utility to the customers and match products with their tastes and preferences.

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2. Elevate/Improve performance of the product.
3. Offer a high-quality product/service for buyer satisfaction.
4. Rapid product innovation to keep up with dynamic environment.
5. Taking steps to enhance brand image and brand value.
6. Fixing product prices based on the unique features of product and buying capacity of the customer.

Question 4

Insite of high commodity inflation, shortage of components and the threat of third wave of COVID-19 pandemic in India, manufacturers of packaged goods, home appliances and consumer electronics are expecting the business to grow by 12 to 25 percent in the coming months. After one-and-a-half years of disruption, manufacturers are now confident about managing their inventories better, keeping their supply channels well-stocked and preparing themselves to minimize the impact of any COVID related restrictions even as they gear up for the festive season, which usually accounts for 25 to 35 percent of their yearly sales.

The home appliances sector could be an example. After a dismal April-June quarter in the year 2021, producers of air conditioners, refrigerators and washing machines are expecting their business to grow by 15-20 percent in the months to come. All the companies operating in the sector have geared up to grab the opportunities available in the market.

A leading company in the home appliances domain, XXP India, is planning to launch various innovative product designs and offer loyalty programmes to lure consumers. With reference to Michael Porter's generic strategies, identify which strategy XXP India has planner for? Explain how this strategy will be advantageous to the company to remain profitable?

Answer 4

According to Michael Porter, strategies allow organizations to gain competitive advantage from three different bases: cost leadership, differentiation, and focus. Porter called these base generic strategies.

XXP India Ltd. has planned for Differentiation Strategy. The company is planning to launch various innovative product designs and offer loyalty programmes to lure customers.

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 desired attributes. A successful differentiation strategy allows a firm to charge a higher price for its product and to gain customer loyalty, because consumers may become strongly attached to the differentiated features.

Advantages of Differentiation Strategy

A differentiation strategy may help an organisation to remain profitable even with rivalry, new entrants, suppliers' power, substitute products, and buyers' power.

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.

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5. Substitutes – Substitute products can't replace differentiated products which have high brand value and enjoy customer loyalty.

Question 6

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 noticed that with 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.

Answer 6

With the success of IPL, league matches are taking place in other sports as well. These are held in a grandeur manner between several teams. **For example**, league matches in magnificent manner now take place in Football, Kabaddi and Hockey 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 threats to them. An opportunity is a favorable condition in the organization's environment which enables it to strengthen its position. On the other hand, a threat is an unfavorable condition in the organization's environment which causes a risk for, or damage to, the organization'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

- Stadiums.
- Manufacturers of sports goods.
- Media Industry – Sports 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 engaged in non-sports events.

Question 7

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.

Answer 7

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

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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 firms 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 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.

Question 8

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.

Answer 8

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 a 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 position 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

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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.

Question 9

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.

Answer 9

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.

Question 10

Gennex is a company that designs, manufactures and sells computer hardware and software. Gennex is well known for its innovative products that has helped the company to have advantage over its competitors. It also spends on research and development and concerned with innovative softwares. 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.

Answer 10

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.

Question 11

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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 higher price 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.

Answer 11

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 emphasizes 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.

Question 12

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 one-stop shop for infants, they are charging a premium for its products. Identify and explain how the strategy adopted by infant care.

Answer 12

Infant care is opting for differentiation strategy. A one-stop shop is a benefit for this type of customers, seeking convenience in a time. Infant care is catering the products 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 product.

Question 13

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 tied up with a foreign footwear giant “Buffrine” to manufacture and sell its Hideseek brand in the country. Putting its 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

Answer 13

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.

- i. **Rivalry:** Brand loyalty acts as a safeguard against competitors. It means that customers will be less

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sensitive to price increases, as long as the firm can satisfy the needs of its customers.

- ii. **Buyers:** They do not negotiate for price as they get special features and also, they have fewer options in the market.
- iii. **Suppliers:** Because differentiators charge a premium price, they can afford to absorb higher costs of supplies and customers are willing to pay extra too.
- iv. **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.
- v. **Substitutes:** Substitute products can't replace differentiated products which have high brand value and enjoy customer loyalty.

Question 14

Rohit Patel is having a small chemist shop in the central part of Ahmedabad. What kind of competencies Rohit can build to gain competitive advantage over online medicine sellers?

Answer 14

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:

- (i) Developing personal and cordial relations with the customers.
- (ii) Providing home delivery with no additional cost.
- (iii) 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.
- (iv) Having extended working hours for convenience of buyers.
- (v) Providing easy credit or a system of monthly payments to the patients consuming regular medicines.

Question 15

'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 CEO 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.

Answer 15

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 organization.

'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 large sales volume, allowing the company to remain profitable with low profit margin.

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Descriptive Questions

Question 16

What is the purpose of SWOT analysis? Why is it necessary to do a SWOT analysis before selecting a particular strategy for a business organization?

Answer 16

An important component of strategic thinking requires the generation of a series of strategic alternatives, or choices of future strategies to pursue, given the company's internal strengths and weaknesses and its external opportunities and threats. The comparison of strengths, weaknesses, opportunities, and threats is normally referred to as SWOT analysis.

- **Strength:** Strength is an inherent capability of the organization which it can use to gain strategic advantage over its competitors.
- **Weakness:** A weakness is an inherent limitation or constraint of the organization which creates strategic disadvantage to it.
- **Opportunity:** An opportunity is a favorable condition in the organization's environment which enables it to strengthen its position.
- **Threat:** A threat is an unfavorable condition in the organization's environment which causes a risk for, or damage to, the organization's position.

SWOT analysis helps managers to craft a business model (or models) that will allow a company to gain a competitive advantage in its industry (or industries). Competitive advantage leads to increased profitability, and this maximizes a company's chances of surviving in the fast-changing, competitive environment. Key reasons for SWOT analysis are:

- It provides a logical framework.
- It presents a comparative account.
- It guides the strategist in strategy identification.

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Test your Knowledge

Multiple Choice Questions

1. Which strategy is implemented after the failure of turnaround strategy?

- (a) Expansion strategy
- (b) Diversification strategy
- (c) Divestment strategy
- (d) Growth strategy

Ans: (c)

2. Retrenchment strategy in the organization 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.

Ans: (b)

3. An organization 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.

Ans: (b)

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)

Ans: (d)

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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.

Ans: (a)

6. Stability strategy is a _____ strategy.

- (a) SBU level
- (b) Corporate level
- (c) Business level
- (d) Functional level

Ans: (b)

7. Conglomerate diversification is another name for which of the following?

- (a) Related diversification
- (b) Unrelated diversification
- (c) Portfolio diversification
- (d) Acquisition diversification

Ans: (b)

8. Diversification primarily helps to:

- (a) Reduce competition
- (b) Reduce risk
- (c) Reduce taxes
- (d) Reduce costs

Ans: (b)

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

Ans: (b)

Scenario Based Question

Question 1

The CEO of a textile mill believes that his company, currently operating at a loss, can be turned around. Develop an action plan outlining steps the CEO can take to achieve this turnaround.

Answer 1

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

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opportunities, develop a strategic plan with specific goals and detailed functional actions after analyzing 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 turnaround strategy process, the organization should begin to show signs of profitability, return on investments and enhancing economic value-added.

Question 2

StarTech Solutions, an aerospace technology firm, operates in a highly competitive industry. Despite the fierce competition in the aerospace sector, StarTech has carved out a niche for itself by focusing on serving unique, high-end clients. Unlike its competitors, StarTech has chosen not to diversify its target market and instead specializes in providing cutting-edge solutions to this niche market.

Identify and explain the strategy adopted by StarTech Solutions. Discuss the advantages and disadvantages of this strategy.

Answer 2

The strategy adopted by *StarTech Solutions* is Focused differentiation. This strategy involves targeting a specific segment of the market with unique products or services that are perceived as valuable by customers in that segment. By specializing in serving unique, high-end clients, *StarTech* is able to differentiate itself from competitors and create a competitive advantage.

Advantages of Focused Differentiation:

- **Strong Customer Loyalty:** By catering to a specific niche market, *StarTech* can build strong relationships with its customers, leading to higher customer loyalty and retention.
- **Higher Profit Margins:** Serving a niche market allows *StarTech* to command higher prices for its specialized products or services, leading to higher profit margins.
- **Reduced Competition:** By focusing on a niche market that other firms are not targeting, *StarTech* faces less competition, allowing it to establish itself as a leader in that segment.
- **Better Resource Allocation:** Focusing on a specific market segment allows *StarTech* to allocate its resources more efficiently, concentrating on areas that will provide the greatest return on investment.

Disadvantages of Focused Differentiation:

- **Limited Market Size:** The niche market that *StarTech* is targeting may be limited in size, restricting the company's potential for growth.
- **Risk of Market Changes:** Changes in the market or customer preferences could impact on the demand for *StarTech's* specialized products or services, leading to potential revenue loss.
- **Higher Costs:** Serving a niche market may require specialized resources and expertise, leading to higher costs of operation.
- **Imitation by Competitors:** If *StarTech's* success in the niche market attracts competitors, they may attempt to imitate its strategy, eroding its competitive advantage.

Overall, the focused differentiation strategy adopted by *StarTech Solutions* has allowed it to differentiate itself in a competitive industry and build a strong position in the market. However, the

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company must be aware of the potential challenges and risks associated with this strategy and continue to innovate and adapt to maintain its competitive edge.

Question 3

XYZ Corporation is a multinational conglomerate operating in various industries. They have a diverse portfolio of businesses, including a leading consumer electronics division, a growing e-commerce platform, a mature industrial machinery division, and a newly established software development unit. Which division of XYZ Corporation would most likely be classified as a "Star" in the BCG Growth-Share Matrix?

Answer 3

In the BCG Growth-Share Matrix, divisions or business units are classified into four categories: Stars, Cash Cows, Question Marks, and Dogs. These classifications are based on a combination of market share and market growth rate.

A "Star" in the BCG Matrix represents a business unit with a high market share in a high-growth market. In the scenario, the newly established software development unit would be classified as a "Star." The software development unit is described as "newly established," suggesting that it is operating in a high-growth market. Additionally, the potential for high market share can be inferred if the unit is strategically positioned to become a leader in the software development industry.

Stars typically require significant investment to fuel their growth, but they have the potential to become future Cash Cows as the market matures. Therefore, the software development unit's high growth potential and the opportunity to capture a substantial market share align with the characteristics of a BCG Matrix "Star."

Question 4

Pizza Galleria was India's first pizza delivery chain enjoying monopoly for several years. However, after the entry of Modino and Uncle Jack it is struggling to compete. Both Modino and Uncle Jack have opened several eateries and priced the product aggressively. In the last four years the chain has suffered significant losses. The chain wishes to know whether they should go for a turnaround strategy. List out components of action plan for turnaround strategy.

Answer 4

Pizza Chain may choose to have turnaround strategy if there are:

- Persistent negative cash flow from business.
- Uncompetitive products or services.
- Declining market share.
- Deterioration in physical facilities.
- Over-staffing, high turnover of employees, and low morale.
- Mismanagement.

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. The chain may attempt to leverage the potential Indian market by engaging a new logistics partner. It may bring innovation in food items, as well as quality and improvements in the overall dine-in and delivery experience. During the turnaround, the "product mix" may be changed, requiring the organization to do some repositioning.

A workable action plan for turnaround would involve:

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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.

Stage Two – Analyze the situation and develop a strategic plan: Before making any major changes; determine the chances of the business's survival. Identify appropriate strategies and develop a preliminary action plan.

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. 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. 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 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.

Question 5

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 markers, 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.

Answer 5

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 markers, notebooks, pencils and pencil sharpeners, envelopes and other office supplies, which is not related to their existing product. In conglomerate diversification, the new businesses/ products are disjointed from the existing businesses/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 are related to the existing business of the firm. The firm remains vertically within 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

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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.

Question 6

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 strategic choice adopted by Shayamli?

Answer 6

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 **turnaround strategy** as this strategy attempts to reverse the process of decline and bring improvement in organizational health. This is also important as 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 turnaround strategy process, the organization should begin to show signs of profitability, return on investments and enhancing economic value-added.

Question 7

Organo is a large supermarket chain. It is considering the purchase of a number of farms that provides Organo with a significant 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?

Answer 7

Organo is a large supermarket chain. By opting backward integration and purchase a number of

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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 to 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.

Question 8

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 grand strategy that can be opted by Soft Cloth Ltd.

Answer 8

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 flow.
- Uncompetitive products or services
- Declining market share
- Deterioration in physical facilities
- Overstaffing, high turnover of 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 a 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, resulting in a liquidation strategy.

Question 9

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.

Answer 9

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 divestment strategy.

Further, divestment helps address issues like:

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1. Persistent cash flows from loss making segment 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.

Question 10

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 has 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.

Question 10

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 with the CEO:

- Invest in new product development and switchover to the new technology. Atrix Ltd. also need time to invest in emerging new technology.
- They can acquire or takeover a competitor provided they have or are able to generate enough financial resources.
- They may also consider unrelated growth and identify other areas for expansion. This will enable Atrix Ltd. to spread their risks.
- 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.

Descriptive Questions

Question 1

Describe the construction of BCG matrix and discuss its utility in strategic management.

Answer 1

Companies that are large enough to be organized into strategic business units face the challenge of allocating resources among those units. In the early 1970's the Boston Consulting Group developed a model for managing portfolio of different business units or major product lines. The BCG growth-share matrix facilitates portfolio analysis of a company having invested in diverse businesses with varying scope of profits and growth.

The BCG matrix can be used to determine what priorities should be given in the product portfolio of a business unit. Using the BCG approach, a company classifies its different businesses on a two-dimensional growth share matrix. Two dimensions are market share and market growth rate. 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's strength in the market.

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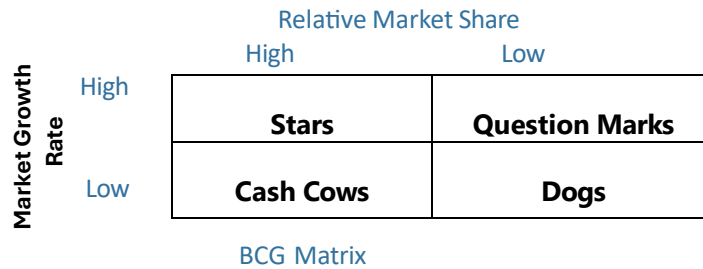
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Thus, the BCG matrix depicts quadrants as shown in the following table:



Different types of business represented by either products or SBUs can be classified for portfolio analyses through BCG matrix. They have been depicted by meaningful metaphors, namely:

- (a) **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.
- (b) **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.
- (c) **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 organizations to turn them stars and then to cash cows when the growth rate reduces.
- (d) **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 minimized by means of divestment or liquidation.

The BCG matrix is useful for classification of products, SBUs, or businesses, and for selecting appropriate strategies for each type as follows.

- (a) Build with the aim for long-term growth and strong future.
 - (b) Hold or preserve the existing market share.
 - (c) Harvest or maximize short-term cash flows.
 - (d) Divest, sell or liquidate and ensure better utilization of resources elsewhere.
- Thus, BCG matrix is a powerful tool for strategic planning analysis and choice.

Question 2

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 crores	48	120 lakhs	48	80	+ 15
B	4 crores	32	50 lakhs	20	40	+ 10

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C	2 crores	16	75 lakhs	30	60	-20
D	50 lakhs	4	5 lakhs	2	5	-10
Total	12.5 crore	100	250 lakhs	100		

Answer 2

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 market share and industry growth rate of Soorya Ltd, its four products are placed in the BCG matrix as follows:

		High	Low
Market Growth Rate	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.

Question 3

Aurobindo, the pharmaceutical company wants to grow its business. Draw Ansoff's Product Market Growth Matrix to advise them of the available options.

Answer 3

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 Markets		Market Penetration	Product Development
		Market Development	Diversification

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New Markets

Ansoff's Product Market Growth Matrix

Based on the matrix, Aurobindo may segregate its different products. Being in pharmaceuticals, development of new products is result of extensive research and involves huge costs. There are also 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 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.

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 may have no choice other than to pursue new market.

Question 4

In the context of Ansoff's Product-Market Growth Matrix, identify with reasons, the type of growth strategies followed in the following cases:

- A leading producer of tooth paste, advises its customers to brush teeth twice a day to keep breath fresh.
- A business giant in hotel industry decides to enter into dairy business.
- One of India's premier utility vehicles manufacturing company ventures to foray into foreign markets.
- A renowned auto manufacturing company launches ungeared scooters in the market.

Answer 4

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

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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.



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Chapter 5

Strategy Implementation And Evaluation

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Test Your Knowledge

Multiple Choice Questions

1. leadership style may be appropriate in turbulent environment.

- (a) Transactional
- (b) Transformational
- (c) Autocratic
- (d) None of these

Ans: (b)

2. An organizational structure with constricted middle level is:

- (a) Divisional structure
- (b) Network structure
- (c) Hour Glass structure
- (d) Matrix structure

Ans: (c)

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 et al, you are practicing: -

- (a) Strategic Control
- (b) Management control
- (c) Administrative Control
- (d) Operations Control

Ans: (b)

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

Ans: (d)

5. Compliance, Identification and Internalization are the three processes involved in:

- (a) Refreezing
- (b) Defreezing
- (c) Changing behavior patterns
- (d) Breaking down old attitudes

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Ans: (c)

6. Which one is NOT a type of strategic control?

- (a) Operational control
- (b) Strategic surveillance
- (c) Special alert control
- (d) Premise control

Ans: (a)

Scenario based Questions

Question 1

Imagine you are a consultant advising a small manufacturing company embarking on a digital transformation journey. The company's leadership is concerned about managing the change effectively. Using the best practices for managing change in small and medium-sized businesses, outline a strategy to help the company navigate this transformation successfully.

Answer 1

To help the small manufacturing company navigate its digital transformation successfully, we would recommend the following strategy:

1. Begin at the top: The leadership team should be united and committed to the digital transformation. They should communicate a clear vision for the future of the company and lead by example.

2. Ensure that the change is necessary and desired: Before implementing any changes, the company should assess its current state and identify areas where digital transformation can add value. It's important to involve employees in this process to ensure their buy-in.

3. Reduce disruption: Employee perceptions of change can vary, so it's important to minimize disruption. This can be done by communicating early and often about the changes, providing training and support for employees, and empowering change agents within the organization.

4. Encourage communication: Create channels for employees to ask questions and provide feedback. Encourage collaboration between departments to share ideas and innovations. Effective communication can help alleviate fears and keep everyone aligned.

5. Recognize that change is the norm: Digital transformation is not a one-time project but an ongoing process. The company should be prepared to adapt to new technologies and market conditions continuously.

By following these best practices, the small manufacturing company can successfully navigate its digital transformation and position itself for future growth and success.

Question 2

A Mumbai-based conglomerate, PQR Ltd., has announced a major restructuring of its business operations. The company has decided to split its business into four separate units: Manufacturing, Retail, Services, and Technology. Each unit will operate as a separate business, with delegated responsibility for day-to-day operations and strategy to the respective unit managers. Identify the organization structure that PQR Ltd. has planned to implement. Discuss any four attributes and the benefits the firm may derive by using this organization structure.

Answer 2

PQR Ltd. has planned to implement the Strategic Business Unit (SBU) structure. Very large organisations, particularly those running into several products, or operating at distant geographical

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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 organisation with increase in number, size and diversity.

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 rest of businesses. Products/ businesses within an SBU receive 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.
- ◆ Each SBU is a separate business and will be distinct from one another on the basis of mission, objectives etc.

Question 3

York Investors, recognizing the importance of aligning its organizational elements with strategic objectives, has strategically invested in training programs, technology, and communication systems. The company aims to enhance the skills and capabilities of its workforce through comprehensive training initiatives. Simultaneously, York Investors leverages cutting-edge technology to streamline its operations and improve overall efficiency. The investment in communication systems ensures seamless collaboration and information flow across various departments. Identify and explain the model used by York Investors to achieve its strategic objectives

Answer 3

York Investors is employing the McKinsey 7S Model to achieve its strategic objectives. The model focuses on seven interdependent elements within an organization, categorized into "Hard Ss" and "Soft Ss." In this case:

- ◆ Strategy (Hard S): Investing in training programs and technology aligns with the strategic objective of enhancing workforce skills and operational efficiency.
- ◆ Structure (Hard S): The investment suggests a structural alignment to support the strategic initiatives, indicating a deliberate organization of resources.
- ◆ Systems (Hard S): The use of cutting-edge technology and communication systems reflects a commitment to optimizing daily tasks and improving overall efficiency, addressing the system component of the model.
- ◆ Shared Values (Soft S): The emphasis on comprehensive training initiatives indicates a commitment to shared values, reflecting a focus on developing a skilled and capable workforce.
- ◆ Style (Soft S): The leadership style is implied in the strategic decision to invest in technology and training for workforce development and operational efficiency.

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◆ **Staff (Soft S):** The commitment to enhancing skills and capabilities reflects a focus on the talent pool within the organization.

◆ **Skills (Soft S):** The strategic investment in training programs directly addresses the development of key skills within the workforce.

York Investors' approach demonstrates a holistic application of the McKinsey 7S Model, emphasizing the interconnectedness of both hard and soft elements to achieve strategic alignment and organizational effectiveness.

Question 4

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 explicit 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.

Answer 4

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 for 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

Question 5

Suresh Sinha has been recently appointed as the head of a strategic business unit of a large multiproduct company. Advise Mr Sinha about the leadership role to be played by him in execution of strategy.

Answer 5

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:

- (i) Staying on top of what is happening, closely monitoring progress, solving out issues, and learning what obstacles lie in the path of good execution.
- (ii) 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.
- (iii) Keeping the organization responsive to changing conditions, alert for new opportunities, bubbling with innovative ideas, and ahead of rivals in developing competitively valuable

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competencies and capabilities.

- (iv) Exercising ethical leadership and insisting that the company conduct its affairs like a model corporate citizen.
- (v) Pushing corrective actions to improve strategy execution and overall strategic performance.

Question 6

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 Bandopadhyay, 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.

Answer 6

Aditya Bandopadhyay, an effective strategic leader of KaAthens Ltd. 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.

Question 7

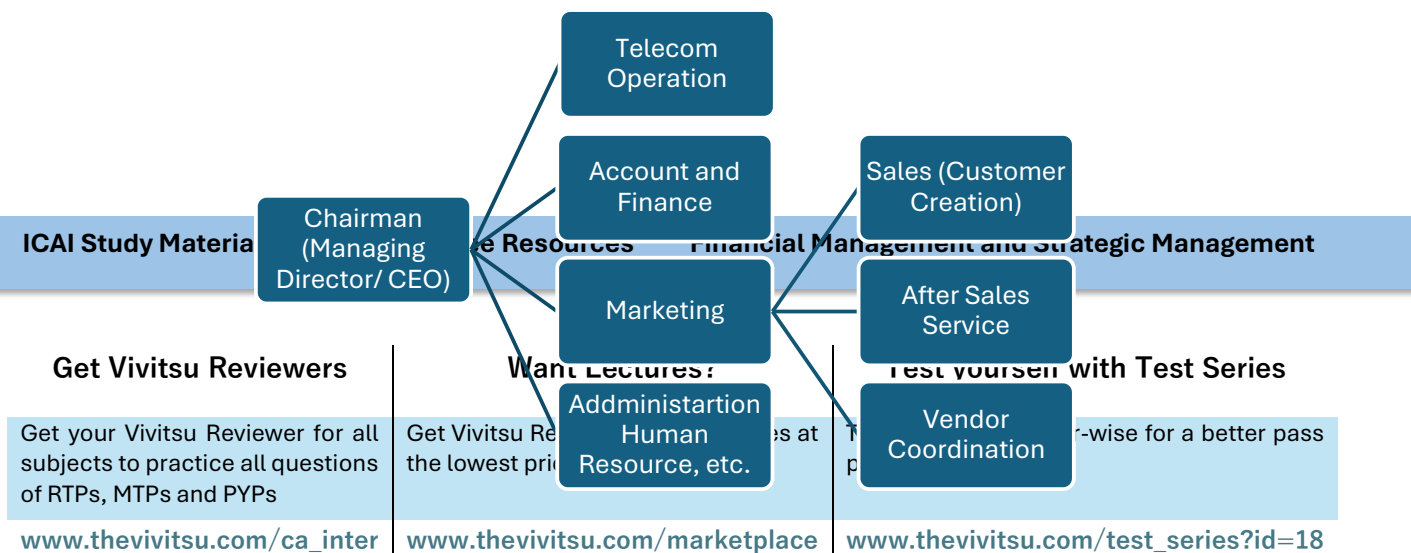
Manoj started his telecom business in 2010. Over next five years, he gradually hired fifty people for various activities such as to keep his accounts, administration, sell his products in the market, create more customers, provide after sales service, coordinate with vendors.

Draw the organization structure Manoj should implement in his organization and name it.

Answer 7

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:



Question 8

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.

Answer 8

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 interests 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 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, just as is the case for Moonlight Private Limited.

SBU structure becomes imperative in an organization with increase in number, size and diversity.

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.

Question 9

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.

Answer 9

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.

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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 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 standards and ensure a result oriented implementation of plans.

Descriptive Questions

Question 1

What is a strategic business unit? What are its advantages?

Answer 1

A strategic business unit (SBU) is any part of a business organization which is treated separately for strategic management purposes. The concept of SBU is helpful in creating an SBU organizational structure. It is discrete element of the business serving product markets with readily identifiable competitors and for which strategic planning can be concluded. 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.

Advantages of SBU are:

- Establishing coordination between divisions having common strategic interests.
- Facilitates strategic management and control on large and diverse organizations.
- Fixes accountabilities at the level of distinct business units.
- Allows strategic planning to be done at the most relevant level within the total enterprise.
- Makes the task of strategic review by top executives more objective and more effective.
- Helps allocate corporate resources to areas with greatest growth opportunities.

Question 2

Draw 'Divisional Structure' with the help of a diagram. Also, give advantages and disadvantages of this structure in brief.

Answer 2

Divisional structure is that organizational structure which is based on extensive delegation of authority and built on 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.

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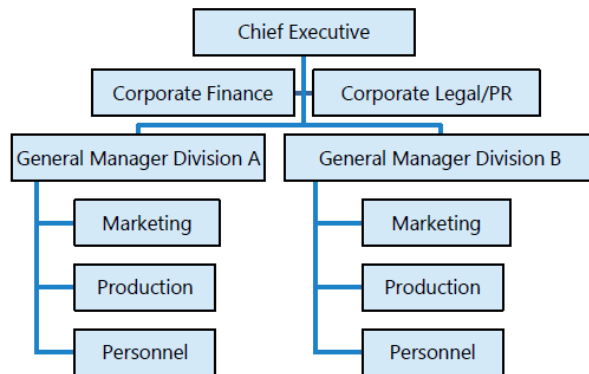
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Figure: Divisional Structure


➤ **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 specialist 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.

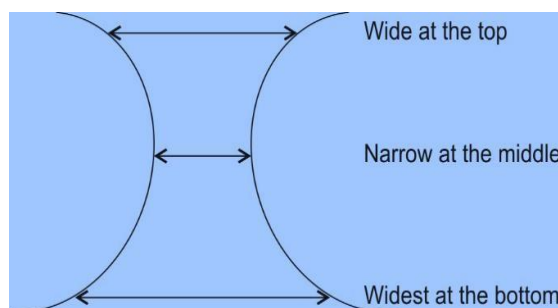
Question 3

What is an 'hourglass structure'? How can this structure benefit an organization?

Answer 3

In the 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 the technological tools. Hourglass organization structure consists of three layers in an organization structure 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


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that are performed by the middle level managers. A shrunken middle layer coordinates diverse lower level activities.

Hourglass Organization Structure

Hourglass structure has obvious benefit 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.

Question 4

How can you differentiate between transformational and transactional leaders?

Answer 4

Difference between transformational and transactional leadership

1. Transformational leadership style uses charisma and enthusiasm to inspire people to exert them for the good of organization. Transactional leadership style uses the authority of its office to exchange rewards such as pay, status symbols etc.
2. Transformational leadership style may be appropriate in turbulent environment, in industries at the very start or end of their cycles, poorly performing organizations, when there is a need to inspire a company to embrace major changes. Transactional leadership style can be appropriate in static environment, in growing or mature industries and in organizations that are performing well.
3. Transformational leaders inspire employees by offering excitement, vision, intellectual stimulation and personal satisfaction. Transactional leaders prefer a more formalized approach to motivation, setting clear goals with explicit rewards or penalties for achievement and non-achievement. Transactional leaders focus mainly to build on existing culture and enhance current practices.

Question 5

What is strategic change? Explain the change process proposed by Kurt Lewin that can be useful in implementing strategies?

Answer 5

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 and it involves a corporate strategy focused on new markets, products, services and new ways of doing business.

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.

(a) Unfreezing the situation: The process of unfreezing simply makes the individuals or organizations aware of the necessity for change and prepares them for such a change. Lewin proposes that the changes should not come as a surprise to the members of the organization. Sudden and unannounced change would be socially destructive and morale lowering. The management must pave the way for the change by first “unfreezing the situation”, so that members would be willing and ready to accept the change.

Unfreezing is the process of breaking down the old attitudes and behaviours, customs and traditions so that they start with a clean slate. This can be achieved by making announcements, holding meetings and promoting the ideas throughout the organization.

(b) Changing to 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

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change, their behaviour patterns need to be redefined. H.C. Kellman proposed three methods for reassigning new patterns of behavior as compliance, identification and internalisation.

(c) Refreezing: 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 to take place. In order for the new behaviour to become permanent, it must be continuously reinforced so that this newly acquired behaviour does not diminish or extinguish.

Change process is not a one time application but a continuous process due to dynamism and ever changing environment. The process of unfreezing, changing and refreezing is a cyclical one and remains continuously in action.

Question 6

What are the differences between operational control and management control?

Answer 6

Differences between Operational Control and Management Control are as under:

- (i) The thrust of operational control is on individual tasks or transactions as against total or more aggregative management functions. When compared with operational, management control is more inclusive and more aggregative, in the sense of embracing the integrated activities of a complete department, division or even entire organisation, instead of mere narrowly circumscribed activities of sub-units. **For example,** *procuring specific items for inventory is a matter of operational control, in contrast to inventory management as a whole.*
- (ii) Many of the control systems in organisations are operational and mechanistic in nature. A set of standards, plans and instructions are formulated. On the other hand, the basic purpose of management control is the achievement of enterprise goals – short range and long range – in an effective and efficient manner.

Question 7

What is strategic control? Briefly explain the different types of strategic control.

Answer 7

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:

- **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.
- **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.
- **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.
- **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.

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Question 8

What is implementation control? Discuss its basic forms.

Answer 8

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 associated with incremental steps and actions.

Strategic implementation control is not a replacement to operational control. Strategic implementation control, unlike operational controls continuously monitors the basic direction of the strategy. The two basic forms of implementation control are:

- (i) **Monitoring strategic thrusts:** Monitoring strategic thrusts help 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.

Case Scenario 1

In the fiercely competitive automotive industry, Zing, a promising newcomer, set out on a strategic journey with ambitions of making a substantial impact. Recognizing the significance of a robust distribution network early on, Zing forged partnerships with established dealerships, offering them attractive margins. This strategic move significantly enhanced Zing's reach, with a presence in 80% of the nation's dealerships by 2022, expanding its coverage significantly.

To differentiate themselves from competitors, Zing adopted two key strategies. Firstly, they prioritized product design, investing heavily in aesthetics and incorporating innovative features and environmentally friendly technologies. This focus on design led to their vehicles receiving excellent reviews and achieving an impressive 15% year-on-year growth in sales.

Secondly, Zing implemented switching costs to discourage customers from switching to other brands. Their vehicles featured branded software, making it both expensive and cumbersome for customers to transition to alternative brands. This strategic move effectively protected Zing's market share.

Zing's overarching goal was to position itself as a premium automotive brand, blending luxury with sustainability. However, their execution fell down as they challenged with maintaining consistent quality and service levels, resulting in mixed customer reviews.

Despite their best efforts, Zing's differentiation strategy fell short due to issues with inconsistent quality and service. Negative word-of-mouth and declining customer satisfaction scores tarnished their brand image, leading to stagnating sales. This failure to deliver on their brand promise proved to be a significant setback.

As Zing's reputation suffered from execution failures, securing additional funds for international expansion became challenging. Consequently, they made the difficult decision to postpone their global ambitions for the next five years, focusing instead on stabilizing their finances and rebuilding their brand image.

In summary, Zing's strategic journey illustrates the importance of not only crafting a compelling differentiation strategy but also executing it flawlessly. In the competitive automotive landscape, maintaining consistent quality and service is paramount to sustaining brand loyalty and achieving long-term success.

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Based on the above Case Scenario, answer the Multiple Choice Questions.

1. What key strategic approach did Zing use to expand its market presence in the automotive industry?

- (a) Product innovation and design
- (b) Cost leadership strategy
- (c) Entering new international markets
- (d) Vertical integration

Ans: (a)

2. How did Zing protect its market share from potential competitors?

- (a) Price-cutting strategy
- (b) Branded software and switching costs
- (c) Aggressive marketing campaigns.
- (d) International expansion

Ans: (b)

3. Why did Zing's differentiation strategy fall short in the market?

- (a) Intense price competition
- (b) Poor marketing strategy
- (c) Inconsistent quality and service
- (d) Lack of international expansion

Ans: (c)

4. Forging partnerships with established dealerships to enhance its distribution network falls under which level of strategy?

- (a) Corporate level strategy
- (b) Business level strategy
- (c) Functional level strategy
- (d) Competitive level strategy

Ans: (b)

5. How did Zing initially expand its market presence across the nation?

- (a) Aggressive marketing campaigns
- (b) Developing low-cost vehicles
- (c) Partnering with established dealerships
- (d) Launching a luxury brand

Ans: (c)

Case Scenario 2

Café Delight, a thriving restaurant chain known for its unique blend of Australian and Indian culinary experiences, embarked on a remarkable journey from its humble beginnings as a small café in Australia to becoming a renowned player in the Indian restaurant industry. This case study digs into the strategic decisions and market dynamics that fueled Café Delight's growth, highlighting its transition from a single café in Powai, Mumbai, to a flourishing chain with a presence in five cities

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and over 25 stores. It explores how Café Delight effectively leveraged social media and adapted its pricing strategy to compete with global brands while maintaining a healthy profit margin.

In 2005, Café Delight was founded in Melbourne, Australia, by a passionate entrepreneur with a vision to bring the flavors of Australia and India together. The first café established in Powai, Mumbai, received accolades for its unique menu, blending Australian coffee culture with Indian culinary traditions. Over the course of five years, Café Delight expanded to three stores in Mumbai, driven by exceptional mouth publicity, customer loyalty, and consistent quality.

As the social media landscape evolved, Café Delight recognized the power of online platforms in reaching a wider audience. By effectively utilizing social media and online marketing, Café Delight expanded its presence to five cities across India and established over 25 stores. Customer engagement through social media platforms enabled the brand to create a strong and vibrant community, driving organic growth.

Café Delight's customer-centric approach involved continuously evolving its menu to cater to the changing tastes and dietary preferences of its patrons. By understanding the evolving needs of its customers, Café Delight could offer personalized menu items, seasonal specials, and dietary alternatives. This approach created a sense of loyalty and engagement among customers, strengthening the brand's appeal. Not just customers but High-power, low-interest stakeholders, including regulatory authorities, were addressed with careful compliance and adherence to industry standards. Low-power, high-interest stakeholders, like potential customers and local communities, were engaged through targeted marketing campaigns and community involvement initiatives. This meticulous stakeholder analysis allowed Café Delight to build and maintain strong relationships with each group, effectively managing their influence and impact on the brand.

With its expanding presence and increasing popularity, Café Delight underwent a shift in its pricing strategy. It transitioned from a pocket-friendly pricing model to a skimming strategy, capitalizing on its unique blend of Australian and Indian flavors to position itself as a premium restaurant. Café Delight faced stiff competition from global brands entering the Indian market but maintained a profit margin of approximately 30% through menu engineering and targeted pricing.

In one of its kind, using strategic tools enabled Café Delight to identify and act on opportunities while mitigating threats, contributing to its long-term success in the highly competitive restaurant industry

Based on the above Case Scenario, answer the Multiple-Choice Questions.

1. Café Delight effectively leveraged social media and adapted its pricing strategy as it stepped into which phase of business life cycle of operations?
 - (a) Introduction Stage
 - (b) Growth Stage
 - (c) Maturity Stage
 - (d) Decline Stage

Ans: (b)

2. What stakeholder group did Café Delight engage through targeted marketing campaigns and community involvement initiatives?
 - (a) High-power, high-interest stakeholders
 - (b) Low-power, low-interest stakeholders
 - (c) Low-power, high-interest stakeholders
 - (d) High-power, low-interest stakeholders

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Ans: (c)

3. What best describes Café Delight's initial expansion strategy when it expanded from one café to three in Mumbai?

- (a) Aggressive price reduction
- (b) Leveraging customer loyalty and word-of-mouth publicity
- (c) Extensive online marketing
- (d) Embracing global branding strategies

Ans: (b)

4. At which level of strategic management does Café Delight's transition from a pocket-friendly pricing model to a skimming strategy fit?

- (a) Corporate level
- (b) Business level
- (c) Functional level
- (d) Operational level

Ans: (b)

5. What type of strategy did Café Delight use to differentiate itself from competitors in the Indian restaurant industry?

- (a) Cost leadership strategy
- (b) Focused differentiation strategy
- (c) Cost focus strategy
- (d) Hybrid strategy

Ans: (b)

Case Scenario 3

Swasthya, a rising star in India's dynamic healthcare sector, stands out as a prime example of smart strategic management.

At Swasthya, the compass guiding their endeavors is a compelling thought: to emerge as the finest healthcare provider renowned for delivering accessible, top-notch healthcare services. This overarching goal is not an isolated vision, but a thread woven into the very fabric of the organization, driving every facet of their operations. The people of the organization play a pivotal role in this journey. They are entrusted with translating this vision into tangible outcomes at the grassroots level, ensuring that local operations are aligned with the grand aspiration of becoming a healthcare leader.

Swasthya works meticulously towards optimizing each link of the patient experience. From streamlining appointment scheduling to expediting test result delivery, every facet of the healthcare journey is scrutinized. Swasthya's strategy is not merely about being a player in the market but about strategically positioning themselves as leaders. They proactively recognize the constant innovations that could disrupt their areas of expertise. To counter this, they introduced value-added offerings such as telemedicine and wellness programs. This addition not only mitigates the risk but also fortifies their long-term viability.

Beyond competition, ensuring the quality and safety of patient care is paramount at Swasthya. Stringent hygiene protocols, equipment maintenance regimens, and adherence to healthcare

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regulations form the cornerstone of their business. In parallel, the organization meticulously undertakes regular assessment as a central element of its decision-making apparatus. This forward-looking exercise encompasses identifying and assessing potential risks such as regulatory changes, medical malpractice vulnerabilities, or shifts in market dynamics, all of which could have far-reaching consequences for their long-term objectives.

The implementation of Swasthya's strategy is steered by the McKinsey 7S model, which ensures a harmonious alignment of seven critical elements: strategy, structure, systems, shared values, skills, style, and staff. It emphasizes that the success of a long-term objective is contingent on the synchronization of these seven elements, reinforcing the idea that strategic management is not a compartmentalized process but a comprehensive activity.

Swasthya's strategic journey through India's healthcare landscape is a testament to the seamless integration of core management concepts, guiding its actions and strategies, while keeping the vision and intent at the core.

Based on the above Case Scenario, answer the Multiple Choice Questions.

1. How does Swasthya's approach to premise control, including stringent hygiene protocols and equipment maintenance, contribute to their long-term objectives and which concept does it align with?

- (a) It reduces immediate costs and aligns with strategic risk assessment.
- (b) It safeguards quality and aligns with strategic risk assessment.
- (c) It enhances immediate profitability and aligns with shared values.
- (d) It streamlines administrative processes and aligns with value chain analysis.

Ans: (b)

2. How does Swasthya counter the risk posed by constant innovations and disruptions in their areas of expertise?

- (a) By aggressively acquiring innovative startups.
- (b) By introducing value-added services like telemedicine and wellness programs.
- (c) By downsizing their operations.
- (d) By focusing exclusively on urban healthcare markets.

Ans: (b)

3. Why is the McKinsey 7S model significant in Swasthya's strategic management approach, and which elements of the model ensure a holistic alignment of their strategy?

- (a) It facilitates short-term profit maximization, with a focus on structure and style.
- (b) It emphasizes a compartmentalized approach to strategy, focusing on shared values and skills.
- (c) It ensures a comprehensive alignment of strategy, structure, systems, shared values, skills, style, and staff.
- (d) It prioritizes immediate cost reduction by aligning systems and strategy.

Ans: (c)

4. Why is the focus on local operations essential for Swasthya in the context of their long-term objective, and how does it contribute to their overall strategy?

- (a) It reduces strategic risk by minimizing the need for strategic risk assessment.
- (b) It aligns with their commitment to immediate profitability.

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- (c) It translates the organization's vision into tangible outcomes and aligns with their long-term objective.
- (d) It diversifies their portfolio and aligns with competitive landscape analysis.

Ans: (c)

5. The case talks about scrutiny of every facet of the healthcare journey and also emphasizes the fact that people of the organization play a pivotal role in this journey. Based on your reading, which level of management has the most crucial part to play here to ensure the sense of customer-first is imbibed in the organization?

- (a) Top Management (C-Suite) which sets the tone and strategy of the organization
- (b) Middle Management (Divisional Managers) who have the responsibility of translating strategy to real-time objectives
- (c) Functional Managers who actually do the work on the field
- (d) Board of Directors who are responsible for wealth creation of the shareholders

Ans: (b)

Case Scenario 4

Once upon a time in the land of sun, sand, and vibrant cultures, there existed a company named "MuseoGoa" - a company that managed museums in the beautiful state of Goa. MuseoGoa had a vision to celebrate the rich history and culture of Goa, but their journey was not without its fair share of challenges.

MuseoGoa had chosen a picturesque location in a quaint village to build their first museum. However, this initial enthusiasm was met with an uproar from the local communities. The villagers were concerned about the impact on their way of life and traditions. They worried that the influx of tourists might disrupt their peaceful existence.

To address this challenge, MuseoGoa applied Mendelow's matrix, identifying the local communities as key stakeholders. They decided to engage in open dialogues, understanding and respecting the villagers' concerns. MuseoGoa initiated community-building activities, such as involving locals in museum operations, supporting local artisans, and organizing cultural events that showcased the village's heritage. Slowly but steadily, the company transformed from being perceived as a threat to a valued partner within the community.

While MuseoGoa had successfully resolved their initial issues with the local community, they faced another challenge. Their location, although idyllic, was a bit off the beaten path. Tourists typically preferred the bustling beaches closer to the city, and this posed a real challenge. MuseoGoa decided to employ a pricing strategy. They priced their tickets affordably, significantly cheaper than the city's attractions. This strategy attracted budget-conscious tourists who were looking for unique experiences in Goa without burning a hole in their pockets. As word spread about the cultural gem tucked away in the village, visitors started flocking in, drawn not just by the museum's charm but also the economical ticket prices.

In the age of social media, MuseoGoa knew that word-of-mouth was no longer limited to whispers. They tapped into the power of social media to promote their unique museum experience. MuseoGoa ran interactive campaigns, encouraging visitors to share their experiences on various platforms. One particular Instagram post featuring a vibrant Goan mural in the museum went viral. This was the turning point. The picture-perfect aesthetics of the museum attracted influencers, bloggers, and travel enthusiasts, making MuseoGoa a social media sensation. Visitors came pouring

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in, not just from India but from across the globe, eager to capture their own moments at the "Instagrammable Museum of Goa."

With success came ambition. MuseoGoa decided to expand its footprint beyond Goa. To guide this expansion, they conducted a strategy audit and trend analysis. They identified emerging cultural and tourism trends and found potential markets in Pune and Trivandrum.

In Pune, MuseoGoa curated a special exhibition that celebrated the fusion of Goan and Maharashtrian cultures. They strategically partnered with local influencers and travel agencies to market the new experience. The expansion into Pune was met with resounding success.

For Trivandrum, MuseoGoa recognized the importance of local traditions and the distinct flavor of Kerala. They tailored their offerings to harmonize with the regional culture. MuseoGoa became the gateway for tourists to explore Kerala's rich heritage, with the museum acting as a bridge between Goa and Kerala's cultural tapestry.

MuseoGoa's journey from initial uproar to expansion was a testament to their commitment to community building, strategic pricing, social media savvy, and a keen eye for trends. The company continued to flourish, celebrating the diverse cultural tapestry of India and making history come alive in every location they touched.

Based on the above Case Scenario, answer the Multiple Choice Questions.

1. Which strategic management concept did MuseoGoa use to address the initial concerns of the local community?
 - (a) SWOT analysis
 - (b) Mendelow's matrix
 - (c) Cost leadership strategy
 - (d) Porter's Five Forces model

Ans: (b)

2. MuseoGoa's idyllic location in a quaint village posed a challenge as tourists preferred beaches closer to the city. To attract visitors, MuseoGoa priced their tickets affordably, cheaper than city attractions, drawing budget-conscious tourists looking for unique experiences. What business strategy did MuseoGoa employ to attract more tourists?
 - (a) Cost leadership strategy
 - (b) Differentiation strategy
 - (c) Focus strategy
 - (d) Diversification strategy

Ans: (a)

3. How did MuseoGoa approach its expansion into new markets such as Pune and Trivandrum?
 - (a) Outsourcing strategy
 - (b) Franchising strategy
 - (c) Product diversification strategy
 - (d) Market development strategy

Ans: (d)

4. Which element of the 7S McKinsey model is demonstrated by MuseoGoa's strategic use of social media and pricing strategies to attract visitors?
 - (a) Style

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- (b) Strategy
- (c) Shared Values
- (d) Skills

Ans: (b)

5. What played a crucial role in MuseoGoa's success in Pune and Trivandrum?

- (a) Strategic partnerships
- (b) Aggressive advertising
- (c) Product differentiation
- (d) Vertical integration

Ans: (a)

Case Scenario 5

Connect Innovations Pvt. Ltd., a Mumbai-based technology company, is entering the competitive landscape of the Indian smartphone market under its brand name "Poppy." The company is well aware of the influx of Chinese manufacturers dominating the smartphone industry. Given the recent global sentiment shift due to the COVID-19 pandemic, Connect Innovations plans to position Poppy as a patriotic choice, proudly promoting it as the "Desi" smartphone of India.

The company's strategic arm conducted a thorough industry analysis, revealing that Chinese brands had completely captured the budget phone segment. However, there was still an untapped opportunity in the lower segment of smartphones. To address this, Connect Innovations is introducing two models: Poppy A and Poppy B, priced at ₹ 4,499 and ₹ 5,499, respectively.

Recognizing the risk of imitation by competitors, Connect Innovations has assembled a team of marketing professionals to devise a strategy. Their proposed solution is to capitalize on the first-mover advantage by investing significant sums in advertising and promotions.

Additionally, to safeguard their business from potential disruption, Connect Innovations decided to expand their product line to include "desi" themed smartphone covers and accessories alongside Poppy smartphones. They made substantial investments in the manufacturing of these accessories. The company's investors set a target of achieving annual sales volumes of 15,000 handsets and 70,000 pieces of accessories.

While the accessory sales exceeded expectations, Poppy A and Poppy B did not receive the anticipated response. As a result, the leadership has decided to shift their focus, scaling back on smartphone production and concentrating primarily on the accessories business.

With this new direction, the "Desi" tag remains vital for success. Connect Innovations aims to establish strong barriers to entry for other domestic players. They plan to ramp up production significantly, driving down unit costs and enabling cost leadership through volume.

1. Connect Innovations Pvt. Ltd. entered a saturated market for smartphones, after a due market study of understanding the competitive landscape. Put the below steps in correct sequence of understanding the competitive landscape.

- (i) Understanding the competitors
 - (ii) Determining strengths and weaknesses of the competitors
 - (iii) Identify the competitors
 - (iv) Put all information gathered together
- (a) (I), (III), (II), (IV)
 - (b) (III), (I), (II), (IV)

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- (c) (II), (III), (IV), (I)
 (d) (I), (III), (II), (IV)

Ans: (b)

2. In which stage of strategic management are such annual objectives especially important?

- (a) Formulation
 (b) Control
 (c) Evaluation
 (d) Implementation

Ans: (d)

3. The decision of Connect Innovations to shift to a new core business with a focus on more profitable ventures falls under which category of business strategy?

- (a) Retrenchment strategy
 (b) Strategic alliance
 (c) Diversification strategy
 (d) Market development

Ans: (a)

4. Considering the results from the market, which category of BCG's growth share matrix does the accessories business of Connect Innovations fall into?

- (a) Star
 (b) Question mark
 (c) Cash cow
 (d) Dog

Ans: (c)

5. In phase two of shifting the business focus to peripheral accessories production, Connect Innovations has planned to implement which barrier to discourage potential competitors?

- (a) Capital requirement
 (b) Product differentiation
 (c) Access to distribution channels
 (d) Economies of scale

Ans: (d)

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