CA INTER FM

CA SANKALP KANSTIYA

SUPER 50
IMPORTANT QUESTIONS LIST

MASTER PRACTICAL QUESTIONS FROM

ICAI MODULE, RTP, PAST PAPERS

FOR EXAM LAST DAY REVISION

CLICK HERE FOR FREE NOTES

CLICK HERE FOR FREE VIDEOS

CA INTER

FM

MAY 2024 EXAM

NOW 30 MARKS CONFIRMED!!!

BY CA SANKALP KANSTIYA

: CLICK & PLAY :

CA INTER

FM

MAY 2024 EXAM

FREE

REVISION SERIES WITH NOTES

CLICK TO WATCH

Question 1 (Suggested - May 23)

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

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

Assume 360 days in a year.

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

Balance Sheet as on 31stMarch, 2023.

Liabilities	Rs	Assets	Rs
Equity share capital (Rs. 10 per share)	xxx	Fixed assets	xxx
Reserves & surplus	xxx	Inventory	xxx
Long-term debt	xxx	Debtors	xxx
Current liabilities	3,10,000	Loans & advances	xxx
		Cash & bank	xxx
Total	xxx	Total	xxx

Solution

(i) Current Ratio = 4	$\frac{\text{CurrentAssets}}{\text{CurrentLiabilities}} = 4$	$\frac{\text{CurrentAssets}}{3,10,000} = 4$
Current Assets = Rs. 12,40,000		

(ii) Acid Test Ratio = 2.5	$\frac{\text{CurrentAssets - Inventory}}{\text{Current Liabilities}} = 2.5$	$\frac{12,40,000 - \text{Inventory}}{3,10,000} = 2.5$
12,40,000 – Inventory = Rs. 7,75,000	Inventory = Rs. 4,65,000	

(iii) Inventory Turnover Ratio (on Sales) = 6	$\frac{\text{Sales}}{\text{Inventory}} = 6$	$\frac{\text{Sales}}{4,65,000} = 6$	Sales = Rs. 27,90,000

(iv) Debtors Collection Period = 70 days
(Debtors / sales) x 360 = 70
(Debtors / 27,90,000) x 360 = 70
Debtors = Rs. 5,42,500

(v) Total Assets Turnover Ratio (on Sales) = 0.96

$\frac{\text{Sales}}{\text{TotalAssets}} = 0.96$	$\frac{27,90,000}{\text{Total Assets}} = 0.96$	Total Assets = Rs. 29,06,250

(vi) Fixed Assets (FA) = Total Assets – Current Assets
= 29,06,250 – 12,40,000
Fixed Assets = Rs. 16,66,250

(vii) Cash Ratio	$= \frac{\text{Cash}}{\text{Current Liabilities}} = 0.43$	$\frac{\text{Cash}}{3,10,000} = 0.43$	Cash = Rs. 1,33,300

(viii) Proprietary Ratio	$\frac{\text{Proprietary Fund}}{\text{Total Assets}} = 0.48$	$\frac{\text{Proprietary Fund}}{29,06,250} = 0.48$	Proprietary Fund = Rs. 13,95,000

(ix) Equity Dividend Coverage Ratio = 1.6	or $\frac{\text{EPS}}{\text{DPS}} = \frac{3.5}{\text{DPS}}$	DPS = Rs. 2.1875

$\text{DPS} = \frac{\text{Total Dividend}}{\text{Number of Equity Shares}}$	$2.1875 = \frac{1,75,000}{\text{Number of Equity Shares}}$

Number of Equity Shares = 80,000
Equity Share Capital = 80,000 x 10 = Rs. 8,00,000
Reserves &Surplus = 13,95,000 - 8,00,000 = Rs. 5,95,000

(x) Loans and Advances = Current Assets - (Inventory + Receivables + Cash & Bank)
= Rs. 12,40,000 - (Rs. 4,65,000 + 5,42,500 + 1,33,300) = Rs. 99,200

Balance Sheet as on 31st March 2023

Liabilities	Rs	Assets	Rs
Equity Share Capital (Rs. 10 per share)	8,00,000	FixedAssets	16,66,250
Reserves & Surplus	5,95,000		
Long-term debt *(B/F)	12,01,250	Inventory	4,65,000
Current Liabilities	3,10,000	Receivables	5,42,500
		Loans & Advances	99,200
		Cash & Bank	1,33,300
Total	29,06,250	Total	29,06,250

Question 2

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

Debt Equity Ratio	1:1
Current Ratio	3:1
Acid Test Ratio	8:3
Fixed Asset Turnover (on the basis of sales)	4
Stock Turnover (on the basis of sales)	6
Cash in hand	Rs. 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%

Solution

Balance Sheet of Rudra Ltd.

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

Working Notes:

Let sales be Rs. x

Balance Sheet of Rudra Ltd.

Liabilities	Rs.	Assets	Rs.
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	Fixed Assets Turnover = 4 = $\frac{x}{\text{Fixed Assets}}$	Fixed Assets = $\frac{x}{4}$
2	Stock Turnover = 6 = $\frac{x}{6}$	Stock = $\frac{x}{6}$
3	Sales to Net Worth = 4 = $\frac{x}{\text{Net Worth}}$	Net Worth = $\frac{x}{4}$

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

5	Gross Profit to Cost = 20%	$\frac{GP}{\text{Sales - GP}} = 20\%$	$\frac{GP}{x - GP} = 20\%$	GP = 0.2x - 0.2 GP
	1.2 GP = 0.2x	GP = $\frac{0.2x}{1.2}$	GP = x/6	Cost of GOods Sold = x - x/6 = 5/6 x

6	COGS to Creditors = 10 : 1	$\frac{COGS}{Creditors} = \frac{10}{1}$	$\frac{\frac{5}{6}x}{Creditors} = \frac{10}{1}$	Creditors = $\frac{5x}{60} = \frac{x}{12}$

7	$\frac{\text{Stock}}{\text{Debtors}} = 1$	Debtors = Stock = $\frac{x}{6}$

8	Current Ratio 3 : 1		
$\frac{\text{Stock + Debtors + Cash}}{\text{Current Liabilities}} = \frac{3}{1}$	$\frac{\frac{x}{6} + \frac{x}{6} + 5{,}00{,}000}{\text{Current Liabilities}} = 3$	$\frac{\frac{x}{3} + 5{,}00{,}000}{3} = \text{CL}$	$\text{CL} = \frac{x}{9} + \frac{5{,}00{,}000}{3}$

9	CA = 3 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 Assets + Current Assets	
$\frac{x}{4} + \frac{x}{4} + \frac{x}{9} + \frac{\text{Rs.5,00,000}}{3} = \frac{x}{4} + \frac{x}{3} + \text{Rs.5,00,000}$		$\frac{x}{4} + \frac{x}{9} - \frac{x}{3} = \text{Rs.5,00,000} - \frac{\text{Rs.5,00,000}}{3}$

$\frac{9x + 4x - 12x}{36} = \frac{\text{Rs. 15,00,000 - Rs.5,00,000}}{3}$	$\frac{x}{36} = \frac{\text{Rs. 10,00,000}}{3}$	$x = \text{Rs. 1,20,00,000}$

11	Now, from above calculations, we get,	
$\text{Fixed Assets} = \frac{x}{4} = \frac{\text{Rs.1,20,00,000}}{4} = \text{Rs.30,00,000}$		$\text{Stocks} = \frac{x}{6} = \frac{\text{Rs.1,20,00,000}}{4} = \text{Rs.20,00,000}$

$\text{Debtors} = \frac{x}{6} = \frac{\text{Rs.1,20,00,000}}{6} = \text{Rs.20,00,000}$	Net Worth = x / 4 = Rs. 30,00,000

Now, Capital to Reserve is 1 : 2	Capital = Rs. 10,00,000 Reserve = Rs. 20,00,000	$\text{Long Term Loan} = \frac{x}{4} = \text{Rs.30,00,000}$

Outstanding Interest = 30,00,000 × 10% = 3,00,000	$\text{Creditors} = \frac{x}{12} = \frac{\text{Rs.1,20,00,000}}{12} = \text{Rs.10,00,000}$

Current Liabilities = Creditors + Other STCL + Outstanding Interest
$\frac{x}{9} + \frac{\text{Rs.5,00,000}}{3} = \text{Rs.10,00,000} + \text{Other STCL} + \text{Rs. 3,00,000}$
$\frac{\text{Rs.1,20,00,000}}{9} + \frac{\text{Rs.5,00,000}}{3} = \text{Rs.13,00,000} + \text{Other STCL}$
Rs. 15,00,000 = Other STCL + Rs. 13,00,000 Other STCL = Rs. 2,00,000

Question 3

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	Rs. 25,000
Bills Payables	Rs. 10,000
Gross Profit	Rs. 4,00,000
Fixed Assets turnover Ratio	4

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

(i) Sales and cost of goods sold

(ii) Sundry Debtors

(iii) Sundry Creditors

(iv) Closing Stock

(v) Fixed Assets

Solution

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

$$\text{Gross Profit Ratio} = \frac{\text{Gross Profit}}{\text{Sales}} \times \text{Rs. } 62,50,000 \quad \text{Or, } \frac{25}{100} = \frac{\text{Rs. } 4,00,000}{\text{Sales}} \quad \text{Or, Sales} = \frac{4,00,00,000}{25} = \text{Rs. } 16,00,000$$

Cost of Goods Sold = Sales – Gross Profit = Rs. 16,00,000 - Rs. 4,00,000 = Rs. 12,00,000

(ii) Determination of Sundry Debtors:

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

$$\text{So, Debtor's Turnover Ratio} = \frac{12 \text{ Months}}{3 \text{ Months}} = 4$$

$$\text{Debtor's Turnover Ratio} = \frac{\text{Credit Sales}}{\text{Average Accounts Receivable}} = \frac{\text{Rs. } 16,00,000}{\text{Bills Receivable} + \text{Sundry Debtors}} = 4$$

Or, Sundry Debtors + Bills receivable = Rs. 4,00,000

Sundry Debtors = Rs. 4,00,000 – Rs. 25,000 = Rs. 3,75,000

(iii) Determination of Sundry Creditors

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

$$\text{So, Creditor's Turnover Ratio} = \frac{12 \text{ Months}}{2 \text{ Months}} = 6$$

$$\text{Creditor's Turnover Ratio} = \frac{\text{Credit Purchase}}{\text{Average Accounts Payables}} = \frac{\text{Rs. 12,10,000}}{\text{Sundry Creditors + Bills Payables}} = 6$$

So, Sundry Creditors + Bills Payable = Rs. 2,01,667
Or, Sundry Creditors + Rs. 10,000 = Rs. 2,01,667
Or, Sundry Creditors = Rs. 2,01,667 – Rs. 10,000 = Rs. 1,91,667

(iv) Determination of Closing Stock

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

So, Average Stock = Rs. 8,00,000

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

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

Or, Opening Stock = Rs. 7,95,000
So, Closing Stock = Rs. 7,95,000 + Rs. 10,000 = Rs. 8,05,000

(v) Determination of Fixed Assets

$$\text{Fixed Assets Turnover Ratio} = \frac{\text{Cost of Goods Sold}}{\text{Fixed Assets}} = 4$$

Or, Fixed Asset = Rs. 3,00,000

Workings:

***Calculation of Credit purchases:**

Cost of goods sold = Opening stock + Purchases – Closing stock
Rs. 12,00,000 = Rs. 7,95,000 + Purchases – Rs. 8,05,000
Rs. 12,00,000 + Rs. 10,000 = Purchases
Rs. 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 4

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 Rs. 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.

Solution

(a) Working Note:

(i)

Calculation of Sales	Therefore,	Sales
$\frac{\text{Fixed Assets}}{\text{Sales}} = \frac{1}{3}$	$\frac{\text{Rs. 26,00,000}}{\text{Current Assets}} = \frac{1}{3}$	Sales = Rs. 78,00,000

(ii) Calculation of Current Assets

$\frac{\text{Fixed Assets}}{\text{Current Assets}} = \frac{13}{11}$	Therefore, $\frac{26,00,000}{\text{Current Assets}} = \frac{13}{11}$	Current Assets = Rs. 22,00,000

(iii) Calculation of Raw Material Consumption and Direct Wages

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

Raw Material Consumption (20% of Works Cost) = Rs. 13,26,000
Direct Wages (10% of Works Cost) = Rs. 6,63,000

(iv)	Calculation of Stock of Raw Materials (= 3 months usage)	$= 13,26,000 \times \frac{3}{12} = \text{Rs. } 3,31,500$

(v)	Calculation of Stock of Finished Goods (= 6% of Works Cost)	$= 66,30,000 \times \frac{6}{100} = \text{Rs. } 3,97,800$

(vi) Calculation of Current Liabilities

$= \frac{\text{Current Assets}}{\text{Current Liabilities}} = 2$	Therefore, $\frac{22,00,000}{\text{Current Liabilities}} = 2$	Current Liabilities = Rs. 11,00,000

(vii) Calculation of Receivables

$\text{Average Collection Period} = \frac{\text{Receivables}}{\text{Credit Sales}} \times 365$	$= \frac{\text{Receivables}}{78,00,000} \times 365 = 60$	Receivables = Rs. 12,82,191.78 or Rs. 12,82,192

(viii) Calculation of Long term Loan

$\frac{\text{Long Term Loan}}{\text{Current Liabilities}} = \frac{2}{1}$	$\frac{\text{Long Term Loan}}{11,00,000} = \frac{2}{1}$	Long Term Loan = Rs. 22,00,000

(ix) Calculation of Cash Balance

Financial Ratios		Rs.
Current assets		22,00,000
Less: Receivables	12,82,192	
Raw materials stock	3,31,500	
Finished goods stock	3,97,800	20,11,492
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	33,00,000
Net worth		15,00,000

Question 5

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
	Rs.	Rs.	Rs.
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

	Rs.	Rs.	Rs.
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
	Rs.	Rs.	Rs.
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 01.04.2020, ANALYSE the company's financial condition and performance over the last 3 years. Are there any problems?

Solution

Net worth = Share capital + Reserves = 15,00,000

Also, $\frac{1}{4} = \frac{\text{Share Capital}}{\text{Reserve \& Surplus}}$

So, Share Capital = 15,00,000 × $\frac{1}{5}$ = Rs. 3,00,000	Reserve & Surplus = 15,00,000 × $\frac{4}{5}$ = Rs. 12,00,000

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

Particulars	Rs.	Particulars	Rs.
To Direct Materials	13,26,000	By Sales	78,00,000
To Direct Wages	6,63,000		
To Works (Overhead)	46,41,000		
(Balancing figure)			
To Gross Profit c/d	11,70,000		
	78,00,000		78,00,000
To Selling and Distribution	5,46,000	By Sales	78,00,000
Expenses (Balancing figure)			
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	Rs.	Assets	Rs.
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

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

Working Note			
Average receivables {(Opening + closing)/2}	(Rs. 2,00,000 + Rs. 2,00,000) / 2	(Rs. 2,00,000 + Rs. 2,60,000) / 2	(Rs. 2,60,000 + Rs. 2,90,000)/2
	= Rs. 2,00,000	= Rs. 2,30,000	= Rs. 2,75,000
Average Inventory {(Opening + closing)/2}	Rs. 4,00,000 + Rs. 4,00,000) / 2	Rs. 4,00,000 + Rs. 4,80,000) / 2	Rs. 4,80,000 + Rs. 6,00,000)/2
	= Rs. 4,00,000	= Rs. 4,40,000	= Rs. 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 Rs. 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 (Suggested - May 23)

MR Ltd. is having the following capital structure, which is considered to be optimum as on 31.03.2022.

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

The earnings per share (EPS) of the company were Rs. 2.50 in 2021 and the expected growth in equity dividend is 10% per year. The next year's dividend per share (DPS) is 50% of EPS of the year 202I. The current market price per share (MPS) is Rs. 25.00. The 15% new debentures can be issued by the company. The company's debentures are currently selling at Rs. 96 per debenture. The new 12% Pref. share can be sold at a net price of Rs. 91.50 (face value Rs. 100 each). The applicable tax rate is 30%.

You are required to calculate

(a) After tax cost of

(i) New debt,

(ii) New pref. share capital and

(iii) Equity shares assuming that new equity shares come from retained earnings.

(b) Marginal cost of capital, How much can be spent for capital investment before sale of new equity shares assuming that retained earnings for next year investment is 50% of 2021?

Solution

(a) (a) (i) After tax cost of new Debt:

$$K_d = I\,\frac{(1-t)}{P_1} = 15\,\frac{(1-0.3)}{96}$$

= 0.1094 (or) 10.94%

(ii) After tax cost of New Preference share capital:

$$K_p = \frac{P_D}{P_o} - \frac{12}{91.5} = 0.1311 \quad (\text{or}) \quad 13.11\%$$

(iii) After tax cost of Equity shares:

$$K_e = \frac{D_1}{P_o} + G\,\frac{12}{91.5} = \left[\frac{2.50 \times 50\%}{25}\right] + 0.10$$

= 0.15 (or) 15%

(b) Marginal Cost of Capital

Type of capital	Proportions	Specific cost	Product
Equity Shares	0.80	0.15	0.12
Preference Shares	0.05	0.1311	0.0066
Debentures	0.15	0.1094	0.0164
Marginal cost of capital			0.1430

(c) Amount that can be spend for capital investment

Retained earnings = 50% of EPS x No. of outstanding Equity shares

= 1.25 x 50,000 = Rs. 62,500

Proportion of equity (Retained earnings here) capital is 80% of total capital. Therefore, Rs. 62,500 is 80% of total capital.

$$\text{Amount of Capital Investment} = \frac{62,500}{0.80} = \text{Rs.}78,125$$

Question 7 (Q4) MAY 23

Capital structure of D Ltd. as on 31stMarch, 2023 is given below:

Liabilities	Rs
Equity share capital (Rs. 10 each)	30,00,000
8% Preference share capital (Rs. 100 each)	10,00,000
12% Debentures (Rs. 100 each)	10,00,000

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

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

Solution

(i) (a) Growth rate in Dividends

14.07 = 10 x FVIF (i,7 years)

FVIF (i,7 years) = 1.407

FVIF (5%, 7 years) = 1.407

i = 5%

Growth rate in dividend= 5%

(b) Cost of Equity

$K_e = \frac{D_1}{P_0} + g$	$K_e = \frac{16}{80} + 0.5$	Ke = 25%

(c) Cost of Preference Shares

$K_p = \frac{PD + \frac{(RV - NP)}{2}}{\frac{(RV + NP)}{2}}$	$K_p = \frac{8 + \frac{(106 - 104)}{5}}{\frac{(106 + 104)}{2}}$	Kp = 8.4/105 Kp = 8%

(d) Cost of Debt

$K_d = \frac{I(1 - t) + \frac{(RV - NP)}{2}}{\frac{(RV + NP)}{2}}$	$K_d = \frac{12(1 - 0.4) + \frac{(120 - 95)}{10}}{\frac{(120 + 95)}{2}}$	Kd = (7.2+2.5)/107.5 Kd = 9.02%

Calculation of existing Weighted Average Cost of Capital (WACC)

Amount (Rs.)	1%	2%	3%	4%
Equity Share Capital	30,00,000	0.6	25%	15.00%
Preference Share Capital	10,00,000	0.2	8%	1.60%
Debenture	10,00,000	0.2	9.02%	1.80%
	50,00,000			18.40%
Total	50,00,000	1		18.40%

Alternative presentation

(i) Computation of existing WACC on book value weights

Source (1)	Book value (Rs.) (2)	Weight (3)	Cost of capital (%) (4)	Product (2) x (4)
Equity share capital	30,00,000	0.60	25	7,50,000
Preference share capital	10,00,000	0.20	8	80,000
Debentures	10,00,000	0.20	9.02	90,200
Total	50,00,000	1.00		9,20,200

WACC = (Product / Total book value) x 100 = (9,20,200 /50,00,000) x 100 = 18.4%

(ii) Cost of Long Term Debt = 15% (1-0.4) = 9%

$$\text{Revised } K_e = \frac{18}{72} + 0.05 = 30\%$$

Calculation of WACC after expansion taking book value weights

Capital	Amount	Weights	Cost	W.C
Equity Share Capital	30,00,000	0.3750	30%	11.25%
Preference Share Capital	10,00,000	0.1250	8%	1.00%
Debenture	10,00,000	0.1250	9.02%	1.13%
Long Term Debt	30,00,000	0.3750	9.00%	3.38%
	80,00,000	1.0000		16.76%

Alternative presentation

(I) Computation of WACC on book value weights after expansion

Source (1)	Book value (Rs.) (2)	Weight (3)	Cost of capital (%) (4)	Product (2) x (4)
Equity share capital	30,00,000	0.375	30	9,00,000
Preference share capital	10,00,000	0.125	8	80,000
Debentures	10,00,000	0.125	9.02	90,200
Long term loan	30,00,000	0.375	9	2,70,000
Total	80,00,00	1.00		13,40,200

WACC = (Product / Total book value) x 100 = (13,40,200 / 80,00,000) x 100 = 16.76%

Question 8

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 (Rs.)	Market Value (Rs.)
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 Rs.130 per share and a new issue priced at Rs.125 per share will be fully subscribed; flotation costs will be Rs. 5 per share.

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

III. Preference shares: 15% Preference shares with face value of Rs. 100 would realiseRs.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.

Floatation cost would be calculated on face value.

Solution

(i) Cost of Equity $(K_e) = \frac{D_1}{P_0 - F} + g^* = \frac{Rs.\ 15}{Rs.\ 125 - Rs.\ 5} + 0.06^*$	Ke = 0.125 + 0.06 = 0.185

*Calculation of g:

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

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

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

(iii) Cost of Preference Shares $(K_P) = \frac{PD}{P_0} + g = \frac{Rs.\ 15}{Rs.\ 105} = 0.1429$

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

$$= \frac{\text{Rs. } 15\,(1 - 0.35) + \frac{(\text{Rs.}100 - \text{Rs. } 91.75^*)}{11 \text{ Years}}}{\frac{\text{Rs. } 100 + \text{Rs. } 91.75^*}{2}} = \frac{\text{Rs. } 15 \times 0.65 + 0.75}{\text{Rs. } 95.875} = \frac{\text{Rs. } 10.5}{\text{Rs. } 95.875} = 0.1095$$

*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) = Rs. 15 ÷ 0.16 = Rs. 93.75
Sale proceeds from debentures = Rs.93.75 – Rs. 2 (i.e., floatation cost) = Rs.91.75

Market value (P_0) of debentures can also be found out using the present value method:
P_0 = Annual Interest × PVIFA (16%, 11 years) + Redemption value × PVIF (16%, 11 years)
P_0 = Rs.15 × 5.029 + Rs.100 × 0.195 P_0 = Rs.75.435 + Rs.19.5 = Rs. 94.935
Net Proceeds = Rs.94.935 – 2% of Rs.100 = Rs. 92.935
Accordingly, the cost of debt can be calculated

Total Cost of capital [BV weights and MV weights]

(Amount in (Rs.) 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	Using Market Value
$= \frac{\text{Rs. } 33.73}{\text{Rs. } 195} = 0.1729 = 17.29\%$	$= \frac{\text{Rs. } 42.76}{\text{Rs. } 244.15} = 0.1751 = 17.51\%$

Question 9

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:

Market Value	(Rs.)
Debentures (Rs. 100 per debenture)	5,00,000
Preference shares (Rs. 100 per share)	5,00,000
Equity shares (Rs. 10 per share)	10,00,000
	20,00,000

The market prices of these securities are:

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

Additional information:

1. Rs. 100 per debenture redeemable at par, 10% coupon rate, 4% floatation costs, 10-year maturity.
2. Rs. 100 per preference share redeemable at par, 5% coupon rate, 2% floatation cost and 10-year maturity.
3. Equity shares has Rs. 4 floatation cost and market price of Rs. 24 per share.

The next year expected dividend is Rs. 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.

Solution

(i) Cost of Equity (K_e)

$$= \frac{D_1}{P_0 - F} + g = \frac{\text{Rs. } 1}{\text{Rs. } 24 - \text{Rs. } 4} + 0.05 = 0.1 \text{ or } 10\%$$

(ii) Cost of Debt (K_d)

Current market price (P0) – floatation cost

= I(1-t) × PVAF (r,10) + RV × PVIF (r,10)

Rs.105 – 4% of Rs.105 = Rs.10 (1-0.3) × PVAF (r,10) + Rs.100 × PVIF (r,10)

Calculation of NPV at discount rate of 5% and 7%

Year	Cash flows (Rs.)	Discount factor @ 5%	Present Value (Rs.)	Discount factor @ 7%	Present Value (Rs.)
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

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

Cost of Debt (Kd) = 6.89%

(iii) Cost of Preference shares (Kp)

Current market price (P0) – floatation cost = PD × PVAF (r, 10) + RV × PVIF ®, 10)

Rs. 110 – 2% of Rs. 110 = Rs. 5 × PVAF (r, 10) + Rs.100 × PVIF ®, 10)

Calculation of NPV at discount rate of 3% and 5%

Year	Cash flows (Rs.)	Discount factor @ 3%	Present Value (Rs.)	Discount factor @ 5%	Present Value (Rs.)
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

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

Cost of Preference Shares (Kp) = 4.08%

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

Source of capital	Book Value (Rs.)	Weights a	After tax cost of capital b	WACC (Ko) c = a x b
10% Debentures	5,00,000	0.25	0.0689	0.01723
5% Preference shares	5,00,000	0.25	0.0408	0.0102
Equity shares	10,00,000	0.50	0.10	0.05000
	20,00,000	1.00		0.07743

WACC (Ko) = 0.07743 or 7.74%

(b) Calculation of WACC using market value weights

Source of capital	Book Value	Weights	After tax cost of capital	WACC (Ko)
	(Rs.)	a	b	c = a x b
10% Debentures (Rs.105 × 5,000)	5,25,000	0.151	0.0689	0.0104
5% Preference shares (Rs.110 × 5,000)	5,50,000	0.158	0.0408	0.0064
Equity shares (Rs.24 × 1,00,000)	24,00,000	0.691	0.10	0.0691
	34,75,000	1.000		0.0859

WACC (Ko) = 0.0859 or 8.59%

Question 10 (Suggested - Dec 21)

Earnings before interest and tax of a company are Rs. 4,50,000. Currently the company has 80,000 Equity shares of Rs. 10 each, retained earnings of Rs. 12,00,000. It pays annual interest of Rs. 1,20,000 on 12% Debentures. The company proposes to take up an expansion scheme for which it needs additional fund of Rs. 6,00,000. It is anticipated that after expansion, the company will be able to achieve the same return on investment as at present.

It can raise fund either through debts at rate of 12% p.a. or by issuing Equity shares at par. Tax rate is 40%.

Required:

Compute the earning per share if:

(i) The additional funds were raised through debts.

(ii) The additional funds were raised by issue of Equity shares.

Advise whether the company should go for expansion plan and which sources of finance should be preferred.

Solution

Working Notes: (1) Capital employed before expansion plan:

	(Rs.)
Equity shares (Rs. 10 × 80,000 shares)	8,00,000
Debentures {(Rs. 1,20,000/12) Rs. 100}	10,00,000
Retained earnings	12,00,000
Total capital employed	**30,00,000**

(2) Earnings before interest and tax (EBIT) = 4,50,000

(3) Return on Capital Employed (ROCE):

$$\text{ROCE} = \frac{\text{EBIT}}{\text{Capital EMployed}} \times 100 = \frac{\text{Rs. 4,50,000}}{\text{Rs. 30,00,000}} \times 100 = 15\%$$

(4) Earnings before interest and tax (EBIT) after expansion scheme:

After expansion, capital employed = Rs. 30,00,000 + Rs. 6,00,000 = Rs. 36,00,000

Desired EBIT = 15% ´ Rs. 36,00,000 = Rs. 5,40,000

(I) & (ii)Computation of Earnings Per Share (EPS) under the following options:

	Present situation	Debt (i)	Equity (ii)
Earnings before Interest and Tax (EBIT)	4,50,000	5,40,000	5,40,000
Less: Interest - Old Debt	1,20,000	1,20,000	1,20,000
- New Debt	—	72,000 (Rs. 6,00,000 x 12%)	—
Earnings before Tax (EBT)	3,30,000	3,48,000	4,20,000
Less: Tax (40% of EBT)	1,32,000	1,39,200	1,68,000
PAT/EAT	**1,98,000**	**2,08,800**	**2,52,000**
No. of shares outstanding	80,000	80,000	1,40,000
Earnings per Share (EPS)	**2.475** $= \left(\frac{\text{Rs. } 1,98,000}{\text{Rs. } 80,000}\right)$	**2.610** $\left(\frac{\text{Rs. } 2,08,000}{\text{Rs. } 80,000}\right)$	**1.800** $\left(\frac{\text{Rs. } 2,52,000}{\text{Rs. } 1,40,000}\right)$

Advise to the Company: When the expansion scheme is financed by additional debt, the EPS is higher. Hence, the company should finance the expansion scheme by raising debt.

Question 11 (Suggested - Nov 22)

The following are the costs and values for the firms A and B according to the traditional approach.

	Firm A	Firm B
Total value of firm, V (in Rs.)	50,000	60,000
Market value of debt, D (in Rs.)	0	30,000
Market value of equity, E (in Rs.)	50,000	30,000
Expected net operating income (in Rs.)	5,000	5,000
Cost of debt (in Rs.)	0	1,800
Net Income (in Rs.)	5,000	3,200
Cost of equity, Ke = NI/V	10.00%	10.70%

(i) Compute the Equilibrium value for Firm A and B in accordance with the M-M approach. Assume that (a) taxes do not exist and (b) the equilibrium value of Ke is 9.09%.

(ii) Compute Value of Equity and Cost of Equity for both the firms.

Solution

(i) Computation of Equilibrium value of Firms A & B under MM Approach:

As per MM approach KO is equal to K_{eu}

$\therefore$ $KO = K_{eu}(1-t) = 9.09(1-0) = 9.09$

Particulars	A	B
EBIT (NOI) (Rs.)	5000	5000
K_o (%)	9.09	9.09
Equilibrium value (Rs.) (NOI/K_o) X 100	55005.5	55005.5
	$= \frac{5,000}{9.09} \times 100$	$= \frac{5,000}{9.09} \times 100$

ii) Computation of value of equity and cost of equity of Firms A & B

Particulars	A	B
Equilibrium value (Rs.) Less: Value of Debt	55,005.5 -	55,005.5 30,000
Value of Equity	55,005.5	25,005.5

ost of Equity of Firm A (unlevered) = 9.09

Cost of Debt of Firm B (K_d) (levered) = (1800/30000) x 100 = 6%

Cost of Equity of Firm B (Levered) = $K_O + (K_O - K_d) \times$ (Debt / Equity)

= 9.09 + (9.09 – 6) x (30000/25005.5)

= 9.09 + 3.09 x 1.2 = 9.09 + 3.71 = 12.80%

OR

Cost of Equity of Firm B (Levered) = $\frac{\text{NI}}{\text{Value of Equity}} \times 100$	$= \frac{3200}{25005.5} \times 100 = 12.8\%$

Question 12 (Suggested - Nov 22)

The following information is available for SS Ltd.

Profit volume (PV) ratio	30%
Operating leverage	2.00
Financial leverage	1.50
Loan	Rs. 1,25,000
Post-tax interest rate	5.6%
Tax rate	30%
Market Price per share (MPS)	Rs. 140
Price Earnings Ratio (PER)	10

You are required to:

(1) Prepare the Profit-Loss statement of SS Ltd. and

(2) Find out the number of equity shares.

Solution

Preparation of Profit – Loss Statement Working Notes:

1. Post tax interest	5.60%
Tax rate	30%
Pre tax interest rate = (5.6/70) x 100	8%
Loan amount	Rs. 1,25,000
Interest amount = 1,25,000 x 8%	Rs. 10,000

$$\text{Financial Leverage (FL)} = \left(\frac{\text{EBIT}}{\text{EBT}}\right) = \left[\frac{\text{EBIT}}{(\text{EBIT - Interest})}\right] = \left[\frac{\text{EBIT}}{(\text{EBIT - 10,000})}\right]$$

$1.5 = \left[\frac{\text{EBIT}}{(\text{EBIT- 10,000})}\right]$	1.5 EBIT -15000 = EBIT 1.5 EBIT – EBIT = 15,000 0.5 EBIT = 15,000	EBT = EBIT – Interest = 30,000 – 10,000 = Rs. 20,000

2	Operating Leverage (OL) = $\frac{\text{Contribution}}{\text{EBIT}}$	$2 = \frac{\text{Contribution}}{30{,}000}$	Contribution = Rs. 60,000

3	Fixed cost = Contribution – Profit	= 60,000 – 30,000 = Rs. 30,000

4	Sales = $\frac{\text{Contribution}}{\text{PV Ratio}}$	$= \frac{60{,}000}{30\%}$	= Rs. 2,00,000

5	If PV ratio is 30%, then the variable cost is 70% on sales. ∴ **Variable cost** = 2,00,000 x 70% = **Rs. 1,40,000**

Profit – Loss Statement

	Rs.
Sales	2,00,000
Less: Variable cost	1,40,000
Contribution	60000
Less: Fixed cost	30,000
EBIT	30,000
Less: Interest	10,000
EBT	20,000
Less: Tax @ 30%	6,000
EAT	**14,000**

(2) Calculation of no. of Equity shares

Market Price per Share (MPS) = Rs.140

Price Earnings Ratio (PER)= 1 0

WKT,

$$EPS = \frac{MPS}{PER} = \frac{140}{10} = \text{Rs. } 14$$

Total earnings (EAT) = Rs. 14,000

∴ No. of Equity Shares = 14,000 / 14 = 1000

Question 13

Ganapati Limited is considering three financing plans. The key information is as follows:

a) Total investment to be raised is Rs. 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 Rs. 10 each will be issued at a premium of Rs. 10 per share.

f) Expected EBIT is Rs. 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.

Solution

(I) Computation of Earnings per share (EPS)

Plans	A (Rs.)	B (Rs.)	C (Rs.)
Earnings before interest & tax (EBIT) Less: Interest charges	80,000 —	80,000 (8,000) (8% × Rs.1 lakh)	80,000 ---
Earnings before tax (EBT) Less: Tax (@ 50%)	80,000 (40,000)	72,000 (36,000)	80,000 (40,000)
Earnings after tax (EAT) Less: Preference dividend	40,000 —	36,000 —	40,000 (8,000) (8% × Rs.1 lakh)
Earnings available for Equity shareholders (A)	40,000	36,000	32,000
No. of Equity shares (B)	10,000 (Rs.2 lakh ÷ Rs.20)	5,000 (Rs.1 lakh ÷ Rs.20)	5,000 (Rs.1 lakh ÷ Rs.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 Rs. 8,000 and no preference dividend, hence, the Financial Break-even point will be Rs. 8,000 (Interest charges).

Plan C: Under this plan there is no interest payment but an after tax preference dividend of Rs. 8,000 is paid. Hence, the Financial Break- even point will be before tax earnings of Rs. 16,000 (i.e. Rs. 8,000÷(1 - 0.5)= Rs. 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.

$$\frac{(EBIT - 0)(1 - 0.5)}{10,000} = \frac{(EBIT - 8,000)(1.05)}{5,000}$$

0.5 EBIT (5,000) = (0.5 EBIT - 4,000) (10,000)

0.5 EBIT = EBIT – 8,000 | 0.5 EBIT = 8,000 | EBIT = Rs. 16,000

II. Indifference point where EBIT of Plan A and Plan C is equal.

$$\frac{(EBIT - 0)(1 - 0.5)}{10,000} = \frac{(EBIT - 0)(1 - 0.5) - 8,000}{5,000}$$

$$\frac{0.5\ EBIT}{10,000} = \frac{0.5\ EBIT - 8,000}{5,000}$$

0.25 EBIT = 0.5 EBIT – 8,000 | 0.25 EBIT = 8,000 | EBIT = Rs. 32,000

III. Indifference point where EBIT of Plan B and Plan C are equal.

$$\frac{(EBIT - Rs.\ 8,000)(1 - 0.5)}{5,000} = \frac{(EBIT - 0)(1 - 0.5) - 8,000}{5,000}$$

0.5 EBIT – 4,000 = 0.5 EBIT – Rs.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 Rs. 8,000 but in case of latter it is Rs. 16,000. Further EPS of plan B is the highest.

Question 14

Following data is available in respect of two companies having same business risk: Capital employed = Rs. 2,00,000, EBIT = Rs. 30,000

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

Solution

1. Valuation of firms

Sources	Levered Company (Rs.)	Unlevered Company (Rs.)
EBIT	30,000	30,000
Less: Interest on debt (10% × Rs. 1,00,000)	10,000	Nil
Earnings available to Equity shareholders	20,000	30,000
Ke	20%	20%
Value of Equity (S)	1,00,000	2,40,000
(Earnings available to Equity shareholders/Ke)		
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 Rs. 1,00,000 : Rs. 1,00,000 i.e. 1:1. To maintain the level of risk he will lend proportionate amount (50%) and invest balance amount (50%) in shares of Levered company.

2. Investment & Borrowings	Rs.
Sell shares in Unlevered company (Rs. 2,40,000 x 15%)	36,000
Lend money (Rs. 36,000 x 50%)	18,000
Buy shares in Levered company (Rs. 36,000 x 50%)	18,000
Total	36,000

3. Change in Return	Rs.
Income from shares in Levered company (Rs. 18,000 x 20%) Interest on money lent (Rs. 18,000 x 10%)	3,600 1800
Total Income after switch over Less: Income from Unlevered firm (Rs. 36,000 x 12.5%)	5,400 4,500
Incremental Income due to arbitrage	900

Question 15

Amita Ltd.'s operating income (EBIT) is Rs. 5,00,000. The firm's cost of debt is 10% and currently the firm employs Rs. 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

Solution

(I) Statement showing total value of the firm

	Rs.
Net operating income (EBIT) Less: Interest on debentures (10% of Rs. 15,00,000)	5,00,000 (1,50,000)
Earnings available for equity holders Total cost of capital (K0) (given)	3,50,000 15%
Market Value Equity (V) = $\frac{EBIT}{K_0} = \frac{5,00,000}{0.15}$	33,33,333

(ii) Calculation of Cost of Equity

	Rs.
Market value of debt (D) Market value of equity (S) = V – D = Rs. 33,33,333 – Rs. 15,00,000	15,00,000 18,33,333

$$K_e = \frac{\text{Earnings Available for Equity Holders}}{\text{Value of Equity (S)}}$$

$$\text{Or, } \frac{\text{EBIT - Interest Paid on Debt}}{\text{Market Value of Equity}} = \frac{\text{Rs. 3,50,000}}{\text{Rs. 18,33,333}} = 19.09\%$$

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

$$= 0.15 \left(\frac{\text{Rs. } 33,33,333}{\text{Rs. } 18,33,333} \right) - 0.10 \left(\frac{\text{Rs. } 15,00,000}{\text{Rs. } 18,33,333} \right)$$

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

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

Question 16

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	Rs. 20,000	Rs. 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.

Solution

Company A

$$\text{(i) Financial Leverage} = \frac{\text{EBIT}}{\text{EBT i.e. EBIT - Interest}} \qquad \text{So, } 3 = \frac{\text{EBIT}}{\text{EBT - Rs. 20,000}}$$

Or, 3 (EBIT - 20,000) = EBIT

Or, 2 EBIT = 60,000

Or, EBIT = 30,000

$$\text{(ii) Operating Leverage} = \frac{\text{Contribution}}{\text{EBIT}} \qquad \text{So, } 5 = \frac{\text{Contribution}}{\text{Rs. 30,000}}$$

Or, Contribution = Rs. 1,50,000

$$\text{Sales} = \frac{\text{Contribution}}{\text{PV Ratio (1 - Variable Cost Ratio)}} = \frac{\text{Rs. 1,50,000}}{40\%} = \text{Rs. 3,75,000}$$

(iii) Fixed Cost = Contribution - EBIT = Rs. 1,50,000 - 30,000

Or, Fixed Cost = Rs. 1,20,000

Company B

(i) Financial Leverage = $\frac{\text{EBIT}}{\text{EBT i.e. EBIT - Interest}}$	So, 2 = $\frac{\text{EBIT}}{\text{EBIT - Rs. 1,00,000}}$

Or, 2 (EBIT - 1,00,000) = EBIT

Or, 2 EBIT - Rs. 2,00,000 = EBIT

Or, EBIT = 2,00,000

(ii) Operating Leverage = $\frac{\text{Contribution}}{\text{EBIT}}$	OR, 2 = $\frac{\text{Contribution}}{\text{Rs. 2,00,000}}$	Or, Contribution = Rs. 4,00,000

Sales = $\frac{\text{Contribution}}{\text{PV Ratio (1 - Variable Cost Ratio)}}$	= $\frac{\text{Rs. 4,00,000}}{50\%}$ = Rs. 8,00,000

(iii) Fixed Cost = Contribution - EBIT = Rs. 4,00,000 - 2,00,000

Or, Fixed Cost = Rs. 2,00,000

Income Statements of Company A and Company B

	Company A (Rs.)	Company B (Rs.)
Sales	3,75,000	8,00,000
Less: Variable cost	2,25,000	4,00,000
Contribution	1,50,000	4,00,000
Less: Fixed Cost	1,20,000	2,00,000
Earnings before interest and tax (EBIT)	30,000	2,00,000
Less: Interest	20,000	1,00,000
Earnings before tax (EBT)	10,000	1,00,000
Less: Tax @ 30%	3,000	30,000
Earnings after tax (EAT)	7,000	70,000

Comment based on Leverage

Comment based on leverage – Company B is better than company A of the following reasons:

- Capacity of Company B to meet interest liability is better than that of companies A (from EBIT/Interest ratio)

$$\left[A = \frac{\text{Rs. 30,000}}{\text{Rs. 20,000}} = 1.5,\ B = \frac{\text{Rs. 2,00,000}}{\text{Rs. 1,00,000}} = 2\right]$$

- 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)

Practical

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 Rs. 1,57,500.

Particulars	(Rs.)
EBIT (Earnings before Interest and Tax)	31,50,000
Earnings before Tax (EBT)	14,00,000

Solution

Operating Leverage (OL)

$$= \frac{\text{Contribution}}{\text{EBIT}} = \frac{\text{EBIT + Fixed Cost}}{\text{EBIT}} = \frac{\text{Rs. 31,50,000 + Rs. 1,57,500}}{\text{Rs. 31,50,000}} = 1.05$$

Financial Leverage (FL)

$$= \frac{\text{EBIT}}{\text{EBT}} = \frac{\text{Rs. 31,50,000}}{\text{Rs. 14,00,000}} = 2.25$$

Combined Leverage (CL) = 1.05 X 2.25 = 2.3625

Percentage Change in Earnings per share

$$\text{DCL} = \frac{\text{\% Change in EPS}}{\text{\% Change in Sales}} = 2.3625 = \frac{\text{\% Change in EPS}}{10\%}$$

% change in EPS = 23.625%

Hence, if sales increases by 10%, EPS will be increased by 23.625%.

Question 17

A company had the following Balance Sheet at the end of the current Financial Year

Liabilities	(Rs.) in crores	Assets	(Rs.) in crores
Equity Share Capital (50 lakhs shares of Rs. 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)	Rs. 4 crores
Variable operating cost ratio	65%
Total assets turnover ratio	2.5
Income Tax rate	30%

Required :
CALCULATE the following and comment:
(i) Earnings Per Share
(ii) Operating Leverage
(iii) Financial Leverage
(iv) Combined Leverage

Solution

Workings:

Total Assets = Rs. 20 crores Total
Asset Turnover Ratio = 2.5
Hence, Total Sales = 20 x 2.5 = Rs. 50 crores

Computation of Profit after Tax (PAT)

Particulars	(Rs.) 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% x Rs. 10 crores)	1.50
PBT	12.00
Less: Tax @ 30%	3.60
PAT	8.40

(i) Earnings per Share

$$EPS = \frac{PAT}{\text{Number of Equity Shares}} = \frac{\text{Rs. 8.40 Crores}}{50,00,000} = \text{Rs. } 16.80$$

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**

$$\text{Operating Leverage} = \frac{\text{Contribution}}{EBIT} = \frac{\text{17.50 Crores}}{\text{Rs. 13.50 Crores}} = 1.296$$

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

$$\text{Financial Leverage} = \frac{EBIT}{PBT} = \frac{\text{Rs. 13.50 Crores}}{\text{Rs. 12.00 Crores}} = 1.125$$

The financial leverage is very comfortable since the debt service obligation is small vis-à-vis EBIT.

(iv) Combined Leverage

$$\text{Combined Leverage} = \frac{\text{Contribution}}{EBIT} \quad \frac{EBIT}{PBT}$$

OR

= Operating Leverage × Financial Leverage
= 1.296 x 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 leverages, operating, financial and combined are used as measurement of risk.

Question 18

The following details of a company for the year ended 31st March are given below:

Operating leverage	2:1
Combined leverage	2.5:1
Fixed Cost excluding interest	Rs. 3.4 lakhs
Sales	Rs. 50 lakhs
8% Debentures of Rs. 100 each	Rs. 30.25 lakhs
Equity Share Capital of Rs. 10 each	34 lakhs
Income Tax Rate	30%

CALCULATE:

(i) Financial Leverage

(ii) P/V ratio and Earning per Share (EPS)

(iii) If the company belongs to an industry, whose assets turnover is 1.5, does it have a high or low assets turnover?

(iv) At what level of sales, the Earning before Tax (EBT) of the company will be equal to zero?

Solution

(i) Financial leverage

Combined Leverage = Operating Leverage(OL) x Financial Leverage (FL)

2.5 = 2 x FL

Or, FL = 1.25

Financial Leverage = 1.25

(ii) P/V Ratio and Earning per share (EPS)

$$\text{Operating Leverage} = \frac{\text{Contribution (C)}}{\text{Contribution - Fixed Assets (FC)}}$$

$$2 = \frac{C}{C - 3,40,000}$$

Or, C = 2 (C - 3,40,000)
Or, C = 2C - 6,80,000
Or, Contribution = Rs. 6,80,000

$$\text{Now, PV Ratio} = \frac{\text{Contribution (C)}}{\text{Sales (S)}} \times 100 = \frac{6,80,000}{50,00,000} \times 100 = 13.6\%$$

PV Ratio = 13.6%

EBT = Sales - Variable Cost- Fixed Cost - Interest
= Rs. 50,00,000 - Rs. 50,00,000 (1 - 0.136) - Rs. 3,40,000 - (8% x Rs. 30,25,000)
= Rs. 50,00,000 - Rs. 43,20,000 - Rs. 3.40,000 - Rs. 2,42,000
= Rs. 98,000

PAT = EBT (1 - T) = Rs. 98,000 (1 - 0.3) = Rs. 68,600

$$EPS = \frac{\text{Profit After Tax}}{\text{No. of Equity Shares}} \qquad EPS = \frac{\text{Rs. 68,600}}{\text{3,40,000 Shares}} = \text{Rs.0.202}$$

(iii) Assets turnover

$$\text{Assets Turnover} = \frac{\text{Sales}}{\text{Total Assets*}} \qquad = \frac{\text{Rs. 50,00,000}}{\text{Rs. 34,00,000 - Rs. 30,25,000}} = \text{Rs.0.78}$$

0.78 < 1.5 means lower than industry turnover.

*Total Asset = Equity share capital + 8% Debentures

(iv) EBT zero means 100% reduction in EBT. Since combined leverage is 2.5, sales have to be dropped by 100/2.5 = 40%. Hence new sales will be

Rs. 50,00,000 X (100 – 40) % = Rs. 30,00,000.

Therefore, at Rs. 30,00,000 level of sales, the Earnings before Tax (EBT) of the company will be zero.

Alternatively

$$\text{Required Sales when EBT is Zerio} = \frac{\text{Fixed Cost + Interest + Desired Profit}}{\text{PV Ratio}}$$

$$= \frac{\text{Rs. 3,40,000 + Rs. 2,42,000 + Zero}}{13.60\%} \qquad = \frac{\text{Rs. 5,82,000}}{13.60\%} = \text{Rs. 42,79,412}$$

Note: The question can also be solved by first calculating EBIT with the help of Financial Leverage. Accordingly, answer to the requirement (ii) and (iv) will also vary.

Question 19 (Q2) NOV 22

The following information is available for SS Ltd.

Profit volume (PV) ratio	30%
Operating leverage	2.00
Financial leverage	1.50
Loan	Rs. 1,25,000
Post-tax interest rate	5.6%
Tax rate	30%
Market Price per share (MPS)	Rs. 140
Price Earnings Ratio (PER)	10

You are required to

(1) Prepare the Profit-Loss statement of SS Ltd. and

(2) Find out the number of equity shares.

Solution

(1) Preparation of Profit – Loss Statement

Working Notes:

1. Post tax interest	5.60%
Tax rate	30%
Pre tax interest rate = (5.6/70) x 100	8%
Loan amount	Rs.1,25,000
Interest amount = 1,25,000 x 8%	Rs.10,000

$$\text{Financial Leverage (FL)} = \left(\frac{\text{EBIT}}{\text{EBT}}\right) = \left[\frac{\text{EBIT}}{(\text{EBIT - Intrest})}\right] = \left[\frac{\text{EBIT}}{(\text{EBIT - 10,000})}\right]$$

$$1.5 = \left[\frac{\text{EBIT}}{\text{EBIT - 10,000}}\right]$$

1.5 EBIT -15000 = EBIT

1.5 EBIT – EBIT = 15,000 0.5 EBIT = 15,000

EBIT = Rs. 30,000

EBT = EBIT – Interest = 30,000 – 10,000 = Rs. 20,000

2. Operating Leverage $(OL) = \frac{\text{Contribution}}{\text{EBIT}}$	$2 = \frac{\text{Contribution}}{30,000}$	Contribution= Rs. 60,000

3. Fixed cost = Contribution – Profit = 60,000 – 30,000 = Rs. 30,000

4. Sales $= \frac{\text{Contribution}}{\text{PV Ratio}}$	$= \frac{60,000}{30\%} = \text{Rs.2,00,000}$

5. If PV ratio is 30%, then the variable cost is 70% on sales.

Variable cost = 2,00,000 x 70% = Rs. 1,40,000

Profit – Loss Statement

Particulars	Rs
Sales	2,00,000
Less: Variable cost	1,40,000
Contribution	60000
Less: Fixed cost	30,000
EBIT	30,000
Less: Interest	10,000
EBT	20,000
Less: Tax @ 30%	6,000
EAT	14,000

(2) Calculation of no. of Equity shares

Market Price per Share (MPS) = Rs.140

Price Earnings Ratio (PER) = 10 WKT,

$$EPS = \frac{MPS}{PER} = \frac{140}{10} = Rs.14$$

Total earnings (EAT) = Rs. 14,000

No. of Equity Shares = 14,000 / 14 = 1000

Question 20 (Q5) DEC 21

- Information of A Ltd. is given below:
- Earnings after tax: 5% on sales
- Income tax rate: 50%
- Degree of Operating Leverage: 4 times
- 10% Debenture in capital structure: Rs. 3 lakhs
- Variable costs: Rs. 6 lakhs Required:

(i) From the given data complete following statement:

Sales	XXXX
Less: Variable costs	Rs. 6,00,000
Contribution	XXXX
Less: Fixed costs	XXXX
EBIT	XXXX
Less: Interest expenses	XXXX
EBT	XXXX
Less: Income tax	XXXX
EAT	XXXX

(ii) Calculate Financial Leverage and Combined Leverage.

(iii) Calculate the percentage change in earning per share, if sales increased by 5%.

Solution

(i) Working Notes

Earning after tax (EAT)is 5% of sales Income tax is 50%

So, EBT is 10% of Sales

Since Interest Expenses is Rs. 30,000

EBIT = 10% of Sales + Rs.30,000 (Equation i)

Now Degree of operating leverage = 4

$$\text{So, } \frac{\text{Contribution}}{\text{EBIT}} = 4$$

Or, Contribution = 4 EBIT

Or, Sales – Variable Cost = 4 EBIT

Or, Sales – Rs. 6,00,000 = 4 EBIT (Equation ii)

Replacing the value of EBIT of equation (i) in Equation (ii) We get, Sales – Rs. 6,00,000 = 4 (10% of Sales + Rs. 30,000) Or, Sales – Rs. 6,00,000 = 40% of Sales + Rs. 1,20,000

Or, 60% of Sales = Rs. 7,20,000

$$\text{So, Sales} = \frac{\text{Rs.}7,20,000}{60\%} = \text{Rs.}12,00,000$$

Contribution = Sales – Variable Cost = Rs. 12,00,000 – Rs. 6,00,000 =Rs. 6,00,000

$$\text{EBIT} = \frac{\text{Rs.}6,00,000}{4} = \text{Rs.}1,50,000$$

Fixed Cost = Contribution – EBIT = Rs. 6,00,000 – Rs. 1,50,000 = Rs. 4,50,000
EBT = EBIT – Interest = Rs. 1,50,000 – Rs. 30,000 = Rs. 1,20,000
EAT = 50% of Rs. 1,20,000 = Rs. 60,000

Income Statement

Particulars	(Rs.)
Sales	12,00,000
Less: Variable cost	6,00,000
Contribution	6,00,000
Less: Fixed cost	4,50,000
EBIT	1,50,000
Less: Interest	30,000
EBT	1,20,000
Less: Tax (50%)	60,000
EAT	60,000

$$\text{(ii) Financial Leverage} = \frac{\text{EBIT}}{\text{EBT}} = \frac{1,50,000}{1,20,000} = 1.25 \text{ times}$$

Combined Leverage = Operating Leverage × Financial Leverage = 4x1.25 = 5 times

Or,

$$\text{Combined Leverage} = \frac{\text{Contribution}}{\text{EBT}} \times \frac{\text{EBIT}}{\text{EBT}}$$

$$\text{Combined Leverage} = \frac{\text{Contribution}}{\text{EBT}} \times \frac{\text{Rs. } 6,00,000}{\text{Rs.}1,20,000} = 5 \text{ times}$$

(iii) Percentage Change in Earnings per share

$$\text{Combined Leverage} = \frac{\%\text{ Change in EPS}}{\%\text{ change in Sales}} = 5 = \frac{\%\text{ change in EPS}}{5\%}$$

% Change in EPS = 25%
Hence, if sales increased by 5 %, EPS will be increased by 25 %.

Question 21

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.

(Rs. in '000)

Period	Project A (Rs.)	Project B (Rs.)	Project C (Rs.)
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	

Solution

(a) Payback Period Method:

A = 5 + (500/900) = 5.56 years

B = 5 + (500/1,200) = 5.42 years

C = 2 + (1,000/2,000) = 2.5 years

Net Present Value Method:

NPV_A = (-5,000) + (900 x 6.145) = (5,000) + 5,530.5 = Rs. 530.5

NPV_B is calculated as follows:

Period	Cash Flow (Rs.)	10% Discount Factor	Present Value (Rs.)
0	(5,000)	1.000	(5,000)
1	700	0.909	636
2	800	0.826	661
3	900	0.751	676

4	1000	0.683	683
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 (Rs.)	10% discount factor	Present value (Rs.)
0	(5,000)	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 x 5.650
= (5,000) + 5085 = 85

NPV at 13% = (5,000) + 900 x 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	Cash flow (Rs.)	10% discount factor	Present value (Rs.)	16% discount factor	Present value (Rs.)
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	1000	0.683	683	0.552	552
5	1100	0.621	683	0.476	524
6	1200	0.564	677	0.410	493
7	1300	0.513	667	0.354	460
8	1400	0.467	654	0.305	427
9	1500	0.424	636	0.263	394
10	1600	0.386	618	0.227	363
			1591		(12)

$$\text{Interpolating } IRR_B = 10\% + \left[\frac{1,591}{1,591 - 12}\right] \times (16\% - 10\%) = 10\% + 5.94\% = 15.94\%$$

Project C

IRR_C

Year	Cash flow (Rs.)	15% discount factor	Present value (Rs.)	18% discount factor	Present value (Rs.)
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	1000	0.572	572	0.516	516
			140		(136)

$$\text{Interpolating } IRR_C = 15\% + \left[\frac{140}{140 + 136}\right] \times (18\% - 15\%) = 15\% + 1.52\% = 16.52\%$$

Accounting Rate of Return:

$$ARR_A = \text{Average Capital Employed} = \left[\frac{5,000}{2}\right] = \text{Rs. } 2,500$$

$$\text{Average Accounting Profit} = \left[\frac{9,000 - 5,000}{10}\right] = \text{Rs. } 400$$

$$ARR_A = \left[\frac{400 \times 100}{2,500}\right] = 16 \text{ Per cent}$$

$$ARR_B = \text{Average Accounting Profit} \left[\frac{11,500 - 5,000}{10}\right] = \text{Rs. } 650$$

$$ARR_B = \left[\frac{650 \times 100}{2,500}\right] = 26 \text{ Per Cent}$$

$$ARR_C = \text{Average Accounting Profit} = \left[\frac{7,000 - 5,000}{4}\right] = \text{Rs. } 500$$

$$ARR_C = \left[\frac{500 \times 100}{2,500}\right] = 20 \text{ Per Cent}$$

(b) Summary of Results

	A	B	C
Payback (years)	5.5	5.4	2.5
NPV (Rs.)	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 22

X Limited is considering purchasing of new plant worth Rs. 80,00,000. The expected net cash flows after taxes and before depreciation are as follows:

Year	Net Cash Flows (Rs.)
1	14,00,000
2	14,00,000
3	14,00,000
4	14,00,000
5	14,00,000
6	16,00,000
7	20,00,000
8	30,00,000
9	20,00,000
10	8,00,000

The rate of cost of capital is 10%.

You are required to CALCULATE:

(i) Pay-back period

(ii) Net present value at 10 discount factor

(iii) Profitability index at 10 discount factor

(iv) Internal rate of return with the help of 10% and 15% discount factor

The following present value table is given for you:

Year	Present value of Rs. 1 at 10% discount rate	Present value of Rs. 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

Solution

(i) Calculation of Pay-back Period

Cash Outlay of the Project	= Rs. 80,00,000
Total Cash Inflow for the first five years	= Rs. 70,00,000
Balance of cash outlay left to be paid back in the 6th year	= Rs. 10,00,000
Cash inflow for 6th year	= Rs. 16,00,000

So, the payback period is between 5th and 6th years, i.e.,

$$5 \text{ Years} + \left[\frac{\text{Rs. } 10,00,000}{\text{Rs. } 16,00,000}\right] = 5.625 \text{ Years or } 5 \text{ Years } 7.5 \text{ Months}$$

(ii) Calculation of Net Present Value (NPV) @10% discount rate:

Year	Net Cash Inflow (Rs.)	Present Value at Discount Rate of 10%	Present Value (Rs.)
	(a)	(b)	(C) = (a) x (b)
1	14,00,000	0.909	12,72,600
2	14,00,000	0.826	11,56,400
3	14,00,000	0.751	10,51,400
4	14,00,000	0.683	9,56,200
5	14,00,000	0.621	8,69,400
6	16,00,000	0.564	9,02,400
7	20,00,000	0.513	10,26,000
8	30,00,000	0.467	14,01,000
9	20,00,000	0.424	8,48,000
10	8,00,000	0.386	3,08,800
			97,92,200

Net Present Value (NPV) = Cash Outflow – Present Value of Cash Inflows
= Rs. 80,00,000 – Rs. 97,92,200 = 17,92,200

(iii) Calculation of Profitability Index @ 10% discount rate:

$$\text{Profitability Index} = \frac{\text{Present Value of Cash Inflows}}{\text{Cost of the Investment}} = \frac{\text{Rs. } 97,92,200}{\text{Rs. } 80,00,000} = 1.224$$

(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 (Rs.)	Present Value at Discount Rate of 15%	Present Value (Rs.)
	(a)	(b)	(C) = (a) x (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% = Rs. 78,84,000 – Rs. 80,00,000 = Rs. -1,16,000

As the net present value @ 15% discount rate is negative, hence internal rate of return falls in between 10% and 15%. The correct internal rate of return can be calculated as follows:

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

$$10\% + \frac{\text{Rs. } 17,92,200}{\text{Rs. } 17,92,200 - (-\text{Rs. } 1,16,000)}(15\% - 10\%)$$

$$10\% + \frac{\text{Rs. } 17,92,200}{\text{Rs. } 19,08,200} \times 5\% = 14.7\%$$

Question 23

XYZ Ltd. is planning to introduce a new product with a project life of 8 years. Initial equipment cost will be Rs. 3.5 crores. Additional equipment costing Rs. 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 Rs. 2,50,000. A working capital of Rs. 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	4 - 5	6 - 8
Units per year	72,000	1,08,000	1,08,000	2,60,000	2,70,000	1,80,000

A sales price of Rs. 240 per unit is expected and variable expenses will amount to 60% of sales revenue. Fixed cash operating costs will amount Rs. 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
PV Factor	0.893	0.797	0.712	0.636	0.567	0.507	0.452	0.404

Solution

Workings:

(a) Calculation of annual cash flows (Rs. 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:

$$\text{On Initial Equipment} = \frac{\text{Rs. 350 Lakhs}}{\text{8 Years}} = 43.75 \text{ Lakhs}$$

$$\text{On Additional Equipment} = \frac{\text{(Rs. 25 - Rs. 2.5) Lakh}}{\text{5 Years}} = 4.5 \text{ Lakh}$$

(c) *Calculation of tax in 2nd Year:

Particulars	Rs. in lakh
Profit for the year Less: Set off of unabsorbed depreciation in 1st year	23.93 (10.63)
Taxable profit	13.30
Tax @30%	3.99

(d) Calculation of Initial cash outflow

Particulars	Rs. in lakh
Cost of New Equipment Add: Working Capital	350 40
Outflow	390

Calculation of NPV **(Rs. in lakh)**

Year	Cash flows	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	
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 24

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 Rs. 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	Rs. 3,30,000	Rs. 10,00,000
Estimated life	8 years	5 years
Salvage value	Nil	Rs. 40,000
Annual output	30,000 units	75,000 units
Selling price per unit	Rs. 15	Rs. 15
Annual operating hours	3,000	3,000
Material cost per unit	Rs. 4	Rs. 4
Labour cost per hour	Rs. 40	Rs. 70
Indirect cash cost per annum	Rs. 50,000	Rs. 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

Solution

(i) Calculation of Net Initial Cash Outflows:

	(Rs.)
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		(Rs.)
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	1,61,040
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
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 @ Rs. 15 per unit	4,50,000	11,25,000	6,75,000
(B) Less: Cost of Operation Material @ Rs. 4 p.u	1,20,000	3,00,000	1,80,000
Labour:	120	135	162
Old = 3,000 x Rs. 40	1,20,000		90,000
New = 3,000 x Rs. 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 & depreciation (PBTD) (A – B)	1,60,000	5,50,000	3,90,000

(iv) Calculation of Incremental Net Present Value:

Year	PBTD	Dep. @ 20%	PBT	Tax @ 30%	Net cash flow	PVF @ 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 (Rs. 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 25 (Suggested - May 23)

A company wants to invest in a project. This requires an initial investment of Rs. 4,50,000. Salvage value after estimated useful life of 5 years is Rs. 50,000. Other details of project are as follows:

Particulars	Worst case	Most likely	Best case
Contribution (Rs.)	3,30,000	5,40,000	6,31,250
Fixed Cost (Excluding Depreciation) (Rs.)	75,000	1,50,000	2,00,000

Tax rate is 40%. Expected cost of capital of project is 12%. Ignore tax on capital gain.

(i) Calculate NPV in each scenario.

(ii) The company is certain about most likely result in first two years, but uncertain about remaining period. In such a situation, calculate NPV expecting worst case scenario during next two years and best case scenario in the remaining period.

Year	1	2	3	4	5
$PVIF_{0.12,t}$	0.893	0.797	0.712	0.636	0.567
$PVIFA_{0.12,t}$	0.893	1.690	2.402	3.038	3.605

Solution

(i) Initial Investment = Rs. 4,50,000
Salvage Value = Rs. 50,000
Useful Life = 5 years

Calculation of cash flow in each scenario

Particulars	Scenario		
	Worst case	Most Likely	Best case
Contribution	3,30,000	5,40,000	6,31,250
Less: Fixed Cost	75,000	1,50,000	2,00,000
Less: Depreciation	80,000	80,000	80,000
Profit before tax	1,75,000	3,10,000	3,51,250
Less: Taxes	70,000	1,24,000	1,40,500
Profit after tax	1,05,000	1,86,000	2,10,750
Add: Depreciation	80,000	80,000	80,000
Cash Flow After Tax	**1,85,000**	**2,66,000**	**2,90,750**

The possible outcomes will be as follows:

Year	PVF @ 12%	Worst case		Most-likely case		Best case	
		Cash Flow	PV	Cash Flow	PV	Cash Flow	PV
0	1	(4,50,000)	(4,50,000)	(4,50,000)	(4,50,000)	(4,50,000)	(4,50,000)
1-5	3.605	1,85,000	6,66,925	2,66,000	9,58,930	2,90,750	10,48,153.75
5	0.567	50,000	28,350	50,000	28,350	50,000	28,350
NPV			**2,45,275**		**5,37,280**		**6,26,503.75**

Alternative presentation

(i) Computation of NPV of different scenarios

Years	DF	Worst case		Most-likely case		Best case	
		Cash Flow	DCF	Cash Flow	DCF	Cash Flow	DCF
0	1.000	(450000)	(450000)	(450000)	(450000)	(450000)	(450000)
1	0.893	185000	165205	266000	237538	290750	259640
2	0.797	185000	147445	266000	212002	290750	231728
3	0.712	185000	131720	266000	189392	290750	207014
4	0.636	185000	117660	266000	169176	290750	184917
5	0.567	185000	104895	266000	150822	290750	164855
5	0.567	50000	28350	50000	28350	50000	28350
NPV			**2,45,275**		**5,37,280**		**6,26,504**

(ii) If the company is certain about the most likely result in first two years but uncertain about the remaining period, then, NPV expecting worst case scenario during next two years and best-case scenario in remaining period will be as follows:

$$= -4,50,000 + \frac{\text{Rs. } 2,66,000}{(1+0.12)} + \frac{\text{Rs. } 2,66,000}{(1+0.12)^2} + \frac{\text{Rs. } 1,85,000}{(1+0.12)^3} + \frac{\text{Rs. } 1,85,000}{(1+0.12)^4} + \frac{\text{Rs. } 2,90,750}{(1+0.12)^5} + \frac{\text{Rs. } 50,000}{(1+0.12)^5}$$

= -4,50,000 + (2,66,000 × 0.893) + (2,66,000 × 0.797) + (1,85,000 × 0.712) + (1,85,000 × 0.636) + (2,90,750 × 0.567) + (50,000 × 0.567)

= -4,50,000 + 2,37,538 + 2,12,002 + 1,31,720 + 1,17,660 + 1,64,855 + 28,350
= Rs. 4,42,125

Alternative presentation

(ii) Computation of NPV on the basis of fixed scenarios **(All figures are in Rs.)**

Year	Scenarios	DF	CF	DCF (DF * CF)
0	Initial Outflow	1.000	(450000)	**(450000)**
1	Most-likely case	0.893	266000	**237538**
2	Most-likely case	0.797	266000	**212002**
3	Worst case	0.712	185000	**131720**
4	Worst case	0.636	185000	**117660**
5	Best case	0.567	290750	**164855**
5	Salvage	0.567	50000	**28350**
				4,42,125

Question 26 (Suggested - Nov 22)

A firm is in need of a small vehicle to make deliveries. It is in tending to choose between two options. One option is to buy a new three wheeler that would cost Rs. 1,50,000 and will remain in service for 10 years.

The other alternative is to buy a second hand vehicle for Rs. 80,000 that could remain in service for 5 years. Thereafter the firm, can buy another second hand vehicle for Rs. 60,000 that will last for another 5 years.

The scrap value of the discarded vehicle will be equal to it written down value (WDV). The firm pays 30% tax and is allowed to claim depreciation on vehicles @ 25% on WDV basis.

The cost of capital of the firm is 12%.

You are required to advise the best option.

Given:

t	1	2	3	4	5	6	7	8	9	10
PVIF (t,12%)	0.892	0.797	0.711	0.635	0.567	0.506	0.452	0.403	0.360	0.322

Solution

Selection of Investment Decision

Tax shield on Purchase of New vehicle			
Year	WDV	Dep. @ 25%	Tax shield @ 30%
1	1,50,000	37,500	11,250
2	1,12,500	28,125	8,437
3	84,375	21,094	6,328
4	63,281	15,820	4,746
5	47,461	11,865	3,560
6	35,596	8,899	2,670
7	26,697	6,674	2,002
8	20,023	5,006	1,502
9	15,017	3,754	1,126
10	11,263	2,816	845
11	8,447	Scrap value	

Tax shield on Purchase of Second hand vehicles

Year	WDV	Dep. @ 25%	Tax shield @ 30%	
1	80,000	20,000	6,000	
2	60,000	15,000	4,500	
3	45,000	11,250	3,375	
4	33,750	8,437	2,531	
5	25,313	6,328	1,898	Scrap value = Rs. 18,985
6	60,000	15,000	4,500	
7	45,000	11,250	3,375	
8	33,750	8,437	2,531	
9	25,313	6,328	1,898	
10	18,985	4,746	1,424	Scrap value = Rs. 14,239

Calculation of PV of Net outflow of New Vehicle

Year	Cash OF/IF	PV Factor	PV of OF/IF
0	1,50,000	1	1,50,000
1	(11,250)	0.892	(10,035)
2	(8,437)	0.797	(6,724)
3	(6,328)	0.711	(4,499)
4	(4,746)	0.635	(3,014)

5	(3,560)	0.567	(2,018)
6	(2,670)	0.506	(1,351)
7	(2,002)	0.452	(905)
8	(1,502)	0.403	(605)
9	(1,126)	0.360	(405)
10	(845 +8447)	0.322	(2,992)
		PVNOF	**1,17,452**

Calculation of PV of Net outflow of Second hand Vehicles

Year	Cash OF/IF	PV Factor	PV of OF/IF
0	80,000	1	80,000
1	(6,000)	0.892	(5,352)
2	(4,500)	0.797	(3,587)
3	(3,375)	0.711	(2,400)
4	(2,531)	0.635	(1,607)
5	(60000 – 18985 – 1898) = 39,117	0.567	22,179
6	(4,500)	0.506	(2,277)
7	(3,375)	0.452	(1,525)
8	(2,531)	0.403	(1,020)
9	(1,898)	0.360	683)
10	(1424 + 14239) = (15,663)	0.322	(5,043)
		PVNOF	**78,686**

Advise: The PV of net outflow is low in case of buying the second hand vehicles. Therefore, it is advisable to buy second hand vehicles.

Question 27 dec 21

Stand Ltd. is contemplating replacement of one of its machines which has become outdated and inefficient. Its financial manager has prepared a report outlining two possible replacement machines. The details of each machine are as follows:

	Machine 1	Machine 2
Initial investment	Rs. 12,00,000	Rs. 16,00,000
Estimated useful life	3 years	5 years
Residual value	Rs. 1,20,000	Rs. 1,00,000
Contribution per annum	Rs. 11,60,000	Rs. 12,00,000
Fixed maintenance costs per annum	Rs. 40,000	Rs. 80,000
Other fixed operating costs per annum	Rs. 7,20,000	Rs. 6,10,000

The maintenance costs are payable annually in advance. All other cash flows apart from the initial investment assumed to occur at the end of each year. Depreciation has been calculated by straight line method and has been included in other fixed operating costs. The expected cost of capital for this project is assumed as 12% p.a.

Required:

(i) Which machine is more beneficial, using Annualized Equivalent Approach? Ignore tax.

(ii) Calculate the sensitivity of your recommendation in part (i) to changes in the contribution generated by machine 1.

Year	1	2	3	4	5	6
$PVIF_{0.12,t}$	0.893	0.797	0.712	0.636	0.567	0.507
$PVIFA_{0.12,t}$	0.893	1.690	2.402	3.038	3.605	4.112

Solution

(i) Calculation of Net Cash flows

Machine 1

Other fixed operating costs (excluding depreciation) = 7,20,000–[(12,00,000–1,20,000)/3]
= Rs. 3,60,000

Year	Initial Investment (Rs.)	Contribution (Rs.)	Fixed maintenance costs (Rs.)	Other fixed operating costs (excluding depreciation) (Rs.)	Residual Value (Rs.)	Net cash flow (Rs.)
0	(12,00,000)	11,60,000				(12,40,000)
1		11,60,000	(40,000)	(3,60,000)		7,60,000
2		11,60,000	(40,000)	(3,60,000)		7,60,000
3			(40,000)	(3,60,000)	1,20,000	9,20,000

Machine 2

Other fixed operating costs (excluding depreciation) = 6,10,000 –[(16,00,000–1,00,000)/5]
= Rs. 3,10,000

Year	Initial Investment (Rs.)	Contribution (Rs.)	Fixed maintenance costs (Rs.)	Other fixed operating costs (excluding depreciation) (Rs.)	Residual Value (Rs.)	Net cash flow (Rs.)
0	(16,00,000)		(80,000)			(16,80,000)
1		12,00,000	(80,000)	(3,10,000)		8,10,000
2		12,00,000	(80,000)	(3,10,000)		8,10,000
3		12,00,000	(80,000)	(3,10,000)		8,10,000
4		12,00,000	(80,000)	(3,10,000)		8,10,000
5		12,00,000		(3,10,000)	1,00,000	9,90,000

Calculation of Net Present Value

		Machine 1		Machine 2	
Year	12% discount factor	Net cash flow (Rs.)	Present value (Rs.)	Net cash flow (Rs.)	Present value (Rs.)
0	1.000	(12,40,000)	(12,40,000)	(16,80,000)	(16,80,000)
1	0.893	7,60,000	6,78,680	8,10,000	7,23,330
2	0.797	7,60,000	6,05,720	8,10,000	6,45,570
3	0.712	9,20,000	6,55,040	8,10,000	5,76,720
4	0.636			8,10,000	5,15,160
5	0.567			9,90,000	5,61,330
NPV @ 12%			6,99,440		13,42,110
PVAF @ 12%			2.402		3.605
Equivalent Annualized Criterion			2,91,190.674		3,72,291.262

Recommendation: Machine 2 is more beneficial using Equivalent Annualized Criterion.

(ii) Calculation of sensitivity of recommendation in part (i) to changes in the contribution generated by machine 1

Difference in Equivalent Annualized Criterion of Machines required for changing the recommendation in part (i) = 3,72,291.262- 2,91,190.674 = Rs. 81,100.588

$$\text{Sensitivity relating to contribution} = \frac{\text{Rs.81,100.588}}{\text{Rs.11,60,000.00}} \times 100 = 6.991 \text{ or } 7\% \text{ yearly}$$

Alternatively,

The annualized equivalent cash flow for machine 1 is lower by Rs. (3,72,291.262- 2,91,190.674) = Rs.81,100.588 than for machine 2. Therefore, it would need to increase contribution for complete 3 years before the decision would be to invest in this machine.

Sensitivity w.r.t contribution = 81,100.588 / (11,60,000 × 2.402) ×100 = 2.911%

Question 28

AB Engineering Ltd. belongs to a risk class for which the capitalization rate is 10%. It currently has outstanding 10,000 shares selling at Rs. 100 each. The firm is contemplating the declaration of a dividend of Rs. 5 share at the end of the current financial year. It expects to have a net income of Rs. 1,00,000 and has a proposal for making new investments of Rs. 2,00,000. CALCULATE the value of the firm when dividends (i) are not paid (ii) are paid.

Solution

CASE 1: Value of the firm when dividends are not paid.

Step 1: Calculate price at the end of the period

$K_e = 10\%$, $P_0 = 100$, $D_1 = 0$

$$P_0 = \frac{P_1 + D_1}{1 + K_e} \qquad 100 = \frac{P_1 + 0}{1 + 0.10} \qquad P_1 = 110$$

Step 2: Calculation of funds required for investment

Earning	Rs. 1,00,000
Dividend distributed	Nil
Fund available for investment	Rs. 1,00,000
Total Investment	Rs. 2,00,000
Balance Funds required	Rs. 2,00,000 - Rs. 1,00,000 = Rs. 1,00,000

Step 3: Calculation of No. of shares required to be issued for balance funds

$$\text{No. of Shares} = \frac{\text{Funds Required}}{\text{Price at End } (P_1)} \qquad \Delta n = \frac{1,00,000}{110}$$

Step 4: Calculation of value of firm

$$nP_0 = \frac{(n + \Delta n)\, P_1 - I + E}{1 + K_e}$$

$$nP_0 = \frac{\left(10,000 + \frac{\text{Rs. } 1,00,000}{\text{Rs. } 110}\right) \times \text{Rs. } 110 - \text{Rs. } 2,00,000 + \text{Rs. } 1,00,000}{(1 + 0.10)} = \text{Rs. } 10,00,000$$

CASE 2: Value of the firm when dividends are paid.

Step 1: Calculate price at the end of the period

K_e = 10%, P_0 = 100, D_1 = 5

$P_0 = \frac{P_1 + D_1}{1 + K_e}$	$100 = \frac{P_1 + 5}{1 + 0.10}$	$P_1 = 105$

Step 2: Calculation of funds required for investment

Earning	Rs. 1,00,000
Dividend distributed	Rs. 50,000
Fund available for investment	Rs. 50,000
Total Investment	Rs. 2,00,000
Balance Funds required	Rs. 2,00,000 - Rs. 50,000 = Rs.1,50,000

Step 3: Calculation of No. of shares required to be issued for balance fund

$\text{No. of Shares} = \frac{\text{Funds Required}}{\text{Price at End } (P_1)}$	$\Delta n = \frac{\text{Rs. } 1,50,000}{\text{Rs. } 105}$

Step 4: Calculation of Value of Firm:

$nP_0 = \frac{(n + \Delta n)\, P_1 - I + E}{1 + K_e}$	$\Delta n = \frac{1,00,000}{110}$

$$nP_0 = \frac{\left(10,000 + \frac{\text{Rs. } 1,50,000}{\text{Rs. } 105}\right) \times \text{Rs. } 105 - \text{Rs. } 2,00,000 + \text{Rs. } 1,00,000}{(1 + 0.10)} = \text{Rs. } 10,00,000$$

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 29

The following figures are collected from the annual report of XYZ Ltd.:

Net Profit	Rs. 30 lakhs
Outstanding 12% preference shares	Rs. 100 lakhs
No. of equity shares	3 lakhs
Return on Investment	20%
Cost of capital i.e. (Ke)	16%

CALCULATE price per share using Gordon's Model when dividend pay-out is
(i) 25%; (ii) 50% and (iii) 100%.

Solution

	Rs. in Lakhs
Net Profit	30
Less: Preference dividend	12
Earning for equity shareholders	18
Earning per share	18/3 = Rs. 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%

$$P_0 = \frac{6 \times 0.25}{0.16 - (0.75 \times 0.2)} = \frac{1.5}{0.16 - 0.15} = \text{Rs. } 150$$

(ii) When dividend pay-out is 50%

$$P_0 = \frac{6 \times 0.5}{0.16 - (0.5 \times 0.2)} = \frac{3}{0.16 - 0.15} = 50$$

(ii) 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 30

The following information is supplied to you:

	(Rs.)
Total Earnings	2,00,000
No. of equity shares (of Rs. 100 each)	20,000
Dividend paid	1,50,000
Price/ Earnings ratio	12.5

Applying Walter's Model:

(i) ANALYSE whether the company is following an optimal dividend policy.

DIVIDEND DECISIONS

(ii) COMPUTE P/E ratio at which the dividend policy will have no effect on the value of the share.

(iii) Will your decision change, if the P/E ratio is 8 instead of 12.5? ANALYSE.

Solution

(i) The EPS of the firm is Rs. 10 (i.e., Rs. 2,00,000/ 20,000), r = Rs. 2,00,000/ (20,000 shares × Rs. 100) = 10%. The P/E Ratio is given at 12.5 and the cost of capital (Ke) may be taken at the inverse of P/E ratio. Therefore, Ke is 8 (i.e., 1/12.5). The firm is distributing total dividends of Rs. 1,50,000 among 20,000 shares, giving a dividend per share of Rs. 7.50. the value of the share as per Walter's model may be found as follows:

$$P = \frac{D + \frac{r}{K_e}(E - D)}{K_e} = \frac{7.5 + \frac{0.1}{0.08}(10 - 7.5)}{0.08} = \text{Rs. } 132.81$$

The firm has a dividend payout of 75% (i.e., Rs. 1,50,000) out of total earnings of Rs. 2,00,000. Since, the rate of return of the firm (r) is 10% and it is more than the Ke 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:

$$= \frac{0 + \frac{0.1}{0.08}(10 - 0)}{0.08} = \text{Rs. } 156.25$$

So, theoretically the market price of the share can be increased by adopting a zero payout

(ii) The P/E ratio at which the dividend policy will have no effect on the value of the share is such at which the Ke would be equal to the rate of return (r) of the firm. The Ke 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..

(iii) If the P/E is 8 instead of 12.5, then the Ke which is the inverse of P/E ratio, would be 12.5 and in such a situation ke> r and the market price, as per Walter's model would be:

$$= \frac{D + \frac{r}{K_e}(E - D)}{K_e} = \frac{7.5 + \frac{0.1}{0.125}(10 - 7.5)}{0.125} = \text{Rs. } 76$$

Question 31

In the month of May of the current Financial Year, shares of RT Ltd. was sold for Rs. 1,460 per share. A long term earnings growth rate of 7.5% is anticipated. RT Ltd. is expected to pay dividend of Rs. 20 per share.

(i) 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?

(ii) 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?

Solution

.(i)According to Dividend Discount Model approach, the firm's expected or required return on equity is computed as follows:

$$K_e = \frac{D_1}{P_0} + g = \frac{20\,(1 + 0.075)}{1.460} + 7.5\%$$

= 0.0147 +0.075 = 0.0897 or 8.97%

(ii) With rate of return on retained earnings (r) is 10% and retention ratio is 60%, new growth rate will be as follows: g = br = 0.10 × 0.60 = 0.06

Accordingly, dividend will also get changed and to calculate this, first we shall calculate previous retention ratio (b1) 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 = b1 × 0.10

b1 = 0.75 and payout ratio = 0.25

With 0.25 Payout Ratio the EPS will be as follows: $= \frac{\text{Rs. } 20}{0.25} = \text{Rs. } 80$

With new 0.40 (1 – 0.60) payout ratio, the new dividend will be

D1 = Rs. 80 × 0.40 = Rs. 32

Accordingly, new Ke will be

$$K_e = \frac{32}{1{,}460} + 6.0\% \quad \text{or} \quad Ke = 8.19\%$$

Question 32

Following information are given for a company:

Earnings per share	Rs. 10
P/E ratio	12.5
Rate of return on investment	12%
Market price per share as per Walter's Model	Rs. 130

You are required to calculate:

(i) Dividend payout ratio.

(ii) Market price of share at optimum dividend payout ratio.

(iii) P/E ratio, at which the dividend policy will have no effect on the price of share.

(iv) Market price of share at this P/E ratio.

(v) Market price of share using Dividend growth model.

Solution

(i) The EPS of the firm is Rs. 10, r =12%. The P/E Ratio is given at 12.5 and the cost of capital (Ke) may be taken as the inverse of P/E ratio. Therefore, Ke is 8% (i.e., 1/12.5). The value of the share is Rs. 130 which may be equated with Walter Model as follows:

$P = \frac{D + \frac{r}{K_e}(E - D)}{K_e}$ OR $= \frac{D + \frac{12\%}{8\%}(10 - D)}{8\%}$	or [D+1.5(10-D)]/0.08=130 or D+15-1.5D=10.4 or -0.5D=-4.6 So, D = Rs. 9.2

The firm has a dividend pay-out of 92% (i.e., 9.2/10).

(ii) Since the rate of return of the firm (r) is 12% and it is more than the Ke of 8%, therefore, by distributing 92% 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:

$P = \frac{D + \frac{12\%}{8\%}(10 - 0)}{8\%}$	P = Rs. 187.5 So, theoretically the market price of the share can be increased by adopting a zero pay-out.

(iii) The P/E ratio at which the dividend policy will have no effect on the value of the share is such at which the Ke would be equal to the rate of return (r) of the firm. The Ke would be 12% (= r) at the P/E ratio of 1/12%=8.33. Therefore, at the P/E ratio of 8.33, the dividend policy would have no effect on the value of the share.

(iv) If the P/E is 8.33 instead of 12.5, then the Ke which is the inverse of P/E ratio, would be 12% and in such a situation ke= r and the market price, as per Walter's model would be:

$$P = \frac{D + \frac{r}{K_e}(E - D)}{K_e} \quad OR \quad = \frac{9.2 + \frac{0.12}{0.12}(10 - 9.2)}{0.12} = Rs.\ 83.33$$

(v) Dividend Growth Model applying growth on dividend

Ke = 8%, r = 12%, D0 = 9.2, b = 0.08

g = b.r

g = 0.08 x 0.12=0.96%

D1 = D0 (1+g) = 9.2 (1+0.0096) = Rs. 9.2883

$$P = \frac{D_1}{(K_e - g)} = 9.2883 / (0.08 - 0.0096) = 9.2883 / 0.704 = Rs.\ 131.936$$

Alternative

Alternatively, without applying growth on dividend

$$P = \frac{E(1 - b)}{(K_e - br)} = \frac{10\ (1 - 0.08)}{0.08 - (0.08 \times 0.12)} = Rs.\ 130.68$$

Question 33

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 Rs. 5 per unit.

There is a regular production and sales cycle.

Wages and overheads are paid on the 1st of each month for the previous month.

The company normally keeps cash in hand to the extent of Rs. 20,000.

Solution

Working Notes:

1. **Raw material inventory:** The cost of materials for the whole year is 60% of the Sales value.

$$\text{Hence it is } 60{,}000 \text{ units} \times \text{Rs.}5 \times \frac{60}{100} = \text{Rs. } 1{,}80{,}000$$

The monthly consumption of raw material would be Rs. 15,000. Raw material requirements would be for two months; hence raw materials in stock would be Rs. 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).

		(Rs.)
(a)	Raw materials in work-in-process (being one month's raw material 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 ½ of the month's labour costs) $\left(\frac{10\% \text{ of } (60{,}000 \times \text{Rs. } 5)}{12 \text{ Months}} \times 0.5 \text{ Month}\right)$	1,250
(c)	Overheads (For ½ month as explained above) $\left(\frac{20\% \text{ of } (60{,}000 \times \text{Rs. } 5)}{12 \text{ Months}} \times 0.5 \text{ Month}\right)$	2,500
	Total work-in-process	**18,750**

3. Finished goods inventory: (3 month's cost of production)

	(Rs.)
Raw Materials $\left(\frac{60\% \text{ of } (60{,}000 \times \text{Rs. } 5)}{12 \text{ Months}} \times 3 \text{ Months}\right)$	45,000
Labour $\left(\frac{10\% \text{ of } (60{,}000 \times \text{Rs. } 5)}{12 \text{ Months}} \times 3 \text{ Months}\right)$	7,500
Overheads $\left(\frac{20\% \text{ of } (60{,}000 \times \text{Rs. } 5)}{12 \text{ Months}} \times 3 \text{ Months}\right)$	15,000
Total finished goods inventory	67,500
Alternatively, (60,000 units x Rs. 5 x 90%) x 3/12	67,500

4. Debtors: The total cost of sales = 2,70,000

$$\text{Therefore, Debtors} = \text{Rs.}2{,}70{,}000 \times \frac{3}{12} = \text{Rs. } 67{,}500$$

Where, Total Cost of Sales = RM + Wages + Overheads + Opening Finished goods inventory – Closing finished goods inventory.
= Rs. 1,80,000 + Rs. 30,000 + Rs. 60,000 + Rs. 67,500 – Rs. 67,500 = Rs. 2,70,000

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.

$$\left(\frac{60\% \text{ of } (60{,}000 \times \text{Rs. } 5)}{12 \text{ Months}} \times 2 \text{ Months}\right) = \text{Rs. } 30{,}000$$

6. Direct Wages Payable

$$\left(\frac{10\% \text{ of } (60{,}000 \times \text{Rs. } 5)}{12 \text{ Months}} \times 1 \text{ Months}\right) = \text{Rs. } 2{,}500$$

7. Overhead Payable:

$$\left(\frac{20\% \text{ of } (60{,}000 \times \text{Rs. } 5)}{12 \text{ Months}} \times 1 \text{ Months}\right) = \text{Rs. } 5{,}000$$

Here it has been assumed that inventory level is uniform throughout the year, therefore opening inventory equals closing inventory.

Statement of Working Capital Required

	(Rs.)	(Rs.)
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		**166,250**

Question 34

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:

	(Rs.)		(Rs.)
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:-

	(Rs.)		(Rs.)
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 Rs. 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 Rs. 5,000 in July, 2022.

vii) The firm had a cash balance of Rs. 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).

Solution

Workings:

Collection from debtors

(Amount in Rs.)

	Feb	March	April	May	June	July	Aug	Sept
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:								
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 Rs.)

	April	May	June	July	Aug	Sept
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 35

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:

			Rs. 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
Tax due			320
Plant			800

Budgeted Profit Statement:	Rs. in '000		
	January	February	March
Sales	2,100	1,800	1,700
Cost of goods sold	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	Rs. in '000		
	31st Jan.	28th Feb.	31st March
Sales	700	—	200
Debtors	2,600	2,500	2,350
Stock	1,200	1,100	1,000

Trade Creditors	2,000	1,950	1,900
Trade Debtors	200	200	200
Dividends payable	485	—	—
Tax due	320	320	320
Plant (depreciation ignored)	800	1,600	1,550

Budgeted balances at the end of each months	Rs. in '000		
	31st Jan.	28th Feb.	31st March
Sales	700	—	200
Debtors	2,600	2,500	2,350
Stock	1,200	1,100	1,000
Trade Creditors	2,000	1,950	1,900
Trade Debtors	200	200	200
Dividends payable	485	—	—
Tax due	320	320	320
Plant (depreciation ignored)	800	1,600	1,550

Depreciation amount to Rs. 60,000 is included in the budgeted expenditure for each month.

Solution

WORKING

	Rs. in '000		
	Jan.	Feb.	March
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
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

CASH BUDGET

(a) 3 months ending 31st March, 2022

			Rs. in '000
	Jan. 2022	Feb. 2022	Mar. 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	1,965
Closing cash balance (A-B)	315	65	290

(b) Statement of Sources & uses of Funds for the 3 month period ending 31st March, 2022

	Rs. '000	Rs. '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

	Jan' 22	March,22	Increase	Decrease
	Rs.' 000	Rs.' 000	Rs.' 000	Rs.' 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:				
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

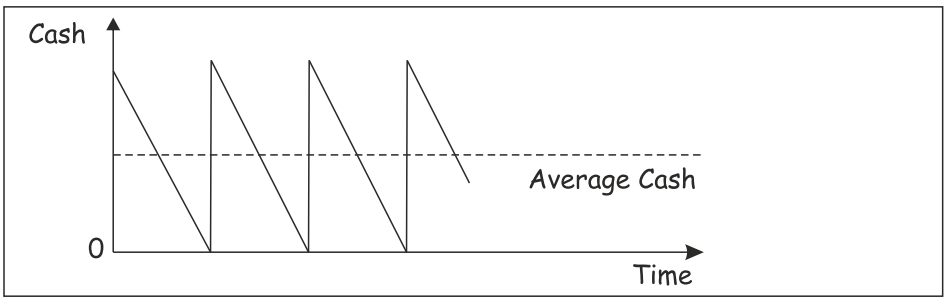
Question 36

A firm maintains a separate account for cash disbursement. Total disbursement are Rs.1,05,000 per month or Rs. 12,60,000 per year. Administrative and transaction cost of transferring cash to disbursement account is Rs. 20 per transfer. Marketable securities yield is 8% per annum.

DETERMINE the optimum cash balance according to William J. Baumol model.

Solution

$$\text{The Optimum Cash Balance } C = \sqrt{\frac{2 \times \text{Rs. } 12{,}60{,}000 \ \text{Rs.}20}{0.08}} = \text{Rs. } 25{,}100$$



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 37

A trader whose current sales are in the region of Rs. 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	Rs. 30,000	1.5%
B	20 days	Rs. 48,000	2%
C	30 days	Rs. 75,000	3%
D	45 days	Rs. 90,000	4%

The selling price per unit is Rs. 3. Average cost per unit is Rs. 2.25 and variable costs per unit are Rs. 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?

Solution

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 Costother 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) should be adopted since the net benefits under this policy are higher as compared to other policies.

Working Notes:

(i) Calculation of Fixed Cost = [Average Cost p.u. – Variable Cost p.u.] × No. of Units sold
= [Rs. 2.25 - Rs. 2.00] × (Rs. 6,00,000/3)
= Rs. 0.25 × 2,00,000 = Rs. 50,000

(ii) Calculation of Opportunity Cost of Average Investments

$$\text{Opportunity Cost} = \text{Total Cost} \times \frac{\text{Collection Period}}{360} \times \frac{\text{Rate of Return}}{100}$$

$$\text{Present Policy} = 4,50,000 \times \frac{30}{360} \times \frac{20}{100} = 7,500$$

$$\text{Policy A} = 4,70,000 \times \frac{40}{360} \times \frac{20}{100} = 10,444$$

$$\text{Policy B} = 4,82,000 \times \frac{50}{360} \times \frac{20}{100} = 13,389$$

$$\text{Policy C} = 5,00,000 \times \frac{60}{360} \times \frac{20}{100} = 16,667$$

$$\text{Policy D} = 5{,}10{,}000 \times \frac{75}{360} \times \frac{20}{100} = 21{,}250$$

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 × 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 × 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.**

$$\text{Expected Rate of Return} = \frac{\text{Incremental Expected Profit}}{\text{Incremental Investment in Receivables}} \times 100$$

$$\text{Policy A} = \frac{\text{Rs. } 6{,}550}{\text{Rs. } 14{,}772} \times 100 = 44.49\%$$

$$\text{Policy B} = \frac{\text{Rs. } 9{,}040}{\text{Rs. } 29{,}444} \times 100 = 30.70\%$$

$$\text{Policy C} = \frac{\text{Rs. } 10{,}750}{\text{Rs. } 45{,}833} \times 100 = 23.45\%$$

$$\text{Policy D} = \frac{\text{Rs. } 8{,}400}{\text{Rs. } 68{,}750} \times 100 = 12.22\%$$

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 38

Mosaic Limited has current sales of Rs. 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 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)

Solution

New level of sales will be 15,00,000 x 1.15 = Rs. 17,25,000

Variable costs are 80% x 75% = 60% of sales

Contribution from sales is therefore 40% of sales

Particulars	Rs.	Rs.
Proposed investment in debtors = Variable Cost + Fixed Cost* = (17,25,000 × 60%) + (15,00,000 × 15%) $= (\text{Rs. } 10{,}35{,}000 + 2{,}25{,}000) \times \frac{60}{360}$		2,10,000
Current investment in debtors = [(15,00,000 x 60%) $[(15{,}00{,}000 \times 60\%) + (\text{Rs. } 15{,}00{,}000 \times 15\%)] \times \frac{30}{360}$		93,750

Increase in investment in debtors		1,16,250
Increase in contribution = 15% x 15,00,000 x 40%		90,000
New level of bad debts = (17,25,000 x 4%)	69,000	
Current level of bad debts (15,00,000 × 1%)	15,000	
Increase in bad debts		(54,000)
Additional financing costs = 1,16,250 x 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.

Question 39

PQ Ltd., a company newly commencing business in 2021-22 has the following projected Profit and Loss Account:

Particulars		**Rs.**	**Rs.**
Sales			2,10,000
Cost of goods sold			1,53,000
Gross Profit			**57,000**
Administrative Expenses		14,000	
Selling Expenses		13,000	27,000
Profit before tax			**30,000**
Provision for taxation			10,000
Profit after tax			**20,000**
The cost of goods sold has been arrived at as under:			
Materials used	84,000		
Wages and manufacturing Expenses	62,500		
Depreciation	23,500	1,70,000	
Less: Stock of Finished goods (10% of goods produced not yet sold)		17,000	
		1,53,000	

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 Rs. 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.

Solution

Statement showing the requirements of Working Capital

Particulars	Rs.	Rs.
A. Current Assets:		
Inventory:		
Stock of Raw material (Rs. 96,600 × 2/12)	16,100	
Stock of Work-in-progress (As per Working Note)	16,350	
Stock of Finished goods (Rs. 1,46,500 × 10/100)	14,650	
Receivables (Debtors) (Rs.1,27,080 × 2/12)	21,180	
Cash in Hand	8,000	
Prepaid Expenses:		
Wages & Mfg. Expenses (Rs. 66,250 × 1/12)	5,521	
Administrative expenses (Rs. 14,000 × 1/12)	1,167	
Selling & Distribution Expenses (Rs.13,000 × 1/12)	1,083	
Advance taxes paid {(70% of Rs.10,000) × 3/12}	1,750	
Gross Working Capital	85,801	85,801
B. Current Liabilities:		
Payables for Raw materials (Rs.1,12,700 × 1.5/12)	14,088	
Provision for Taxation (Net of Advance Tax) (Rs.10,000 × 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	Rs.
Raw Material (Rs. 84,000 × 15%)	12,600
Wages & Mfg. Expenses (Rs. 62,500 × 15% × 40%)	3,750
Total	**16,350**

ii) Calculation of Stock of Finished Goods and Cost of Sales

Particulars	Rs.
Direct material Cost [Rs. 84,000 + Rs. 12,600]	96,600
Wages & Mfg. Expenses [Rs.62,500 + Rs. 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	Rs.
Raw material consumed	96,600
Add: Closing Stock	16,100
Less: Opening Stock	—
Purchases	1,12,700

Question 40

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 (Rs.in '000)	Assets	Amount (Rs.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 Rs. 1,50,000 in January, Rs. 2,00,000 in February, and Rs. 1,60,000 in March. Selling, administrative, taxes, and other cash expenses are expected to be Rs. 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	(Rs.)	Month	(Rs.)	Month	(Rs.)
November	500	January	600	March	650
December	600	February	1,000	April	750

On the basis of this information:

(a) PREPARE a cash budget and DETERMINE the amount of additional bank borrowings necessary to maintain a cash balance of Rs. 50,000 at all times for the months of January, February, and March.

(b) PREPARE a pro forma balance sheet for March 31.

Solution

(a) **Cash Budget** (in thousands)

Month	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
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.(Rs.)	Feb.(Rs.)	Mar.(Rs.)
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 (Rs.in '000)	Assets	Amount (Rs.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 x 0.8 + Sales in February x 0.1
= Rs. 650 x 0.8 + Rs. 1,000 x 0.1 = Rs. 620

Inventories = Rs. 545 + Total purchases from January to March - Total sales from **January to March x 0.6**
= Rs. 545 + (Rs. 600 + Rs. 390 + Rs. 450) - (Rs. 600 + Rs. 1000 + Rs. 650) x 0.6
= Rs. 635

Accounts payable = Purchases in March = Rs. 450

Retained earnings = Rs. 1,439 + Sales – Payment for purchases – Labour costs and – Other expenses, all for January to March
= Rs. 1,439 + (Rs. 600 + Rs. 1000 + Rs. 650) – (Rs. 360 + Rs. 600 + Rs. 390)
– (Rs. 150 + Rs. 200 + Rs. 160) – (Rs. 100 + Rs. 100 + Rs. 100)
= Rs. 1,529

Question 41

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 Rs. 1,00,000 p.a. Production and Selling expenses amount to 80% of sales and the income-tax rate is 50%. The company's minimum required rate of return (after tax) is 25%.
Should the sales manager's proposal be accepted? ANALYSE
Also COMPUTE the degree of risk of non-payment that the company should be willing to assume if the required rate of return (after tax) were (I) 30%, (ii) 40% and (iii) 60%.

Solution

Statement showing the Evaluation of Proposal

Particulars	(Rs.)
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

$$\text{Opportunity Cost} = \text{Total Cost of Credit Sales} \times \frac{\text{Collection Period}}{12} \times \frac{\text{Required Rate of Return}}{100}$$

$$= \text{Rs. } 80{,}000 \times \frac{1.5}{12} \times \frac{25}{100} = \text{Rs. } 2{,}500$$

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*
	= Rs. 3,000	= Rs. 4,000	= Rs. 6,000

$$\text{Average Debtors} = \text{Total Cost of Credit Sales} \times \frac{\text{Collection Period}}{12} = \text{Rs. } 80{,}000 \times \frac{1.5}{12} = \text{Rs. } 10{,}000$$

Computation of the value and percentage of X in each case is as follows:

Case I
10,000 – 0.5x = 3,000
0.5x = 7,000
x = 7,000/0.5 = Rs. 14,000
Bad Debts as % of sales = Rs. 14,000/Rs.1,00,000 × 100 = 14%

Case II
10,000 – 0.5x = 4,000
0.5x = 6,000
x = 6,000/0.5 = Rs. 12,000
Bad Debts as % of sales = Rs. 12,000/Rs.1,00,000 × 100 = 12%

Case III
10,000 – 0.5x = 6,000
0.5x = 4,000
x = 4,000/0.5 = Rs. 8,000

Bad Debts as % of sales = Rs. 8,000/Rs.1,00,000 × 100 = 8%

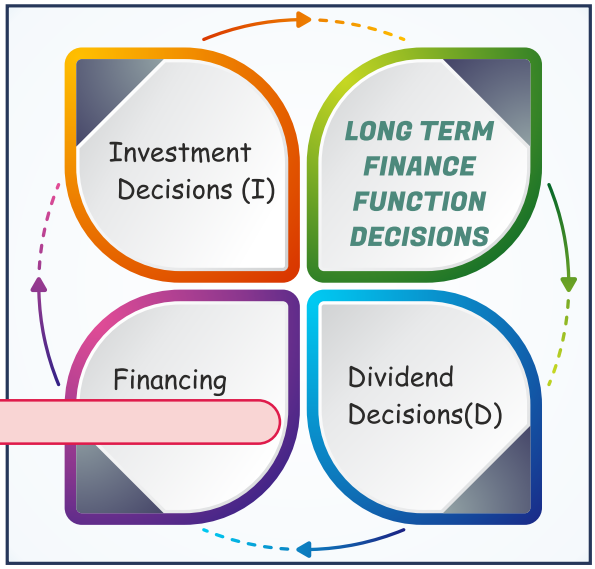
Thus, it is found that the Acceptable Degree of risk of non-payment is 14%, 12% and 8% if required rate of return (after tax) is 30%, 40% and 60% respectively.

Question 42

(a) **Investment decisions (I):** selection of assets in which funds will be invested by a firm.

(b) **Financing decisions (F):** Acquiring the optimum finance to meet financial objectives and seeing that fixed and working capital are effectively managed.

(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 organisation as income for its owners/shareholders.



Question 43

5. IMPORTANCE OF FINANCIAL MANAGEMENT

The best way to demonstrate the importance of good financial management is to describe some of the tasks that it involves:-

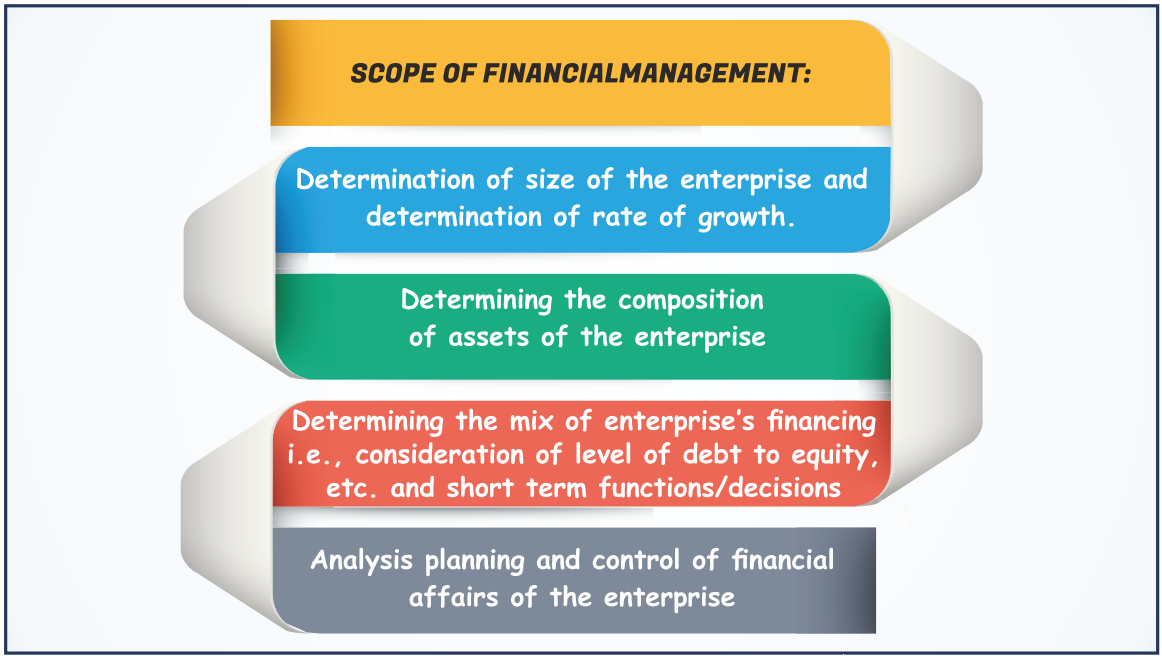
Taking care	***Balancing***	***Ensuring***
Not to over-invest in fixed assets	Cash-outflow with cash-inflows	That there is a sufficient level of short-term working capital

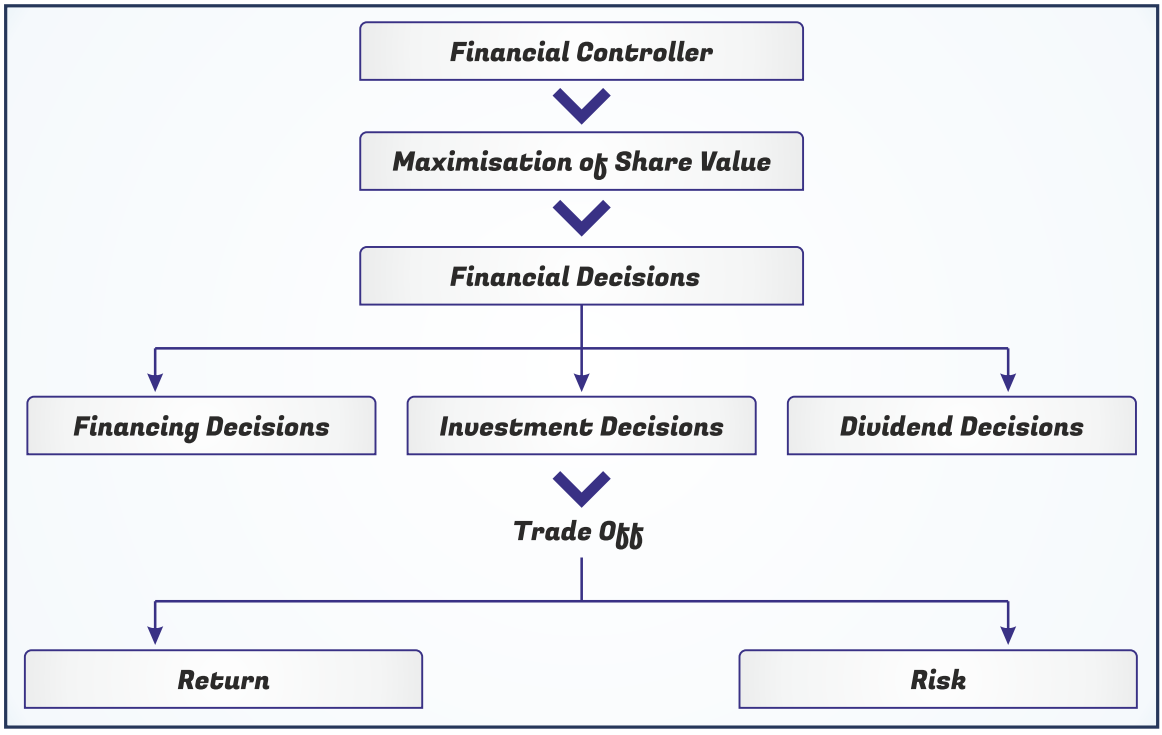
Increasing	***Setting***	***Tax planning***
Gross profit by setting correct pricing for products/ services	sales revenue targets that will deliver growth	that will minimize the taxes a business has to pay.

Controlling
The level of general and administrative expenses by finding more cost-efficient ways of running the day-to-day business operations, and

Question 44

6. SCOPE OF FINANCIAL MANAGEMENT





Question 45

9.1. ROLE OF FINANCE EXECUTIVE IN TODAY'S WORLD VIS-A-VIS IN THE PAST

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 & accounts receivable	Overseeing the HR function
Travel and entertainment expense management	Strategic planning (sometimes overseeing this function)
—	Regulatory compliance
—	Risk management

Question 46

Difference between Preference Shares and Debentures

Basis of difference	Preference shares	Deben
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.

Question 47

3.3. BOND

Bond is fixed income security created to raise fund. Bonds can be raised through Public Issue and through Private Placement.

Types of Bonds

Based on call, Bonds can be categorized as:

(I) Callable bonds, (ii) Puttable bonds

Callable bonds	*Puttable bonds*
A callable bond has a call option which gives the issuer the right to redeem the bond before maturity at a predetermined price known as the call price (Generally at a premium).	Puttable bonds give the investor a put option (i.e. the right to sell the bond) back to the company before maturity.

Various Bonds with their salient features are as follows:

(I) Foreign Bonds

No.	Name of Bond	Salient Features
1	Foreign Currency Convertible Bond (FCCB)	• This bond comes at a very low rate of interest. • The advantage to the issuer is that the issuer can get foreign currency at a very low cost. • The risk is that in case the bond has to be redeemed on the date of maturity, the issuer has to make the payment and at that time the issuer may not have the money.
2	Plain Vanilla Bond	• The issuer would pay the principal amount along with the interest rate. • This type of bond would not have any options. • This bond can be issued in the form of discounted bond or can be issued in the form of coupon bearing bond.
3	Convertible Floating Rate Notes (FRN)	• A convertible FRN is issued by giving its holder an option to convert it into a longer term debt security with a specified coupon • It protects an investor against falling interest rate • The long- term debt security can be sold in the market and the investor can earn profit • Capital gain is not applicable to FRN
4	Drop Lock Bond	• It is a Floating Rate Note with a normal floating rate • The floating rate bond would be automatically converted into fixed rate bond if interest rate falls below a predetermined level • The new fixed rate stays till the drop lock bond reaches its maturity • The difference between the convertible floating rate note and drop lock bond is that the former is a long option structure and the later one is a short option structure
5	Variable Rate Demand Obligations	• A normal floating rate note with a nominal maturity • The holder of the floating rate note can sell the obligation back to the trustee at par plus accrued interest • It gives the investor an option to exit, so it is more liquid than the normal FRN
6	Yield Curve Note (YCN)	• It is a structured debt security • Yield increases when prevailing interest rate declines • Yield decreases when prevailing interest rate increases • This is used to hedge the interest rate • This works like inverse floater

7	Euro Bond	• Euro bonds are issued or traded in a country using a currency other than the one in which the bond is denominated. This means that the bond uses a certain currency, but operates outside the jurisdiction of the Central Bank that issues that currency. • Eurobonds are issued by multinational corporations, for example, a British company may issue a Eurobond in Germany, denominating it in U.S. dollars • It is important to note that the term has nothing to do with the euro, and the prefix "euro-" is used more generally to refer to deposit outside the jurisdiction of the domestic central bank

(ii) Indian Bonds

No.	Name of Bond	Salient Features
1	Masala Bond	• Masala (means spice) bond is an Indian name used for Rupee denominated bond that Indian corporate borrowers can sell to investors in overseas markets. • These bonds are issued outside India but denominated in Indian Rupees. • NTPC raised Rs. 2,000 crore via masala bonds for its capital expenditure in the year 2016.
2	Municipal Bonds	Municipal bonds are used to finance urban infrastructure are increasingly evident in India. • Ahmedabad Municipal Corporation issued a first historical Municipal Bond in Asia to raise Rs.100 crore from the capital market for part financing a water supply project.
3	government or Treasury Bonds	Government or Treasury bonds are bonds issued by Government of India, Reserve Bank of India, any state Government or any other Government department.

Some other bonds are included in other source of Financing

Question 48

6.1 Types of Lease Contracts

Broadly lease contracts can be divided into following two categories:

(a) Operating Lease (b) Financial Lease

comparison between Financial Lease and Operating Lease

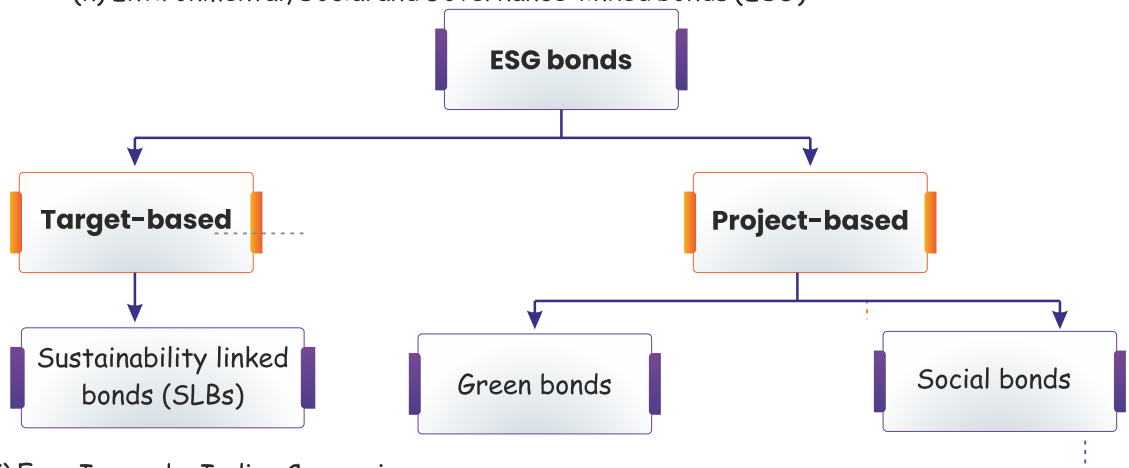
	remains the legal owner of the asset.	ownership belong wholly to the lessor.
2	The lessee bears the risk of obsolescence.	The lessor bears the risk of obsolescence.
3	The lessor is interested in his rentals and not in the asset. He must get his principal back along with interest. Therefore, the lease is non-cancellable by either party.	As the lessor does not have difficulty in leasing the same asset to other willing lessee, the lease is kept cancelable by the lessor.
4	The lessor enters into the transaction only as financier. He does not bear the cost of repairs, maintenance or operations.	Usually, the lessor bears cost of repairs, maintenance or operations.
5	The lease is usually full payout, that is, the single lease repays the cost of the asset together with the interest.	The lease is usually non-payout, since the lessor expects to lease the same asset over and over again to several users.

Question 49

6.5. INTERNATIONAL FINANCING

(1) Commercial Banks
(2) Development Banks
(3) Discounting of Trade Bills
(4) International Agencies
(5) International Capital Markets
(6) Financial Instruments

(a) External Commercial Borrowings (ECB
(b) Euro Bonds
(c) Foreign Bonds
(d) Fully Hedged Bonds
(e) Medium Term Notes (MTN)
(f) Floating Rate Notes (FRN)
(g) Euro Commercial Papers (ECP)
(h) Foreign Currency Option (FC)
(i) Foreign Currency Futures
(j) Foreign Euro Bonds
(k) Euro Convertible Bonds
(l) Euro Convertible Zero Bonds
(m) Euro Bonds with Equity Warrants
(n) Environmental, Social and Governance-linked bonds (ESG)



(7) Euro Issues by Indian Companies

(a) American Depository Receipts (ADRs)
(b) Global Depository Receipts (GDRs)
(c) Indian Depository Receipts (IDRs)

Question 50

6.6. CONTEMPORARY SOURCES OF FUNDING

(1) Crowd funding

(2) Equity funding
(3) Peer-to-Peer (P2P) lending
(4) Start-up funding
(5) Donation-based Crowdfunding