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RATIO ANALYSIS

Ratio analysis is an important means of expressing the relationship between two numbers. Accounting ratios show interrelationships which exist among various accounting data. A financial ratio helps to express the relationship between two accounting figures in such a way that users can draw conclusions about the performance, strengths and weaknesses of a firm.

Advantages of Ratio Analysis

- **Simplicity:** Ratios are simple to calculate. They are generally one number divided by another, such figures that can be taken directly from the accounts (or the attached notes).
- **Liquidity Position:** With the help of ratio analysis conclusions can be drawn regarding the liquidity position of a firm. The liquidity position of a firm would be satisfactory if it is able to meet its current obligations when they become due.
- **Long-term Solvency:** Ratio analysis is equally useful for assessing the long-term financial viability of the firm. This aspect of the financial position of a borrower is of concern to the long-term creditors, security analysts and present and potential owners of a business.
- **Operating Efficiency:** Yet another dimension of the usefulness of the ratio analysis, relevant from the viewpoint of management, is that it throws light on the degree of efficiency in the management and utilization of its assets & Capital employed.
- **Overall Profitability**: The management is constantly concerned about the overall profitability of the enterprise.
- **Inter-firm Comparison:** A single figure of particular ratio is meaningless unless it is related to some standard or norm. One of the popular techniques is to compare the ratios with the industry average.

Limitations of Ratio Analysis

(a) **Diversified product lines:** Many businesses operate a large number of divisions in quite different industries. In such cases, ratios calculated on the basis of aggregate data cannot be used for inter-firm comparisons.

(b) **Financial data are badly distorted by inflation:** Historical cost values may be substantially different from true values. Such distortions of financial data are also carried in the financial ratios.

(c) **Seasonal factors** may also influence financial data.

(d) **To give a good shape to the popularly used financial ratios** (like current ratio, debt- equity ratios, etc.): The business may make some year-end adjustments. Such window dressing can change the character of financial ratios which would be different had there been no such change.

(e) **Differences in accounting policies and accounting period:** It can make the accounting data of two firms non-comparable as also the accounting ratios.

(f) **There is no standard set of ratios** against which a firm's ratios can be compared: Sometimes a firm's ratios are compared with the industry average. But if a firm desires to be above the average, then industry average becomes a low standard. On the other hand, for a below average firm, industry averages become too high a standard to achieve.

USERS OF FINANCIAL ANALYSIS

Shareholders	Investors	Lenders	Creditors	Employees	Regulator / Government
Profitability Ratio EPS, DPS, P/E,Dividend Payout ratio	Profitability Ratios Solvency Ratios Turnover Ratios	Coverage Ratios Solvency Ratios Turnover Ratios Profitability Ratios	Liquidity Ratios Short term solvency Ratios	Liquidity Ratios Long terms solvency Ratios Profitability Ratios Return of investment	Profitability Ratios

PRACTICAL PROBLEMS

BASIC COMPUTATIONS

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Q 1 The following are the summarized Profit & Loss A/C of Hind products Ltd. for the year ending 31st March 2015 and the balance sheet as on that date.

Liabilities	₹	Assets	₹
Share capital 2,000 equity share of ₹100 each	2,00,000	Land and building	1,50,000
Reserves	90,000	Plant and machinery	80,000
Other current liabilities	90,000	Stock in trade	1,49,000
Profit and loss A/C	60,000	Sundry debtors	41,000
Bills payable	40,000	Cash and bank balance	30,000
		Bills receivable	30,000
	4,80,000		**4,80,000**

90k + 60k = 150k (Reserves)

FA → Land and building, Plant and machinery
CA → Stock in trade, Sundry debtors, Cash and bank balance, Bills receivable

Particulars	₹	Particulars	₹
To Opening stock	99,500	By Sales (Credit)	8,50,000
To Purchases	5,45,250	By Closing stock	1,49,000
To Incidental expenses	14,250		
To Gross profit	3,40,000		
	9,99,000		**9,99,000**
To Operating expenses	1,95,000	By Gross profit	3,40,000
To Non operating expenses	4,000	By Non operating income	9,000
To Net Profit	1,50,000		
	3,49,000		**3,49,000**

From the above statements you are required to calculate the following ratios:

(i) Gross profit ratio. → 40% (Ans)
(ii) Net profit ratio. → 17.65% Ans)
(iii) Operating profit ratio. → (17.06%) Ans.
(iv) Operating ratio. / operating cost Ratio → (82.94%) Ans)
(v) Return on capital employed. → 41.43% (Ans)
(vi) Net profit to fixed assets ratio. → 65.22% (Ans)
(vii) Stock turnover ratio. 4.10 times
(viii) Receivable turnover ratio. 10 times
(ix) Creditors' turnover ratio. 6.82 times
(x) Sales to working capital. 7.08 times
(xi) Sales to fixed assets. → ~~7.08 times~~ 3.70 times
(xii) Sales to capital employed. → 2.43 times
(xiii) Return on total resources. → 31.25%
(xiv) Turnover on total assets. → 1.77 times

Additional information:

Average receivables	₹ 85,000
Average payables	₹ 80,000

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Q 2 Andy Company's equity shares are being traded in the market at ₹54 per share with a price-earning ratio of 9. The company's dividend payout is 72 % .It has 1,00,000 equity share of ₹ 10 each and no preference shares .Book value per share is ₹ 42.

Calculate:

(i) Earning per share
(ii) Net Income
(iii) Dividend yield
(iv) Return on equity

▶ Learning objective

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Q 3 The following ratios and information relate to the business at Lakhotia Traders Ltd.

Credit period allowed to debtors	2 months
Stock turnover Ratio	8
Lag in payment to suppliers	1 month
Gross profit Ratio	25% on turnover
Opening stock	₹ 1,05,000

Gross profit for the year ended 31.3.2015 amounted to ₹ 3,00,000.

Find out :

(i) Sales = 1200000 (ii) Sundry debtors = 200000

(iii) Closing stock = 120K (iv) Sundry Creditors = 76250

▶ Learning objective

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Q 4 MNP Ltd. has made plans for the next year 2014-15. It is estimated that the company will employ total assets of ₹ 25,00,000. 30% of the assets being financed by borrowed capital at an interest rate of 9% per year. The direct costs for the year are estimated at ₹ 15,00,000 and all other operating expenses are estimated at ₹ 2,40,000. The sales revenue are estimated at ₹ 22,50,000. Income tax rate is assumed to be 40%.

You are required to calculate:

(i) Net profit margin. (ii) Return on assets.

(iii) Assets turnover. (iv) Return on equity.

▶ Learning objective

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Q 5 Pinto Limited has the following data for projections for the next five years .It has an existing Term Loan of ₹ 360 lakhs repayable over next five years and has got sanctions for new term loan for ₹ 500 lakhs which is also repayable in five years. As a Finance Manager you are required to calculate:

(i) Debt service coverage Ratio and (ii) Interest service coverage ratio for each year

(₹ in lakhs)

Particulars	1	2	3	4	5
Profit after tax	480	575	635	650	685
Depreciation	155	150	140	135	120
Taxation	125	203	254	275	299
Interest on term loans	162	125	87	50	16
Repayments of term loans	178	178	178	178	148

▶ Learning objective

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Q 6 From the information given below calculate the amount of fixed assets and Proprietor's fund.

Ratio of fixed assets to proprietors fund = 0.75

Net working capital = ₹ 6,00,000. FA=18 lacs; Sh fund = 24 lacs

▶ Learning objective

DUPONT ANALYSIS

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Q 7 (i) A company has a operating profit margin of 20% and capital turnover of 3 times. What is the company return on Investment?

(ii) What is return on investment if –

a. Profit margin in increased by 5%?

b. Capital turnover is decreased to 2 times?

c. Profit margin is decreased by 5% and capital turnover is increased to 4 times.

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Q 8

Particulars	1st case	2nd case	3rd case
Return (EBIT)	75,000	80,000	60,000
Sales	3,00,000	3,00,000	3,00,000
Capital Employed	2,00,000	2,25,000	1,75,000

Compute capital turnover ratio, Net operating profit ratio and applying Dupont analysis state the relationship between the two.

PREPARATION OF BALANCE SHEET FROM RATIOS

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Q 9 From the following information of X Engineering Co., complete the Proforma Balance Sheet if its sales are ₹ 16,00,000:

Sales to net worth	2.3 times
Current liabilities to net worth	42%
Total liabilities to net worth	75%
Current ratio	2.9 times
Sales to closing inventory	4.5 times
Average collection period	64 days

Proforma balance sheet

Liabilities	₹	Assets	₹
Net worth	?	Fixed assets	?
Long term liabilities	?	Cash	?
Current liabilities	?	Stock	?
		Sundry debtors	?

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Q 10 The following figures and ratios are related to a company:

(1)	Sales for the year (all credit)	₹ 30,00,000
(2)	Gross Profit ratio	25 percent
(3)	Fixed assets turnover (basis on cost of goods sold)	1.5
(4)	Stock turnover (basis on cost of goods sold)	6
(5)	Liquid ratio	1: 1
(6)	Current ratio	1.5: 1
(7)	Debtors collection period	2 months
(8)	Reserve and surplus to Share capital	0.6: 1
(9)	Fixed assets to net worth	1.20: 1

You are required to prepare Balance Sheet of the company on the basis of above details.

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Q 11

Using the following data complete the balance sheet given below:

Gross profits	₹ 54,000
Shareholder's funds	₹ 6,00,000
Gross profit margin	20%
Credit sales to total sales	80%
Total assets turnover	0.3 times
Inventory turnover	4 times
Average collection period (360 days in a year)	20 days
Current ratio	1.8
Long term debt to equity	40%

Balance Sheet

Creditors	-	Cash	-
Long term debt	-	Debtors	-
Shareholder's funds	-	Inventory	-
		Fixed assets	-

▶ Learning objective

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R1 R2 R3

Q 12

From the following particulars prepare the Balance sheet of Sri Mohan Ram:

Current Ratio	2
Working capital	₹ 4,00,000
Capital Block to current Assets	3:2
Fixed assets to Turnover	1: 3
Sales Cash/Credit	1:2
Creditors velocity	2 Months
Stock velocity	2 months
Debtors velocity	3 months
Capital Block	
Net Profit -	10% of turnover
Reserve -	2 ½ % of turnover
Debenture/share capital -	1: 2
Gross Profit Ratio	25% (of sales)

▶ Learning objective

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R1 R2 R3

Q 13 With the help of the following information, complete the Balance Sheet of XYZ Ltd.

Equity	₹ 1,00,000
Current Debt to Total Debt	0.40
Total Debt to Owner Equity	0.60
Fixed Assets to Owners Equity	0.60
Total Assets Turnover	2 Times
Inventory Turnover	8 Times

▶ Learning objective

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R1 R2 R3

Q 14 Using the following information, complete the Balance Sheet given below:

(i) Total debt to net worth	:	1:2
(ii) Total assets turnover	:	2
(iii) Gross profit on sales	:	30%
(iv) Average collection period (Assume 360 days in a year)	:	40 days
(v) Inventory turnover ratio based on cost of goods sold and year-end inventory	:	3
(vi) Acid test ratio	:	0.75

Balance Sheet
As on March 31, 2015

Liabilities	₹	Assets	₹
Equity Share Capital	4,00,000	Plant and Machinery and other Fixed Assets	425000
Reserves and Surplus	6,00,000	Current Assets:	
Total Debt:		Inventory	700000
Current liabilities	500000	Debtors	33333
		Cash	41667
	1500000		1500000

▶ Learning objective

PREPARATION OF BALANCE SHEET AND P & L ACCOUNT FROM RATIOS

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Q 15 Prepare Balance sheet from the following information:-

	₹
Capital	4,00,000
Working Capital	1,80,000
Bank Overdraft	30,000

There are no fictitious assets. In current assets there are no assets other than stock, debtors and cash.

Closing stock is 20% higher than opening stock.

(i)	Current Ratio – 2.5
(ii)	Quick Ratio – 2 (Quick Asset / Quick Liability)
(iii)	Proprietary Ratio 0.6 (Fixed Assets / Proprietary Fund)
(iv)	Gross Profit Ratio –20% to sales
(v)	Stock velocity –5
(vi)	Debtor's velocity –73 days
(vii)	Assumed 365 days in a year

▶ Learning objective

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R1 R2 R3

Q 16 The following accounting information and financial ratio of PQR Ltd. relate to the year ended 31st December, 2015

I	**Accounting Information:**	
	Gross Profit	15% of sales
	Net profit	8% of sales
	Raw Materials consumed	20% of works cost
	Direct wages	10% of work 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
	Capital to Reserves and surplus	1: 4

If value of fixed assets as on 31st December, 2015 amounted to ₹ 26 Lakhs, prepare a summarized profit and Loss account of the company for the year ended 31st December, 2015 and also the balance sheet as on 31st December 2015.

▶ Learning objective

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R1 R2 R3

Q 17 From the following information and ratios, prepare the Profit and Loss A/c for the year ended 31st March, 2015, and the Balance Sheet as on that date of M/s. Start & Co.

IMP ans

Current Assets to stock	3:2
Current Ratio	3.00
Acid Test Ratio	1.00
Financial Leverage	2.20
Earnings per Share (each of ₹10)	10.00
Book Value per Share (₹)	40.00
Average Collection Period (assume 360 days in the year)	30 days
Stock Turnover Ratio (on sales)	5.00
Fixed Asset / Turnover Ratio	1.20
Total Liabilities to Net Worth	2.75
Net Working Capital	₹ 10 lakhs
Net profit to Sales	10%
Variable Cost	60%
Long Term Loan Interest	12%
Taxation	Nil

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R1 R2 R3

Q 18 Following is the Profit and Loss Account and Balance Sheet of Jai Hind Ltd. Redraft them for the purpose of analysis and calculate the following ratios: (1) Gross Profit Ratio (2) Overall Profitability Ratio (3) Current Ratio (4) Debt-Equity Ratio (5) Stock-Turnover Ratio (6) Finished Goods Turnover Ratio (7) Liquidity Ratio.

Dr.	Profit and Loss A/C for the year ended 31st March, 2022		Cr.
Particulars	**Amount (₹)**	**Particulars**	**Amount (₹)**
Opening stock of finished goods	1,00,000	Sales	10,00,000
Opening stock of raw material	50,000	Closing stock of raw material	1,50,000
Purchase of raw material	3,00,000	Closing stock of finished goods	1,00,000
Direct wages	2,00,000	Profit on sale of shares	50,000
Manufacturing expenses	1,00,000		
Administration expenses	50,000		

Selling & distribution expenses		50,000		
Loss on sale of plant		55,000		
Interest on debentures		10,000		
Net Profit		3,85,000		
Total		**13,00,000**	**Total**	**13,00,000**

Balance Sheet as on 31.3.2022

Liabilities		**Amount (₹)**	**Assets**	**Amount (₹)**
Equity share capital		1,00,000	Fixed assets	2,50,000
Preference share capital		1,00,000	Stock of raw material	1,50,000
Reserves		1,00,000	Stock of finished goods	1,00,000
Debentures		2,00,000	Bank balance	50,000
Sundry creditors		1,00,000	Debtors	1,00,000
Bills payable		50,000		
Total		**6,50,000**	**Total**	**6,50,000**

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Q 19 From the information given below relating to Bad Past Ltd., calculate Altman's Z-score and comment:

(i)	Working Capital to Total Assets	= 25%
(ii)	Retained Earnings to Total Assets	= 30%
(iii)	EBIT to Total Assets	= 15%
(iv)	Market Value of Equity Shares to Book Value of Total Debt	= 150%
(v)	Sales to Total Assets	= 2 times

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Q 20 Following information are available for Navya Ltd. along with various ratios relevant to the particular industry it belongs to. APPRAISE your comments on strength and weakness of Navya Ltd. comparing its ratios with the given industry norms.

Balance Sheet

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

Statement of Profitability
For the year ending 31.3.2021

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

Industry Norms

Ratios	Norm
Current Ratio	2.5
Receivables Turnover Ratio	8.0
Inventory Turnover Ratio (based on Sales)	9.0
Total Assets Turnover Ratio	2.0
Net Profit Ratio	3.5%
Return on Total Assets (on EBIT)	7.0%
Return on Net worth (Based on Net profit)	10.5%
Total Debt/Total Assets	60.0%

Learning objective

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Q 21 The capital structure of Beta Limited is as follows:

Particulars	Amount (₹)
Equity share capital of ₹ 10 each	8,00,000
9% preference share capital of ₹ 10 each	3,00,000
	11,00,000

Additional information: Profit (after tax at 35 per cent) ₹ 2,70,000; Depreciation ₹ 60,000; Equity dividend paid 20 per cent; Market price of equity shares ₹ 40.

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

(a) Dividend yield on the equity shares

(b) Cover for the preference and equity dividends

(c) Earnings per shares

(d) Price-earnings ratio

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Q 22 Gig Ltd. has furnished the following information relating to the year ended 31st March, 2020 and 31st March, 2021:

	31st March, 2020	31st March, 2021
Share Capital	40,00,000	40,00,000
Reserve and Surplus	20,00,000	25,00,000
Long term loan	30,00,000	30,00,000

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

You are required to PREPARE Balance Sheet as on 31st March, 2021 in the following format:

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

▶ Learning objective

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Q 23 The total sales (all credit) of a firm are ₹ 6,40,000. It has a gross profit margin of 15 per cent and a current ratio of 2.5. The firm's current liabilities are ₹ 96,000; inventories ₹ 48,000 and cash ₹ 16,000. (a) Determine the average inventory to be carried by the firm, if an inventory turnover of 5 times is expected? (Assume a 360 day year). (b) Determine the average collection period if the opening balance of debtors is intended to be of ₹ 80,000? (Assume a 360 day year).

SOLUTION

(a) Inventory turnover = $\frac{\text{Cost of goods sold}}{\text{Average inventory}}$

Since gross profit margin is 15 per cent, hence COGS should be 85 per cent of the sales.

Cost of goods sold = 0.85 × ₹ 6,40,000 = ₹ 5,44,000.

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

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

(b) Average collection period = $\frac{\text{Average Receivables}}{\text{Credit Sales}} \times 360 \text{ days}$

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

Closing balance of receivables is found as follows:

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

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

Average Receivables = ₹ 2,56,000 / 2 = 1,28,000

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

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Q 24 Using the following information, complete this balance sheet:

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

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

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

SOLUTION

$$\frac{\text{Long-term debt}}{\text{Net worth}} = 0.5 = \frac{\text{Long-term debt}}{2,00,000}$$

Long-term debt = 1,00,000

Total liabilities and net worth = ₹ 4,00,000

Total assets = ₹ 4,00,000

$$\frac{\text{Sales}}{\text{Total assets}} = 2.5 = \frac{\text{Sales}}{4,00,000} = \text{Sales} = ₹\ 10,00,000$$

Cost of goods sold = (0.9) (₹ 10,00,000) = ₹ 9,00,000

$$\frac{\text{Cost of goods sold}}{\text{Inventory}} = \frac{9,00,000}{\text{Inventory}} = 9 = \text{Inventory} = ₹\ 1,00,000$$

$$\frac{\text{Receivables} \times 360}{10,00,000} = 18 \text{ days}$$

Receivables = ₹ 50,000

$$\frac{\text{Cash} + 50,000}{1,00,000} = 1$$

Cash = ₹ 50,000

Plant and equipment = ₹ 2,00,000

Balance Sheet

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

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Q 25 From the following information, prepare a summarised Balance Sheet as at 31st March, 2002:

Net Working Capital	₹ 2,40,000
Bank overdraft	₹ 40,000
Fixed Assets to Proprietary ratio	0.75
Reserves and Surplus	₹ 1,60,000
Current ratio	2.5
Liquid ratio (Quick Ratio)	1.5

SOLUTION

Working notes:

1. Current assets and Current liabilities computation:

$$\frac{\text{Current assets}}{\text{Current liabilities}} = \frac{25}{1}$$

Or Current assets = 2.5 Current liabilities

Now, Working capital = Current assets -Current liabilities

Or ₹ 2,40,000 = 2.5 Current liability - Current liability

Or 1.5 Current liability = ₹ 2,40,000

□ Current liabilities = ₹ 1,60,000

So, Current assets = ₹ 1,60,000 □ 2.5 = 4,00,000

2. Computation of stock

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

$$\text{Or } 1.5 = \frac{\text{Current assets} - \text{Inventories}}{₹\ 1,60,000}$$

Or 1.5 × 1, 60,000 = ₹ 4,00,000 □ Inventories

Or Inventories = ₹ 4, 00,000 – ₹ 2, 40,000

Or Stock = ₹ 1, 60,000

3. Computation of Proprietary fund; Fixed assets; Capital and Sundry creditors

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

Fixed Asset = 0.75 Proprietary fund (PF) [FA + NWC = PF or NWC = PF- FA (i.e. .75 PF)]

and Net working capital (NWC) = 0.25 Proprietary fund

Or ₹ 2,40,000/0.25 = Proprietary fund

Or Proprietary fund = 9,60,000

And Fixed assets = 0.75 proprietary fund

= 0.75 □ ₹ 9,60,000

= ₹ 7,20,000

Capital = Proprietary fund - Reserves & Surplus

= 9,60,000- 1,60,000 = 8,00,000

Sundry creditors = (Current liabilities □ Bank overdraft)

= (₹ 1,60,000- ₹ 40,000) = ₹ 1,20,000

Balance Sheet

Liabilities	(₹)	Assets	(₹)
Capital	8,00,000	Fixed assets	7,20,000
Reserves & Surplus	1,60,000	Stock	1,60,000
Bank overdraft	40,000	Current assets	2,40,000
Sundry creditors	1,20,000		
	11,20,000		11,20,000

▶ Learning objective

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Q 26 The following accounting information and financial ratios of M Limited relate to the year ended 31st March, 2016 :

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

Total sales ₹ 30,00,000; cash sales 25% of credit sales; cash purchases ₹ 2,30,000; working capital ₹ 2,80,000; closing inventory is ₹ 80,000 more than opening inventory.

You are required to calculate:

(i) Average Inventory
(ii) Purchases
(iii) Average Debtors
(iv) Average Creditors
(v) Average Payment Period
(vi) Average Collection Period
(vii) Current Assets
(viii) Current Liabilities

Answer

(i) Computation of Average Inventory

Gross Profit = 25% of ₹ 30, 00,000 = ₹ 7,50,000

Cost of goods sold (COGS) = Sales - Gross Profit = ₹ 30,00,000 – ₹ 7,50,000
= ₹ 22,50,000

$$\text{Inventory Turnover Ratio} = \frac{\text{COGS}}{\text{Average Inventory}}$$

$$6 = \frac{22,50,000}{\text{Average Inventory}}$$

Average Inventory = ₹ 3,75,000

(ii) Computation of Purchases

Purchases = COGS + (Closing Stock – Opening Stock) = ₹ 22,50,000 + 80,000*

Purchases = ₹ 23,30,000

* Increase in Stock = Closing Stock – Opening Stock = ₹ 80,000

(iii) Computation of Average Debtors

Let Credit Sales be ₹ 100, Cash sales = $\frac{25}{100} \times 100 = ₹ 25$

Total Sales = 100 + 25 = ₹ 125

Total Sales is ₹ 125 credit sales is ₹ 100

If total sales is ₹ 30,00,000 then credit sales is = $\frac{₹ 30,00,000 \times 100}{125}$

Credit Sales = ₹ 24,00,000

Cash Sales = (₹ 30,00,000 – ₹ 24,00,000) = ₹ 6,00,000

$$\text{Debtors Turnover Ratio} = \frac{\text{Net Credit Sales}}{\text{Average debtors}} = 8 = \frac{₹ 24,00,000}{\text{Average debtors}} = 8$$

$$\text{Average Debtors} = \frac{₹ 24,00,000}{8}$$

Average Debtors = ₹ 3,00,000

(iv) Computation of Average Creditors

Credit Purchases = Purchases – Cash Purchases

= ₹ 23,30,000 – ₹ 2,30,000 = ₹ 21,00,000

$$\text{Creditors Turnover Ratio} = \frac{\text{Credit Purchases}}{\text{Average Creditors}}$$

$$10 = \frac{₹ 21,00,000}{\text{Average Creditors}}$$

Average Creditors = ₹ 2,10,000

(v) Computation of Average Payment Period

$$\text{Average Payment Period} = \frac{\text{Average Creditors}}{\text{Average Daily Credit Purchases}}$$

$$= \frac{₹ 2,10,000}{\left(\frac{\text{Credit Purchases}}{365}\right)} = \frac{₹ 2,10,000}{\left(\frac{₹ 2,10,000}{365}\right)}$$

$$= \frac{₹ 2,10,000}{₹ 2,10,000} \times 365 * = 36.5 \text{ days}$$

(vi) Computation of Average Collection Period

$$\text{Average Collection Period} = \frac{\text{Average Debtors}}{\text{Net Credit Sales}} \times 365^* = \frac{₹\ 3,00,000}{₹\ 24,00,000} \times 365 = 45.625 \text{ days}$$

Alternatively

$$\text{Average collection Period} = \frac{365^*}{\text{Debtors Turnover Ratio}}$$

$$= \frac{365^*}{8} = 45.625 \text{ days}$$

* 1 year is taken as 365 days.

(vii) Computation of Current Assets

$$\text{Current Ratio} = \frac{\text{Current Assets (CA)}}{\text{Current Liabilities (CL)}} = 2.4$$

2.4 Current Liabilities = Current Assets or CL = CA/2.4

Further, Working capital = Current Assets – Current liabilities

So, ₹ 2,80,000 = CA-CA/2.4

₹ 2,80,000 = 1.4 CA/2.4 Or, 1.4 CA = ₹ 16,72,000

CA = ₹ 4,80,000

(viii) Computation of Current Liabilities

$$\text{Current Liabilities} = \frac{4,80,000}{2.4} = ₹\ 2,00,000$$

▶ Learning objective

ADDITIONAL QUESTIONS

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Q 27 Presently, the current assets and current liabilities of a company are ₹ 16 lakh and ₹ 8 lakh respectively. Calculate the effect of each of the following transactions individually and totally on the current ratio of the company.

(i) Cash purchase of new machinery for ₹ 5 lakh.

(ii) Purchase of new machinery for ₹ 10 lakh on a medium-term loan from the bank, with 20% margin.

(iii) Payment of dividend of ₹ 2 lakh.

(iv) Receipt of a shipment of new materials at landed cost of ₹ 5 lakh, against which the bank finance obtained, is ₹ 3 lakh.

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Q 28 You have been furnished with the financial information of Aditya Mills Ltd for the current year.

Balance sheet, March 31, current year				
Liabilities	**Amount (₹ thousand)**	**Assets**		**Amount (₹ thousand)**
Equity share capital (₹ 100 each)	1,000	Plant and equipment		640
Retained earnings	368	Land and buildings		80
Sundry creditors	104	Cash		160
Bills payable	200	Sundry debtors	360	
Other current liabilities	20	Less: Allowances / P.B.D.D	40	320
		Stock		480
		Prepaid insurance		12
	1,692			**1,692**

Statement of profit year ended March 31, current year	
Liabilities	**Amount (₹ thousand)**
Sales	4,000
Less: Cost of goods sold	3,080
Gross profit on sales	920
Less: Operating expenses	680
~~Net profit~~ Operating profit / EBIT / EBT	240
Less: Taxes (0.35)	84
Net profit after taxes / EAT / EAFCSH	156

Sundry debtors and stock at the beginning of the year were ₹ 3,00,000 and ₹ 4,00,000 respectively.

Determine the following ratios of the Aditya Mills Ltd: (i) Current ratio, (ii) Acid-test ratio, (iii) Stock turnover, (iv) Debtors turnover, (v) Gross profit ratio, (vi) Net profit ratio, (vii) Operating ratio, (viii) Earnings per share, (ix) Rate of return on equity capital, and (x) Market value of the shares if P/E ratio is 10 times.

Indicate for each of the following transactions whether the transaction would improve, weaken or have an effect on the current ratio of the Aditya Mills Ltd: (i) Sell additional equity shares, (ii) Sell 10% debentures, (iii) Pay bills payable, (iv) Collect sundry debtors, (v) Purchase additional plant, (vi) Issuing bills payable to creditors, (vii) Collecting bills receivable from debtors, (viii) Purchase of treasury bills, and (ix) Writing off bad debt.

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Q 29

The following is the summary of the financial ratios of a company relating to its liquidity position:

	Year 1	Year 2	Year 3	
Current ratio	2	2.13	2.28	Acha hai
Acid test ratio	1.20	1.10	0.90	Ye kharab hai
Debtors turnover	10	8	7	Ye kharab hai
Stock turnover	6	5	4	Ye " "

The current ratio is increasing, while the acid-test ratio is decreasing. Explain the contributing factor(s) for this apparently divergent trend.

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Q 30

Below are selected ratios for two companies in the same industry, along with industry average:

	A	B	Industry
Current ratio	221	561	241
Acid-test ratio	121	301	131
Debt-asset ratio	36	5	35
Operating expenses ratio	18	17.5	20
Number of times interest earned	6	12	5
Stock turnover	8.5	6.5	7.0
Debtors' turnover	11.0	15.0	11.4
Rate of return on total assets	17	10	13.5

Can we say on the basis of above ratios and information that company B is better than company A because its ratios are better in six out of eight areas (all except stock turnover and rate of return on total assets)? The company B is better than the industry average in the same six categories.

CAPITAL BUDGETING

The term Capital Budgeting refers to decisions relating to proposed long-term capital outlays. The capital budgeting decisions are important, crucial and critical business decisions due to following reasons:

1. **Substantial expenditure:** To invest in a project, a substantial capital investment is required. Due to huge capital investments, it is necessary for an entity to make such decisions after a thorough study and planning.
2. **Long time period:** The capital budgeting decision has its effect over a long period of time. These decisions not only affect the future benefits and costs of the firm but also influence the growth of the firm.
3. **Irreversibility:** Once the decision is implemented it is very difficult to reverse the decision.
4. **Complex decision:** The capital investment decision involves future events which is difficult to predict. Further it is quite difficult to estimate in quantitative terms all the benefits or the costs.

CAPITAL BUDGETING PROCESS

1. **Planning:** The capital budgeting process begins with the identification of investment opportunities. Then the effect on the firm's fortunes is assessed. Opportunities having little merit are rejected and promising opportunities are advanced to the evaluation phase.
2. **Evaluation:** This phase involves the determination of inflows and outlaws. Investment techniques, ranging from the simple payback method and accounting rate of return to the more sophisticated discounted cash flow techniques, are used to appraise the proposals.
3. **Selection:** Considering the returns and risks associated with the individual projects as well as the cost of capital to the organisation, the organisation will choose among projects so as to maximise shareholders' wealth.
4. **Implementation:** When the final selection has been made, the firm must acquire the necessary funds, purchase the assets, and begin the implementation of the project.
5. **Control:** The progress of the project is monitored with the aid of feedback reports.
6. **Review:** The review may produce ideas for new proposals to be undertaken in the future.

RELEVANCE OF COST

Opportunity Cost: Alternative cash inflow foregone due to acceptance of any project should be considered as opportunity cost and should be included in our analysis.

Modified Internal Rate of Return

One of the points advanced in favour of the IRR approach is that IRR is expressed as a percentage and decision makers may prefer to think in percentage terms. But IRR has also been criticized on the grounds that it is a percentage that contains the implicit assumption that returns are invested at a rate equal to the IRR. There has been much discussion about this point. It may not be possible for a firm to reinvest intermediate cash flows at a rate of return equal to the project's internal rate of return. The analysts favouring the use of IRR but concerned about the impact of the reinvestment debate have provided a modified device, also consistent with NPV, which circumvents any reinvestment worries. This is called the modified internal rate of return (MIRR) or the terminal rate of return. Under this method, all cash flows, apart from the initial investment, are brought to the terminal value using an appropriate discount rate (the cost of capital). This results in a single stream of cash inflow in the terminal year. The MIRR is obtained by assuming a single outflow in the zeroth year and the terminal cash inflow as mentioned above. The discount rate which equates the present value of the terminal cash inflow to the zeroth year outflow is called the MIRR.

PRACTICAL PROBLEMS

BASIC PROBLEMS – NPV, PI, PAY BACK, DISCOUNTED PAYBACK, IRR, ARR

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Q 1 XYZ Ltd. is a manufacturer of high quality running shoes. Devang, President, is considering computerizing the company's ordering, inventory and billing procedures. He estimate that the annual saving from computerization include a reduction of 10 clerical employees with annual salaries of ₹ 15,000 each, ₹ 8,000 from reduce production delays caused by raw materials inventory problems, ₹ 12,000 from lost sales due to inventory stock out and ₹ 3,000 associated with timely billing procedures.

The purchase price of the system is ₹ 2,00,000 and installation costs are ₹ 50,000. These outlays will be capitalized (depreciated on a straight- line to a zero book salvage value, which is also its market value at the end of 5 years). Operation of the new system requires two computers specialist with annual salaries of ₹ 40,000 per person. Also annual maintenance and operating expenses of ₹ 12,000 are estimated to be required. The company's tax rate is 40% and its required rate of return (cost of capital) for this project is 12%. You are required to:

(i) Find the project's initial net cash outlay

(ii) Find the project's operating and terminal value cash flows over its 5- years life

(iii) Evaluate the project using NPV method

(iv) Evaluate the project's using PI method

(v) Calculate the project's payback period

(vi) Find the project's cash flows and NPV assuming that the system can be sold for ₹ 25,000 at the end of five years even though the book salvage value will be zero, and

(vii) Find the project's cash flows and NPV assuming that the book salvage value for depreciation purposes is ₹ 20,000 even though the machine is worthless in term of its resale value.

▶ Learning objective

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Q 2 A company is contemplating to purchase a machine. The machine A and B are available each costing ₹ 5 lakhs. In comparing the profitability of machines, a discounting rate of 10% is to be used and machine is to be written off in 5 years by straight line method of depreciation with nil residual value. Earning after taxation but before depreciation or cash inflow after tax are expected as follows:

Year	Machine A (₹ In lakhs)	Machine B (₹ In lakhs)
1	1.5	0.5
2	2.0	1.5
3	2.5	2.0
4	1.5	3.0
5	1.0	2.0

Indicate which machine would be profitable using the following methods of ranking investment proposal:

(i) Pay back method:

(ii) Net present value method:

(iii) Profitability index method: and

(iv) Average rate of return method,

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Q 3 A company has to make a choice between two project namely A and B. The initial capital outlay of two project are ₹ 1,35,000 and ₹ 2,40,000 respectively for A and B. There will be no scrap value at the end of the life of the both the projects. The opportunity cost of capital of the company is 16%. The annual cash inflows are as under:

Year	Project A	Project B	Discounting factor @ 16%
1	--------	60,000	0.862
2	30,000	84,000	0.743
3	1,32,000	96,000	0.641
4	84,000	1,02,000	0.552
5	84,000	90,000	0.476

You are required to calculate for each project:

(i) Profitability index

(ii) Net present value

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Q 4 A hospital is considering to purchases a diagnostic machine costing ₹ 80,000, the projected life of the machine is 8 years and has an expected salvage value of ₹ 6,000 at the end of 8 years. The annual operating cost of the machine is ₹ 7,500. It is expected to generate revenues of 40,000 per year for eight years. Presently, the hospital is outsourcing the diagnostic work and earning commission income of ₹ 12,000 per annum, net of taxes. Tax Rate - 30%, DRR - 10%.

Required: Whether it would be profitable for the hospital to purchases the machine? Give your recommendation under:

(1) Net present value method

(2) Profitability index method.

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Q 5 Consider the following mutually exclusive projects:

	Cash flows ₹				
Projects	C_0	C_1	C_2	C_3	C_4
A	-10,000	6,000	2,000	2,000	12,000
B	-10,000	2,500	2,500	5,000	7,500
C	-3,500	1,500	2,500	500	5,000
D	-3,000	0	0	3,000	6,000

Required:

(1) Calculate the payback period for each project.

(2) If the standard payback period is 2 years, which project will you select? Will your answer differ, if standard payback period is 3 years.

(3) If the cost of capital is 10%, compute the discounted payback period for each project. Which project will you recommend, if standard discounted payback period is 1) 2 year; 2) 3 years?

(4) Compute NPV of each project. Which project will you recommend on the NPV criterion? The cost of capital is 10%. What will be appropriate choice criteria in this case? The PV factor at 10% are:

Year	1	2	3	4
PV factor are 10%	0.9091	0.8264	0.7513	0.6830

▶ Learning objective

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₹1 ₹2 ₹3

Q 6

A company is considering the following investment projects:

Cash flows ₹

Projects	C_0	C_1	C_2	C_3
A	(-10,000)	+ 10,000		
B	(-10,000)	+ 7,500	+ 7,500	
C	(-10,000)	+ 2,000	+ 4,000	+ 12,000
D	(-10,000)	+ 10,000	+ 3,000	+ 3,000

(i) Rank the projects according to each of the following methods: (1) Payback, (2) ARR, (3) NPV, assuming discount rates of 10 and 30 percent.

(ii) Assuming the projects are independent which one should be accepted? If the projects are mutually exclusive, which project is the best?

Learning objective

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₹1 ₹2 ₹3

Q 7

Given below are the data on a capital project M:

Annual cost saving	60,000
Useful life	4 years
Internal rate of return	15%
Profitability index	1.064
Salvage value	0

You are required to calculate for this project M:

(i) Cost of project
(ii) Payback period
(iii) Cost of capital
(iv) Net present value.

Given the following table of discount factors:

Discount factor	15%	14%	13%	12%
1 year	0.869	0.877	0.885	0.893
2 years	0.756	0.769	0.783	0.797
3 years	0.658	0.675	0.693	0.712
4 years	0.572	0.592	0.613	0.635
Total	2.855	2.913	2.974	3.038

Learning objective

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Q 8 The management of Urmila Ltd.is considering an investment project costing ₹ 1,50,000 and it will have a scrap value of ₹ 10,000 at the end of its 5 years life. Transportation charges and installation charges are expected to be ₹ 5,000 and ₹ 25,000 respectively. If the project is accepted, a spare part inventory of ₹ 10,000 must also be maintained. It is estimated that the spare parts will have an estimated scrap value of 60% of their initial cost after 5 years. Annual revenue from the project is expected to be ₹ 1,70,000 and annual labour, material and maintenance expenses are estimated to be ₹ 15,000, ₹ 50,000 and ₹5,000 respectively. The depreciation and taxes for five years will be:

Year	Depreciation (₹)	Tax (₹)
1	72,000	11,200
2	43,200	22,720
3	32,400	27,040
4	21,600	31,360
5	800	39,680

(i) Calculate the cost of the project and scrap value of the following after 5 years.

(ii) Evaluate the project at 12% rate of interest.

▶ Learning objective

EVALUATION OF MACHINE WITH UNEQUAL LIFE

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Q 9 The management of P Limited is considering selecting a machine out of the two mutually exclusive machines. The company's cost of capital is 12 percent and corporate tax rate for the company is 30 percent. Details of the machines are as follows:

	Machine-1	Machine-2
Cost of machine	₹ 10,00,000	₹ 15,00,000
Expected life	5 years	6 years
Annual income before tax and depreciation	₹ 3,45,000	₹ 4,55,000

Depreciation is to be charged on straight line basis

You are required to:

(i) Calculate the discounted pay-back period and net present value for each machine.

(ii) Advise the management of P Limited as to which machine they should take up.

Year	1	2	3	4	5	6
At 12%	.893	.797	.712	.636	.567	.507

▶ Learning objective

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Q 10 A company has to make a choice between two machines X and Y. The two machines are designed differently, but have identical capacity and do exactly the same job. Machine X costs ₹ 550000 and will last for three years. It costs ₹ 125000 per year to run. Machine Y is an economy model costing ₹ 400000, but will last for two years and costs ₹ 150000 per year to run. These are real cash flows. The costs are forecasted in Rupees of constant purchasing power. Opportunity cost of capital is 12%. Ignore taxes. Which machine company should buy?

▶ Learning objective

DECISION MAKING – REPLACEMENT OF MACHINERY

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R1 R2 R3

Q 11 P Ltd. has a machine having an additional life of 5 years, which costs ₹ 10,00,000 and has a book value of ₹ 400,000. A new machine costing ₹ 20,00,000 is available. Though its capacity is the same as that of the old machine, it will mean a saving in variable costs to the extent of ₹ 700,000 per annum. The life of the machine will be 5 years at the end of which it will have a scrap value of ₹ 200,000. The rate of income tax is 46% and P Ltd. policy is not make an investment if the yield is less than 12% per annum. The old machine if sold today will realize ₹ 100,000, it will have no salvage value if sold at the end of 5th year. Advise P Ltd., whether or not the old machine should be replaced.

(Present value of Re 1 receivable at the end of 5 years at 12% per annum = 0.567). Capital gain is tax-free. Ignore income tax saving on depreciation as well as on loss due to sale of existing machine.

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Q 12 WX Ltd. has a machine which has been in operation for 3 years. Its remaining estimated useful life is 8 years with no salvage value in the end. Its current value is ₹ 2,00,000. The company is considering a proposal to purchase a new model of machine to replace the existing machine. The relevant information are as follows:

	Existing Machine	New Machine
Cost of machine	3,30,000	10,00,000
Estimated life	11 years	8 years
Salvage value	Nil	40,000
Annual output	30,000 units	75,000 units
Selling price per unit	15	15
Annual operating hours	3,000	3,000
Material cost per unit	4	4
Labour cost per hour	40	70

Indirect cash cost per annum	50,000	65,000

The company follows the straight line method of depreciation. The corporate tax rate is 30% and WX Ltd., does not make any investment, if it yields less than 12%. Present value of annuity of ₹1 at 12% rate of discount for 8 years is 4.968. Present value of ₹1 at 12% rate of discount, received at the end of 8th year is 0.404. Ignore capital gain tax. Advice WX Ltd. whether the existing machine should be replaced or not.

▶ Learning objective

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Q 13 A company wants to replace its old machine with a new automatic machine. Two models A and B are available at the same cost of ₹ 5 lakhs each. Salvage value of the old machine is ₹ 1 lakh. The utilities of the existing machine can be used if the company purchases model A. Additional cost of utilities to be purchased in that case are ₹ 1 lakh. If the company purchases model B then all the existing utilities will have to be replaced with new utilities costing ₹ 2 lakhs. The salvage value of the old utilities will be ₹ 0.20 lakhs.

(Cash inflow ₹)

Year/Model	A	B	P.V.Factor @15%
1	1,00,000	2,00,000	0.87
2	1,50,000	2,10,000	0.76
3	1,80,000	1,80,000	0.66
4	2,00,000	1,70,000	0.57
5	1,70,000	40,000	0.50
Salvage value at the end of year 5	50,000	60,000	

The targeted return on capital is 15%. You are required to:

(i) Compute, for the two machines separately, net present value, discounted payback and desirability factor

(ii) Advice which of the machines is to be selected?

▶ Learning objective

INTERNAL RATE OF RETURN

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Q 14 An investment of ₹ 1,36,000 yields the following cash inflows (profits before depreciation but after tax). Determine internal rate of return.

Year	₹
1	30,000
2	40,000
3	60,000
4	30,000
5	20,000
	1,80,000

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Q 15 A sole trader installs plant and machinery in rented premises for the production of luxury article, the demand for which is expected to last only 5 years. The total capital put in by the sole trader is as under:

Year	₹
Plant and machinery	₹ 2,70,500
Working Capital	₹ 40,000
	3,10,500

The working capital will be fully realized at the end of the 5th year. The scrap value of the plant expected to be realized at the end of the 5th year is only ₹ 5,500.

The trader's earnings are expected to be as under:

Year	Cash profit (before depreciation & tax) (₹)	Tax ₹
1	90,000	20,000
2	1,30,000	30,000
3	1,70,000	40,000
4	1,16,000	26,000
5	19,500	5,000

Present value factors of various rates of interest are given below:

Year	11%	12%	13%	14%	15%
1	0.9009	0.8929	0.8850	0.8770	0.8696
2	0.8116	0.7972	0.7831	0.7695	0.7561
3	0.7312	0.7118	0.6931	0.6750	0.6675
4	0.6587	0.6355	0.6133	0.5921	0.5718
5	0.5935	0.5674	0.5428	0.5194	0.4972

You are required to compute the present value of the cash flow discounted at the various rates of interest given above and state the return from the project.

▶ Learning objective

NPV VS IRR CONFLICT

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Q 16 The cash flows of two mutually exclusive projects are as under:

	t0	t1	t2	t3	t4	t5	t6
Project 'P'	(40,000)	13,000	8,000	14,000	12,000	11,000	15,000
Project 'J'	(20,000)	7,000	13,000	12,000	-----	-----	-----

Required:

(i) Estimate the net present value (NPV) of the project 'P' and 'J' using 15% as the hurdle rate.

(ii) Estimate the internal rate of return (IRR) of the project 'P' and 'J' using 15% and 26% as base.

(iii) Why there is a conflict in the project choice by using NPV and IRR criterion?

(iv) Which criteria you will use in such a situation? Estimate the value at that criterion make a project choice.

The present value interest factor values at different rates of discount are as under:

Rate of Discount	t0	t1	t2	t3	t4	t5	t6
15%	1.00	0.8696	0.7561	0.6575	0.5718	0.4972	0.4323
26%	1.00	0.7937	0.6299	0.4999	0.3968	0.3149	0.2499

▶ Learning objective

MISC PROBLEMS

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Q 17 XYZ Ltd. is planning to introduce a new product with a project life of 8 years. The project is to be setup in Special Economic Zone (SEZ), qualifies for one time (at starting) tax free subsidy from the State Government of ₹ 25,00,000 on capital investment. Initial equipment cost will be ₹ 1.75 crore. Additional equipment cost ₹ 12,50,000 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 ₹ 1,25,000 A working capital of ₹ 20,00,000 will be needed and it will be released at the end of eight year. The project will be financed with sufficient amount of equity capital. The sales volumes over eight years have been estimated as follows:

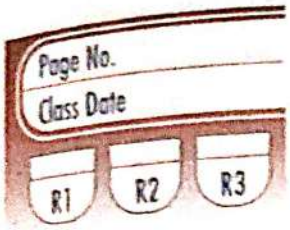
Year	1	2	3	4 & 5	6 - 8
Units	72,000	1,08,000	2,60,000	2,70,000	1,80,000

A sales price of ₹ 120 per unit is expected and variable expenses will amount to 60% of sales revenue. Fixed cash operating costs will amount ₹ 18,00,000 per year. The company is subject to 30 percent tax rate and consider 12 percent to be an appropriate after tax cost of capital for this project. The company follows straight line method of depreciation. Required: Calculate the net present value of the project and advise the management to take appropriate decision.

Note: The PV factors at 12% are :

Year	1	2	3	4	5	6	7	8
Units	.893	0797	.712	.636	.567	.507	.452	.404

▶ Learning objective

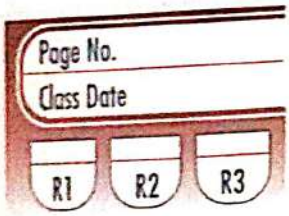


Q 18 Cello Limited is considering buying a new machine which would have a useful economic life of five years, a cost of ₹1,25,000 and a scrap value of ₹30,000, with 80 per cent of the cost being payable at the start of the project and 20 per cent at the end of the first year. The machine would produce 50,000 units per annum of a new product with an estimated selling price of ₹ 3 per unit. Direct cost should be ₹ 1.75 per unit and annual fixed costs, including depreciation calculated on a straight- line basis, would be ₹ 40,000 per annum.

In the first year and the second year, special sales promotion expenditure, not Included in the above costs, would be incurred, amounting to ₹ 10,000 and ₹ 15,000 respectively.

Evaluate the project using the NPV method of investment appraisal, assuming the company's cost of capital to be 10 percent.

▶ Learning objective



Q 19 The directors of the company believe that the current capital structure fails to take advantage of tax benefits of debt and propose to finance the new project with undated perpetual debt secured on the company's assets. The company intends to issue sufficient debt to cover the cost of capital expenditure and the after tax cost of issue.

The current annual gross rate of interest required by the market on corporate undated debt of similar risk is 10%. The after tax costs of issue are expected to be ₹ 10 lakhs. Company's tax rate is 30%.

You are REQUIRED to: Calculate the adjusted present value of the investment,

▶ Learning objective

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Q 20 After spending ₹ 60,000 on research, the company discovered that the waste could be sold for ₹ 10 per gallon if it was processed further. Additional processing would, however, require an investment of ₹ 6,00,000 in new equipment, which would have an estimated life of 10 years with no salvage value. Depreciation would be calculated by straight line method.

Except for the costs incurred in advertising ₹ 20,000 per year, no change in the present selling and administrative expenses is expected, if the new product is sold. The details of additional processing costs are as follows:

Variable : ₹ 5 per gallon of waste put into process.

Fixed : (Excluding Depreciation) ₹ 30,000 per year.

There will be no losses in processing, and it is assumed that the total waste processed in a given year will be sold in the same year. Estimates indicate that 50,000 gallons of the product could be sold each year.

The management when confronted with the choice of disposing off the waste or processing it further and selling it, seeks your ADVICE. Which alternative would you recommend? Assume that the firm's cost of capital is 15% and it pays on an average 50% Tax on its income.

You should consider Present value of Annuity of ₹ 1 per year @ 15% p.a. for 10 years as 5.019.

ADDITIONAL QUESITONS FROM STUDY MATERIAL

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Q 21 A company is considering replacement of one of its old machines, purchased three years ago at a cost of ₹ 5,00,000 with a life of 5 years. It follows straight line method of depreciation. Annual revenue from the sale of the product manufactured using the machine is ₹ 5,50,000 and the annual operating cost is ₹ 4,00,000. The current salvage value of the machine is ₹ 1,00,000. The cost of the new machine is ₹ 3,00,000 and its salvage value at the end of its life 2 years is nil. The annual operating cost of the new machine is estimated at ₹ 2,30,000 and the revenue is expected to be same as to that of the old machine.

Identify relevant costs and revenues if any form the above information.

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Q 22 Parrot Ltd. is the manufacturer of a low-end consumer durable N. In order to modernize the manufacturing facility, Parrot Ltd. wants to buy a new machinery costing ₹ 10,00,000 at cash price. The annual cash flow before tax over the entire life span of the company is ₹ 3,00,000 p.a. The marginal rate of tax is 30% and cost of capital is 10% p.a. The scrap value at the end of the useful life of the machinery is negligible. The company is currently following a straight-line method of charging depreciation on machineries. Do you think the project is financially viable?

The company has an alternative to charge accelerated depreciation @ 30% of the depreciable amount each for the first three years and @ 10% for the fourth year. Does it change your suggestion?

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Q 23 Assume a business that is considering a given project. Below are some selected data from the discounted cash flow model created by the company's financial analysts:

A project requires an initial investment of ₹ 1,91,315 and is expected to generate the following net cash inflows:

Year 1 (2018): ₹ 95,000; Year 2 (2019): ₹ 80,000; Year 3 (2020): ₹ 60,000; Year 4 (2021): ₹ 55,000. Compute discounted payback period of the project if the appropriate discount rate for this project is 12%.

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Q 24 X Ltd. has a capital budget of ₹ 1.5 crore for the year. From the following information relating to six independent proposals, select the projects if (i) the projects are divisible and (ii) the projects are indivisible.

Proposal	Investments (₹)	NPV (₹)
A	70,00,000	30,00,000
B	25,00,000	16,00,000
C	50,00,000	20,00,000
D	20,00,000	10,00,000
E	55,00,000	45,00,000
F	75,00,000	-25,00,000

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Q 25 A limited company is considering investing a project requiring a capital outlay of ₹ 2,00,000. Forecast for annual income after depreciation but before tax is as follows:

Year	(₹)
1	1,00,000
2	1,00,000
3	80,000
4	80,000
5	40,000

Depreciation may be taken as 20% on original cost and taxation at 50% of net income.

You are required to evaluate the project according to each of the following methods:

Payback period method

Rate of return on original investment method

Rate of return on average investment method

Discounted cash flow method taking cost of capital as 10%

Net present value index method

Q 26 A company has just installed a machine Model A for the manufacture of a new product at capital cost of ₹ 1,00,000. The annual operating costs are estimated at ₹ 50,000 (excluding depreciation) and these costs are estimated on the basis of an annual volume of 1,00,000 units of production. The fixed costs at this volume of 1,00,000 units of output will amount to ₹ 4,00,000 p.a. The selling price is ₹ 5 per unit of output. The machine has a five-year life with no residual value.

The company has now come across another machine called Super Model which is capable of giving, the same volume of production at an estimated annual operating cost of ₹ 30,000 exclusives of depreciation. The fixed costs will however, remain the same in value. This machine also will have a five-year life with no residual value. The capital cost of this machine is ₹ 1,50,000.

The company has an offer for the sale of the machine Model A (which has just been installed) at ₹ 50,000 and the cost of removal thereof will amount to ₹ 10,000. Ignore tax.

In view of the lower operating cost, the company is desirous of dismantling of the machine Model A and install-ing the Super Model Machine. Assume that Model A has not yet started commercial production and that the time lag in the removal thereof and the installation of the Super Model machine is not material.

The cost of capital is 14% and the P.V. Factors for each of the five years respectively are 0.877, 0.769, 0.675, 0.592 and 0.519.

State whether the company should replace Model A machine by installing the Super Model machine. Will there be any change in your decision if the Model A machine has not been installed and the company is in the process of consideration of selection of either of the two models of the machine? Present suitable statement to illustrate your answer.

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Q 27 A chemical company is considering replacing an existing machine with one costing ₹ 65,000. The existing machine was originally purchased two years ago for ₹ 28,000 and is being depreciated by the straight-line method over its seven-year life period. It can currently be sold for ₹ 30,000 with no removal costs. The new machine would cost ₹ 10,000 to install and would be depreciate over five years. The management believes that the new machine would have a salvage value of ₹ 5,000 at the end of year 5. The management also estimates an increase in net working capital requirement of ₹ 10,000 as a result of expanded operations with the new machine. The firm is taxed at a rate of 55% on normal income and 30% on capital gains. The company's expected after-tax profits for next 5 years with existing machine and with new machine are given as follows:

Year	With existing machine	With new machine
1	2,00,000	2,16,000
2	1,50,000	1,50,000
3	1,80,000	2,00,000
4	2,10,000	2,40,000
5	2,20,000	2,30,000

Calculate the net investment required by the new machine.

If the company's cost of capital is 15%, determine whether the new machine should be purchased.

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Q 28 A plastic manufacturer has under consideration the proposal of production of high-quality plastic glasses. The necessary equipment to manufacture the glasses would cost ₹ 1 lakh and would last 5 year The tax relevant rate of depreciation is 20% on written down value. There is no other asset in this block. The expected salvage value is ₹ 10,000. The glasses can be sold at ₹ 4 each. Regardless of the level of production, the manufacturer will incur cash cost of ₹ 25,000 each year if the project is undertaken. The overhead costs allocated to this new line would be ₹ 5,000. The variable costs are estimated at ₹ 2 per glass. The manufacturer estimates it will sell about 75,000 glasses per year; the tax rate is 35%. Should the proposed equipment be purchased? Assume 20% cost of capital and additional working requirement, ₹ 50,000.

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Q 29 Modern Enterprises Ltd. is considering the purchase of a new computer system for its research and development division, which would cost ₹ 35 lakh. The operation and maintenance costs (excluding depreciation) are expected to be ₹ 7 lakh per annum. It is estimated that the useful life of the system would be 6 years, at the end of which the disposal value is expected to be ₹ 1 lakh.

The tangible benefits expected from the system in the form of reduction in design and draftsmanship costs would be ₹ 12 lakh per annum. The disposal of used drawing office equipment and furniture initially is anticipated to net ₹ 9 lakh.

As capital expenditure in research and development, the proposal would attract a 100% write-off for tax purposes. The gains arising from disposal of used assets may be considered tax free. The effective tax rate is 35%. The average cost of capital of the company is 12%.

After appropriate analysis of cash flows, advise the company of the financial viability of the proposal. Ignore tax on salvage value.

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Q 30 A company has to replace one of its machines, which has become unserviceable. Two options are available to the company:

A more expensive machine (EM) with 12 years life.

A less expensive machine (LM) with 6 years life.

If machine LM is chosen, it will be replaced at the end of 6 years by another LM machine.

The pattern of maintenance, running costs and prices as under:

Particulars	EM (₹)	LM (₹)
Purchase price	20,00,000	14,00,000
Scarp value at end of life	3,00,000	3,00,000
Overhauling is due at the end of	8th Year	4th Year
Overhauling cost	4,00,000	2,00,000
Annual repairing expenses	2,00,000	2,80,000

Cost of capital is 14%.

You are required to recommend which of the machines should be purchased.

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Q 31 Royal Industries Ltd. is considering the replacement of one of its moulding machines. The existing machine is in good operating condition, but is smaller than required if the firm is to expand its operations. The old machine is 5 years old, has a current salvage value of ` 30,000 and a remaining depreciable life of 10 years. The machine was originally purchased for ` 75,000 and is being depreciated at ` 5,000 per year for tax purposes.

The new machine will cost ` 1,50,000 and will be depreciated on a straight line basis over 10 years, with no salvage value. The management anticipates that, with the expanded operations, there will be need of an additional net working capital of ` 30,000. The new machine will allow the firm to expand current operations, and thereby increase annual revenues of ` 40,000, and variable operating costs from ` 2,00,000 to ` 2,10,000. The company's tax rate is 35% and its cost of capital is 10%.

Should the company replace its existing machine? Assume that the loss on sale of existing machine can be claimed as short-term capital loss in the current year itself.

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Q 32 A firm is considering an introduction of a new product which will have a life of five years. Two alternatives of promoting the product have been identified:

Option 1: This involves hiring many agents. An immediate investment of ` 5,00,000 is required to promote the product. This will result in a net cash inflow of ` 3,00,000 at the end of each year for the next five years. However, agents need to pay ` 50,000 per year. After the contract is terminated, the agent has to pay a lump sum of ` 1,00,000 at the end of the fifth year.

Option 2: Under this alternative, the firm will not employ agents but will sell directly to the customers. The initial cost of advertising is ` 2,50,000. This earns cash at the end of each year ` 1,50,000. However, this alternative comes with a sales administration fee of ` 50,000. The firm also proposes to allocate fixed costs worth ` 20,000 per year to this product if this alternative is pursued.

Required: Advise the management, which method of promotion is to be adopted? You may assume that the firm's cost of capital is 20%.

DIVIDEND POLICY

DETERMINANTS OF DIVIDEND DECISIONS- The dividend policy is affected by the following factors:

Availability of funds: If the business is in requirement of funds, then retained earnings could be a good source. Since it saves the floatation cost and further the control will not be diluted.

Cost of capital: If the financing requirements can be financed through debt (relatively cheaper source of finance), then it should be preferred to distribute more dividend but if the financing is to be done through fresh issue of equity shares, it is better to use retained earnings as much as possible.

Capital structure: An optimum Debt equity ratio should also be under consideration for the dividend decision.

Stock price: Generally, higher dividends increase value of shares and low dividends decrease it.

Investment opportunities in hand: The dividend decision is also affected, if there are investment opportunities in hand, the company may prefer to retain more from the earnings

Internal rate of return: If the internal rate of return is more than the cost of retained earnings, it's better to distribute the earnings as much as possible.

Trend of industry: Few industries have been seen by investors for regular income, hence in such cases, the firm will have to pay dividend for survival.

Expectation of shareholders: The shareholders can be categorised in two categories: (i) those who invests for regular income, & (ii) those who invests for growth. Generally, the investor prefers current dividend more than the future growth.

Assumptions of Walter Model

1. All investments proposals of the firm are to be financed through retained earnings only.
2. 'r' rate of return & 'Ke' cost of capital are constant
3. Perfect capital markets: The firm operates in a market in which all investors are rational and information is freely available to all.
4. No taxes or no tax discrimination between dividend income and capital appreciation (capital gain): This assumption is necessary for the universal applicability of the theory, since, the tax rates or provisions to tax income may be different in different countries.
5. No floatation or transaction cost: Similarly, these costs may differ country to country or market to market.
6. The firm has perpetual life

Assumptions of Gordon Model

1. Firm is an all equity firm i.e. no debt
2. IRR will remain constant, because change of IRR will change the growth rate and consequently the value will be affected.

PRACTICAL PROBLEMS

▶ Learning objective

WALTER MODEL

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Q 1 Sahu & Co. earns ₹ 6 per share having capitalisation rate of 10 per cent and has a return on investment at the rate of 20 per cent. According to Walter's model, what should be the price per share at 30 per cent dividend payout ratio? Is this the optimum payout ratio as per Walter?

$D = 6 \times 30\% = 1.8$

▶ Learning objective

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Q 2 The following information pertains to M/s XY Ltd.

Earnings of the Company	₹ 5,00,000
Dividend Payout ratio	60%
No. of shares outstanding	1,00,000
Equity capitalization rate	12%
Rate of return on investment	15%

(i) What would be the market value per share as per Walter's model?
(ii) What is the optimum dividend payout ratio according to Walter's model and the market value of Company's share at that payout ratio?

▶ Learning objective

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Q 3 The following figures are collected from the annual report of XYZ Ltd.:

	₹
Net Profit (EAT)	30 lakhs
Outstanding 12% preference shares	100 lakhs
No. of equity shares	3 lakhs
Cost of Equity K_e	16%
Return on Investment r	20%

EAT − Pref. Dividend = EAFESH
30L − (100 × 12%)
30L − 12L = 18L
EAFESH = 18L

$EPS = \frac{18L}{3L} = ₹6$

$C = 6$

What should be the approximate dividend pay-out ratio so as to keep the share price at ₹ 42 by using Walter model?

▶ Learning objective

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Q 4 The following information relates to Maya Ltd:

Earnings of the company	₹ 10,00,000
Dividend payout ratio	60%
No. of Shares outstanding	2,00,000
Rate of return on investment	15%
Equity capitalization rate	12%

(i) What would be the market value per share as per Walter's model ?

(ii) What is the optimum dividend payout ratio according to Walter's model and the market value of company's share at that payout ratio?

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Q 5 Subhash & Co. earns ₹ 8 per share having capitalisation rate of 10 per cent and has a return on investment at the rate of 20 per cent. According to Walter's model, what should be the price per share at 25 per cent dividend payout ratio? Is this the optimum payout ratio as per Walter's Model?

▶ Learning objective

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Q 6 Goldi locks Ltd. was started a year back with equity capital of ₹ 40 lakhs. The other details are as under:

Earnings of the company	₹ 4,00,000
Price Earnings ratio	12.5
Dividend paid	₹ 3,20,000
Number of Shares	40,000

a. Find the current market price of the share. Use Walter's Model.

b. Find whether the company's D/ P ratio is optimal, use Walter's formula

▶ Learning objective

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R1 R2 R3

Q 7 The following information is supplied to you:

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

(i) Ascertain whether the company is the following an optimal dividend policy.
(ii) Find out what should be the 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?

▶ Learning objective

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Q 8 X Ltd has an internal rate of return @ 20%. It has declared dividend @ 18% on its equity shares, having face value of 10 each. The payout ratio is 36% and Price Earning Ratio is 8. Find the cost of equity according to Walter's Model and hence determine the market value of its shares.

▶ Learning objective

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Q 9 The earnings per share of a company is ₹ 10 and the rate of capitalisation applicable to it is 10 per cent. The company has three options of paying dividend i.e.(i) 50%,(ii)75% and (iii)100%. Calculate the market price of the share as per Walter's model if it can earn a return of (a) 15, (b) 10 and (c) 5 per cent on its retained earnings.

▶ Learning objective

WATER MODEL AND GORDON MODEL

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Q 10 A firm had paid dividend at ₹ 2 per share last year. The estimated growth of the dividends from the company is estimated to be 5% p.a. Determine the estimated market price of the equity share if the estimated growth rate of dividends (i) rises to 8%, and (ii) falls to 3%. Also find out the present market price of the share, given that the required rate of return of the equity investors is 15.5%.

▶ Learning objective

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R1 R2 R3

Q 11

The following information is collected from the annual reports of J Ltd:

Profit before tax	₹ 2.50 crore
Tax rate	40 percent
Retention ratio	40 percent
Number of outstanding shares	50,00,000
Equity capitalization rate $\Rightarrow k_e$	12 percent
Rate of return on investment $\Rightarrow r$	12 percent

What should be the market price per share according to Gordon's model of dividend policy?

▶ Learning objective

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R1 R2 R3

Q 12

The following information is given for QB Ltd.

Earning per share	₹12
Dividend per share	₹3
Cost of capital	18%
Internal Rate of Return on investment	22%
Retention Ratio	75%

Calculate the market price per share using

(i) Gordon's formula

(ii) Walter's formula

▶ Learning objective

MODIGLIANI MILLER APPROACH

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R1 R2 R3

Q 13

RST Ltd. has a capital of ₹10,00,000 in equity shares of ₹100 each. The shares are currently quoted at par. The company proposes to declare a dividend of ₹ 10 per share at the end of the current financial year. The capitalization rate for the risk class of which the company belongs is 12%. What will be the market price of the share at the end of the year, if

(i) a dividend is not declared ?

(ii) a dividend is declared ?

(iii) assuming that the company pays the dividend and has net profits of ₹ 5,00,000 and makes new investments of ₹10,00,000 during the period, how many new shares must be issued? Use the MM model.

▶ Learning objective

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Q 14 X Ltd., has 8 lakhs equity shares outstanding at the beginning of the year. The current market price per share is ₹ 120. The Board of Directors of the company is contemplating ₹ 6.4 per share as dividend. The rate of capitalisation, appropriate to the risk-class to which the company belongs, is 9.6%:

(i) Based on M-M Approach, calculate the market price of the share of the company, when the dividend is – (a) declared; and (b) not declared.

(ii) How many new shares are to be issued by the company, if the company desires to fund an investment budget of ₹ 3.20 crores by the end of the year assuming net income for the year will be ₹ 1.60 crores?

▶ Learning objective

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Q 15 ABC Ltd. has 50,000 outstanding shares. The current market price per share is ₹ 100 each. It hopes to make a net income of ₹ 5,00,000 at the end of current year. The Company's Board is considering a dividend of ₹5 per share at the end of current financial year. The company needs to raise ₹10,00,000 for an approved investment expenditure. The company belongs to a risk class for which the capitalization rate is 10%. Show, how the M-M approach affects the value of firm if the dividends are paid or not paid.

▶ Learning objective

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R1 R2 R3

Q 16 M Ltd. belongs to a risk class for which the capitalization rate is 10%. It has 25,000 outstanding shares and the current market price is ₹ 100. It expects a net profit of ₹ 2,50,000 for the year and the Board is considering dividend of ₹ 5 per share.

M Ltd. requires to raise ₹ 5,00,000 for an approved investment expenditure. Show, how the MM approach affects the value of M Ltd. if dividends are paid or not paid.

▶ Learning objective

MISC. QUESTIONS

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R1 R2 R3

Q 17 The earnings per share of a company is ₹ 30 and dividend payout ratio is 60%. Multiplier is 2.

DETERMINE the price per share as per Graham & Dodd model.

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R1 R2 R3

Q 18 The following information regarding the equity shares of M Ltd. is given below:

Market price	₹ 58.33
Dividend per share	₹ 5
Multiplier	7

According to the Graham & Dodd approach to the dividend policy, COMPUTE the EPS.

▶ Learning objective

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Q 19 Given the last year's dividend is ₹ 9.80, speed of adjustment of 45%, target payout ratio is 60% and EPS for current year ₹ 20. COMPUTE current year's dividend using Linter's model.

▶ Learning objective

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Q 20 The dividend payout ratio of H Ltd. is 40%. If the company follows traditional approach to dividend policy with a multiplier of 9, COMPUTE P/E ratio.

▶ Learning objective

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R1 R2 R3

Q 21

Mr. A is contemplating purchase of 1,000 equity shares of a Company. His expectation of return is 10% before tax by way of dividend with an annual growth of 5%. The Company's last dividend was ₹2 per share. Even as he is contemplating, Mr. A suddenly finds, due to a budget announcement dividends have been exempted from tax in the hands of the recipients. But the imposition of dividend Distribution tax on the Company is likely to lead to a fall in dividend of 20 paise per share. A's marginal tax rate is 30%.

Calculate what should be Mr. A's estimates of the price per share before and after the Budget announcement?

▶ Learning objective

TOOLS FOR FINANCIAL ANALYSIS

COMPARATIVE, COMMON-SIZE FINANCIAL STATEMENTS AND TREND ANALYSES

Comparative Financial Analysis and Common Size Statement Analysis

Illustration 1 ✓ Pg-206 9/9/23

From the following income statement prepare a common size statement and also interpret the results.

Income Statement for the year ended 31st March

Particulars	2021 (₹)	2022 (₹)
Net Sales	10,50,000	13,50,000
Less: Cost of goods sold	5,70,000	6,45,000
Gross Profit	4,80,000	7,05,000
Less: Other operating expenses	1,50,000	2,16,000
Operating Profit	3,30,000	4,89,000
Less: Interest on long-term debt	60,000	51,000
Profit before tax (PBT)	2,70,000	4,38,000

Illustration 2 ✓ (207) 9/9/23

From the following figures prepare a common size comparative statement and comment on the results.

Particulars	2017-18	2018-19	2019-20	2020-21	2021-22
	₹ (in lakh)	₹ (in lakh)	₹ (in lakh)	₹ (in lakh)	₹ (in lakh)
Cost of Materials	150	220	250	200	200
Labour cost	200	140	150	150	175
Conversion cost	150	150	140	200	175
Total Manufacturing cost	500	510	540	550	550
Sales Revenue	1,200	1,100	1,000	1,000	950
Gross Profit	700	590	460	450	400
Other operating expenses	300	220	200	200	180
Operating profit	400	370	260	250	220

Illustration 3

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From the following balance sheet prepare a common size statement and comment.

Particulars	Amount (₹) 31.03.2021	Amount (₹) 31.03.2022
Shareholders' Fund		
Equity Share Capital (₹10 each)	7,20,000	7,20,000
Reserve & Surplus	2,88,000	5,46,000
Non-current Liabilities		
Long-term debt	5,46,000	5,08,000
Current Liabilities		176000
Current Liabilities & Provisions	2,40,000	176000
Total	18,00,000	19,50,000
Non-current Assets		
Fixed Assets	12,06,000	11,70,000
Current Assets		
Inventory	2,52,000	3,51,000
Debtors	1,80,000	1,95,000
Bank	1,62,000	2,34,000
Total	18,00,000	19,50,000

Illustration 4

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The following are the income statements of A Limited for the years ended 31.03.2021 and 31.03.2022.

	31.03.21 (₹)	31.03.22 (₹)
Net Sales	1,70,000	1,90,400
Less: Cost of goods sold	1,05,000	1,20,000
Gross Profit (P)	65,000	70,400
Administrative expenses (A)	13,200	14,960
Selling expenses:		
Advertisement expenses	3,000	4,000
Other selling expenses	40,800	41,800
Total selling expenses (B)	43,800	45,800
Operating expenses (A + B)	57,000	60,760
Operating Profit (D) [D = P – (A + B)]	8,000	9,640
Other Incomes (E)	6,400	9,200
Other expenses (F)	6,800	4,800
Profit before tax (PBT) [PBT = D + E – F]	7,600	14,040
Income tax (T)	3,800	6,200
Profit after tax (PAT) [PAT = PBT – T]	3,800	7,840

Prepare a comparative income statement and comment on the performance of the company.

Illustration 5

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The following are the Balance Sheet of Maharaj Ltd. as on 31.03.21 and 31.03.22:

Particulars	Δ %	Change	31.03.21 (₹)	31.03.22 (₹)
Current Assets:				
Cash and Bank Balance	(91.5%)	(21600)	23,600	2,000
Debtors	(9.1%)	(3800)	41,800	38,000
Inventory	(18.7%)	(6000)	32,000	26,000
Other Current Assets	(59.38%)	(3800)	6,400	2,600
Total Current Assets (A)	(33.91%)	(35200)	1,03,800	68,600
Fixed Assets :				
Land and Building	(37.64%)	(20000)	54,000	34,000
Plant and Machinery	153.55%	95200	62,000	1,57,200
Furniture	65.52%	3800	5,800	9,600
Total Fixed Assets (B)	64.86%	79000	1,21,800	2,00,800
Long-term Investment	28.26%	2600	9,200	11,800
Total Assets (A + B + C)	19.76%	46400	2,34,800	2,81,200
Current Liabilities (D)	(51.53%)	(27000)	52,400	25,400
Long-term Debt (E)	62.5%	25000	40,000	65,000
Owners' Equity:				
Equity Share Capital	50%	40000	80,000	1,20,000
Reserve and Surplus	(13.46%)	8400	62,400	70,800
Total Owners' Equity(F)	33.98%	48400	1,42,400	1,90,800
Total Liabilities and Capital (D+E+ F)	19.76%	46400	2,34,800	2,81,200

Prepare Comparative Balance Sheet and study its financial position.

Illustration 6

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Compute the Trend Ratios from the following data and comment.

Particulars	Balances as on 31st March			
	2019 (₹)	2020 (₹)	2021 (₹)	2022 (₹)
Cost of material consumed	2,00,000	2,50,000	2,00,000	1,80,000
Labour cost	1,50,000	1,50,000	1,00,000	1,25,000
Other expense	1,50,000	2,00,000	5,00,000	1,50,000
Cost of sales	5,00,000	6,00,000	2,50,000	4,55,000
Profit	3,00,000	3,00,000	7,50,000	3,45,000
Sales	8,00,000	9,00,000		8,00,000

Illustration 7

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A partial list of trend and common-size percentages for ABC Ltd. is given below.

Particulars	March, current year	March, previous year
Trend percentages:		
Sales (net)	120	100
Cost of goods sold	?	100
Gross profit on sales	?	100
Operating expenses and income taxes	?	100
Net income	?	100
Common-size percentages:		
Sales (net)	100	100
Cost of goods sold	?	?
Gross profit on sales	40	?
Operating expenses and income taxes	20	25
Net income	20	10

Determine the missing trend and common-size percentages.

FUND FLOW AND CASH FLOW STATEMENTS

Illustration 1

From the following Balance Sheet of PKJ Ltd., Prepare Funds Flow Statement for 2016. ('000)

Income Statement for the year ended 31st March

Liabilities	31-3-15	31-3-16	Assets	31-3-15	31-3-16
Equity Share Capital	150	200	Goodwill	50	40
9% Redeemable Preference Share capital	75	50	Land & Buildings	100	85
Capital Reserve	—	10	Plant & Machinery	40	100
General Reserve	20	25	Investments	10	15
Profit & Loss Account	15	24	Sundry Debtors	70	85
Proposed Dividend	21	25	Stock	39	55
Sundry Creditors	13	24	Bills Receivable	10	15
Bills Payable	10	8	Cash in hand	7	5
Liability for Expenses	15	18	Cash at bank	5	4
Provision for tax	20	25	Preliminary Exp.	8	5
	339	409		339	409

Additional information:

1. A part of land was sold out in 2016, and the profit was credited to Capital Reserve.
2. A machine has been sold for ₹5,000 (written down value of the machinery was ₹6,000). Depreciation of ₹5,000 was charged on plant in 2016.
3. An interim dividend of ₹10,000 has been paid in 2016.
4. An Amount of ₹1,000 has been received as dividend on investment in 2016.

Illustration 2

The Balance Sheets of A, B, & C Co. Ltd. as at the end of 2015 and 2016 are given below:

LIABILITIES	2015 (₹)	2016 (₹)	ASSETS	2015 (₹)	2016 (₹)
Share Capital	1,00,000	1,50,000	Freehold land	1,00,000	1,00,000
Share premium	---	5,000	Plant at cost	1,04,000	1,00,000
General Reserve	50,000	60,000	Furniture at cost	7,000	9,000
Profit & Loss Account	10,000	17,000	Investments	60,000	80,000
6% Debentures	70,000	50,000	Debtors	30,000	70,000
Provision for Depreciation on Plant	50,000	56,000	Stock	60,000	65,000

LIABILITIES	2015 (₹)	2016 (₹)	ASSETS	2015 (₹)	2016 (₹)
Provision for Dep. on Furniture	5,000	6,000	Cash	30,000	45,000
Provision for taxation	20,000	30,000			
Sundry Creditors	86,000	95,000			
	3,91,000	4,69,000		3,91,000	4,69,000

A plant purchased for ₹ 4,000 (Depreciation ₹ 2,000) was sold for Cash for ₹ 800 on September 30, 2015. On June 30, 2015 an item of furniture was purchased for ₹ 2,000. These were the only transactions concerning fixed assets during 2015. A dividend of 22½ % on original shares was paid. You are required to prepare funds Flow Statement and verify the results by preparing a schedule of changes in Working Capital.

Illustration 3

From the Balance Sheet of A Ltd., Please prepare:

A. A Statement of changes in the Working Capital.

B. Funds Flow Statement.

BALANCE SHEET

	31st March			31st March	
LIABILITIES	2015 (₹)	2016 (₹)	ASSETS	2015 (₹)	2016 (₹)
Equity Share Capital:	3,00,000	4,00,000	Goodwill	1,15,000	90,000
8% Preference share capital	1,50,000	1,00,000	Land & Buildings	2,00,000	1,70,000
P & L A/c	30,000	48,000	Plant	80,000	2,00,000
General Reserve	40,000	70,000	Debtors	1,60,000	2,00,000
Proposed Dividend	42,000	50,000	Stock	77,000	1,09,000
Creditors	55,000	83,000	Bills Receivable	20,000	30,000
Bills Payable	20,000	16,000	Cash in hand	15,000	10,000
Provision for Taxation	40,000	50,000	Cash at Bank	10,000	8,000
	6,77,000	8,17,000		6,77,000	8,17,000

Following is the additional information available:

(i) Depreciation of ₹ 10,000 and ₹ 20,000 have been charged on Plant and Land and Buildings respectively in 2016.

(ii) Interim dividend of ₹ 20,000 has been paid in 2016.

(iii) Income tax of ₹ 35,000 has been paid in 2016.

Illustration 4

From the following figures, prepare a statement showing the changes in the Working Capital and Funds Flow Statement during the year 2015.

ASSETS:	Dec.31, 2014	Dec.31, 2015
Fixed Assets (net) ₹	5,10,000	6,20,000
Investments	30,000	80,000
Current Assets	2,40,000	3,75,000
Discount on debentures	10,000	5,000
	7,90,000	10,80,000

Liabilities:	Dec.31, 2014	Dec.31, 2015
Equity share capital	3,00,000	3,50,000
Preference share capital	2,00,000	1,00,000
Debentures	1,00,000	2,00,000
Reserves	1,10,000	2,70,000
Provision for doubtful debts	10,000	15,000
Current Liabilities	70,000	1,45,000
	7,90,000	10,80,000

You are informed that during the year:

(a) A machine costing ₹ 70,000 book value ₹ 40,000 was disposed of for ₹ 25,000.

(b) Preference share redemption was carried out at a premium of 5% and

(c) Dividend at 15% was paid on equity shares for the year 2014.

Further:

1. The provision for depreciation stood at ₹ 1,50,000 on 31.12.14 and at ₹ 1,90,000 on 31.12.15; and
2. Stock which was valued at ₹90,000 as on 31.12.14; was written up to its cost, ₹ 1,00,000 for preparing Profit and Loss account for the year 2015.

Illustration 5

The following is the Balance Sheets of the Andhra Industrial Corporation Ltd. as on 31st December 2015 and 2016.

BALANCE SHEET

Assets:	2015	2016
Fixed Assets: Property	1,48,500	1,44,250
Machinery	1,12,950	1,26,200
Goodwill	----	10,000
Current Assets: Stock	1,10,000	92,000
Trade Debtors	86,160	69,430
Cash at Bank	1,500	11,000
Pre-payments	3,370	1,000
	4,62,480	**4,53,880**

Liabilities:	2015	2016
Shareholders funds: Paid up Capital	2,20,000	2,70,000
Reserves	30,000	40,000
Profit and Loss Account	39,690	41,220
Current Liabilities: Creditors	39,000	41,660
Bills Payable	33,790	11,000
Bank Overdraft	60,000	–
Provision for taxation	40,000	50,000
	4,62,480	**4,53,880**

During the year ended 31st December, 2016, a divided of ₹ 26,000 was paid and assets of another company were purchased for ₹ 50,000 payable in fully paid-up shares. Such assets purchased were:

Stock ₹ 21,640; Machinery ₹ 18,360; and Goodwill ₹ 10,000. In addition Plant at a cost of ₹ 5,650 was purchased during the year; depreciation on Property ₹ 4,250; on Machinery ₹ 10,760. Income tax during the year amounting to ₹ 28,770 was charged to provision for taxation. Net profit for the year before tax was ₹ 76,300.

Prepare Funds Flow Statement for the year 2016.

Illustration 6

From the information contained in Income Statement and Balance Sheet of 'A' Ltd, prepare Cash Flow Statement.

Income Statement for the year ended March 31, 2016

	(₹)
Net Sales (A)	2,52,00,000
Less:	
Cash cost of sales	1,98,00,000
Depreciation	6,00,000
Salaries and Wages	24,00,000
Operating Expenses	8,00,000
Provision for Taxation	8,80,000
(B)	2,44,80,000
Net Operating Profit (A – B)	7,20,000
Non-recurring Income – Profits on sale of equipment	1,20,000
	8,40,000
Retained earnings and Profits brought forward	15,18,000
	23,58,000
Dividends declared and paid during the year	7,20,000
Profit and Loss A/c balance as on March 31, 2016	16,38,000

Balance Sheet as on

	(₹)	(₹)
Assets		
Fixed Assets:		
Land	4,80,000	9,60,000
Buildings and Equipment	36,00,000	57,60,000
Current Assets:		15,000
Cash	6,00,000	7,20,000
Debtors	16,80,000	18,60,000
Stock	26,40,000	9,60,000
Advances	78,000	90,000
	90,78,000	**1,03,50,000**

Balance Sheet as on

	(₹)	(₹)
Liabilities and Equity	**March 31, 2015**	**March 31, 2016**
Share Capital	36,00,000	44,40,000
Surplus in Profit and Loss A/c	15,18,000	16,38,000
Sundry Creditors	24,00,000	23,40,000
Outstanding Expenses	2,40,000	4,80,000
Income - Tax payable	1,20,000	1,32,000
Accumulated Depreciation on Buildings and Equipment	12,00,000	13,20,000
	90,78,000	**1,03,50,000**

The original cost of equipment sold during the year 2015-16 was ₹ 7,20,000.

Illustration 7

The Balance Sheet of JK Limited as on 31st March, 2015 and 31st March, 2016 are given below:

Balance Sheet as on

(₹'000')

Liabilities	31.03.15	31.03.16	Assets	31.03.15	31.03.16
Share Capital	1,440	1,920	Fixed Assets	3,840	4,560
Capital Reserve	--	48	Less: Depreciation	1,104	1,392
General Reserve	816	960	Net Fixed Asset	2,736	3,168
Profit and Loss A/c	288	360	Investment	480	384
9% Debenture	960	672	Cash	210	312
Current Liabilities					
Proposed Dividend	144	174	Other Current Assets (including Stock)	1,134	1,272
Provision for Tax	432	408	Preliminary Expenses	96	48
Unpaid Dividend				--	18
	4,656	**5,184**		**4,656**	5,184

Additional Information:

1. During the year 2015-2016, Fixed Assets with a book value of ₹2,40,000 (accumulated depreciation ₹ 84,000) was sold for ₹ 1,20,000.
2. Provided ₹ 4,20,000 as depreciation.
3. Some investments are sold at a profit of ₹48,000 and profit was credited to Capital Reserve.
4. It decided that stocks be valued at cost, whereas previously the practice was to value stock at cost less 10 per cent. The stock was ₹ 2,59,200 as on 31.03.15. The stock as on 31.03.16 was correctly valued at ₹ 3,60,000.
5. It decided to write off Fixed Assets costing ₹60,000 on which depreciation amounting to ₹ 48,000 has been provided.
6. Debentures are redeemed at ₹ 105.

Prepare a Cash Flow Statement.

Illustration 8

Balance Sheets of a company as on 31st March, 2015 and 2016 were as follows:

(₹'000')

Liabilities	31.03.15	31.03.16	Assets	31.03.15	31.03.16
Equity share capital	10,00,000	10,00,000	Goodwill	1,00,000	80,000
8% Pref. Share capital	2,00,000	3,00,000	Land and Building	7,00,000	6,50,000
General Reserve	1,20,000	1,45,000	Plant and Machinery	6,00,000	6,60,000
Securities Premium	--	25,000	Investments (non trading)	2,40,000	2,20,000
Profit & Loss A/c.	2,10,000	3,00,000	Stock	4,00,000	3,85,000
11% Debentures	5,00,000	3,00,000	Debtors	2,88,000	4,15,000
Creditors	1,85,000	2,15,000	Cash and Bank	88,000	93,000

Liabilities	31.03.15	31.03.16	Assets	31.03.15	31.03.16
Provision for tax	80,000	1,05,000	Prepaid Expenses	15,000	11,000
Proposed Dividend	1,36,000	1,44,000	Premium on Redemption of debenture	--	20,000
	24,31,000	25,34,000		24,31,000	25,34,000

Additional Information:

1. Investments were sold during the year at a profit of ₹ 15,000.
2. During the year an old machine costing ₹ 80,000 was sold for ₹ 36,000. Its written down value was ₹ 45,000.
3. Depreciation charged on Plant and Machinery @ 20% on the opening balance.
4. There was no purchase or sale of Land and Building.
5. Provision for tax made during the year was ₹ 96,000.
6. Preference shares were issued for consideration of cash during the year.

You are required to prepare Cash Flow Statement as per AS-3.

Illustration 9

The Balance Sheets of a company as on 31st March, 2015 and 2016 are given below:

Liabilities	31.03.15	31.03.16	Assets	31.03.15	31.03.16
Equity Share Capital	14,40,000	19,20,000	Fixed Assets	38,40,000	45,60,000
Capital Reserve	--	48,000	Less: Depreciation	(11,04,000)	(13,92,000)
General Reserve	8,16,000	9,60,000		27,36,000	31,68,000
Profit & Loss A/c	2,88,000	3,60,000	Investment	4,80,000	3,84,000
9% Debentures	9,60,000	6,72,000	Sundry Debtors	12,00,000	14,00,000
Sundry Creditors	5,50,000	5,90,000	Stock	1,40,000	1,84,000
Bills Payable	26,000	34,000	Cash in hand	4,000	--
Proposed Dividend	1,44,000	1,72,800	Preliminary Expenses	96,000	48,000
Provision for tax	4,32,000	4,08,000			
Unpaid Dividend	----------	19,200			
	46,56,000	51,84,000		46,56,000	51,84,000

Additional Information:

During the year ended 31st March, 2016 the company:

1. Sold a machine for ₹ 1,20,000; the cost of machine was ₹ 2,40,000 and depreciation provided on it was ₹ 84,000.
2. Provided ₹ 4,20,000 as depreciation on fixed assets.
3. Sold some investment and profit credited to capital reserve.
4. Redeemed 30% of the debenture @ 105.
5. Decided to write off fixed assets costing ₹ 60,000 on which depreciation amounting to ₹ 48,000 has been provided.

You are required to prepare Cash Flow Statement as per AS-3.