

FM & SM Suggested Answers by CA Ashish Kalra Sir

(CA Inter May 2023)

Q1(a): Following information are given for a company:

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

You are required to calculate:

- (i) Dividend payout ratio
- (ii) Market price of share at optimum dividend payout ratio
- (iii) P/E ratio, at which the dividend policy will have no effect on the price of share.
- (iv) Market price of share at this P/E ratio
- (v) Market price of share using Dividend growth model

(5 marks)

(CA Inter May 2023)

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

$$P = \frac{D + \frac{r}{K_e} (E - D)}{\frac{K_e}{8\%}}$$
$$= \frac{D + \frac{12\%}{8\%} (10 - D)}{8\%}$$

$$[D + 1.5(10 - D)]/0.08 = 130$$

$$D + 15 - 1.5D = 10.4$$

$$-0.5D = -4.6$$

$$D = ₹9.2$$

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

(ii) Since the rate of return of the firm (r) is 12% and it is more than the K_e of 8% , therefore, by distributing 92% of earnings, the firm is not following an optimal dividend policy. The optimal dividend policy for the firm would be to pay zero dividend and in such a situation, the market price would be:

$$P = \frac{0 + \frac{12\%}{8\%} (10 - 0)}{8\%}$$

$$P = ₹187.5$$

So, theoretically the market price of the share can be increased by adopting a zero pay-out.

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

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

$$P = \frac{D + \frac{r}{K_e} (E - D)}{\frac{K_e}{0.12}}$$
$$= \frac{9.2 + \frac{0.12}{0.12} (10 - 9.2)}{0.12}$$
$$= ₹83.33$$

(v) Dividend Growth Model applying growth on dividend

$$K_e = 8\%, r = 12\%, D_0 = 9.2, b = 0.08$$

$$\begin{aligned}
 g &= b \times r \\
 g &= 0.08 \times 0.12 = 0.0096 \\
 D_1 &= D_0 (1 + g) = 9.2 (1 + 0.0096) = `9.2883 \\
 P &= \frac{D_1}{(K_e - g)} = \frac{9.2883}{(0.08 - 0.0096)} = \frac{9.2883}{0.0704} = `131.936
 \end{aligned}$$

Alternative

Alternatively, without applying growth on dividend

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

Q1(b): A company has current sale of `12 lakhs per year. The profit-volume ratio is 20% and post-tax cost of investment in receivables is 15%. The current credit terms are 1/10, net 50 days and average collection period is 40 days. 50% of customers in terms of sales revenue are availing cash discount and bad debt is 2% of sales. In order to increase sales, the company want to liberalise its existing credit terms to 2/10, net 35 days. Due to which, expected sales will increase to `15 lakhs. Percentage of default in sales will remain same. Average collection period will decrease by 10 days. 80% of customers in terms of sales revenue are expected to avail cash discount under this Prospected policy. Tax rate is 30%.

Advise, should the company change its credit terms. (Assume 360 days in a year.)

(5 marks)

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Solution 1(b): (i) Calculation of Cash Discount

Cash Discount = Total credit sales × % of customers who take up discount × Rate

$$\text{Present Policy} = \frac{12,00,000 \times 50 \times 0.01}{100} = `6,000$$

$$\text{Proposed Policy} = 15,00,000 \times 0.80 \times 0.02 = `24,000$$

(ii) Opportunity Cost of Investment in Receivables

$$\begin{aligned}
 \text{Present Policy: Opportunity Cost} &= \frac{\text{Total Cost} \times \text{Collection period} \times \text{Rate of Return}}{360 \times 100} \\
 &= \frac{9,60,000 \times 40 \times 15}{360 \times 100} = `16,000
 \end{aligned}$$

$$\begin{aligned}
 \text{Proposed Policy: Total Cost} &= \frac{\text{Total Cost} \times \text{Collection period} \times \text{Rate of Return}}{360 \times 100} \\
 &= \frac{12,00,000 \times 30 \times 15}{360 \times 100} = `15,000
 \end{aligned}$$

Statement showing Evaluation of Credit Policies

Particulars	Present Policy	Proposed Policy
Credit Sales	12,00,000	15,00,000
Variable Cost @80%* of sales	9,60,000	12,00,000
Bad Debts @ 2%	24,000	30,000
Cash Discount	6,000	24,000
Profit before tax	2,10,000	2,46,000
Less: Tax @30%	(63,000)	(73,800)
Profit after Tax	1,47,000	1,72,200
Less: Opportunity Cost of Investment in Receivables	(16,000)	(15,000)
Net Profit	1,31,000	1,57,200

*Only relevant or variable costs are considered for calculating the opportunity costs on the funds blocked in receivables. Since 20% is profit-volume ratio, hence the relevant costs are taken to be 80% of the respective sales.

Advise: Proposed policy should be adopted since the net benefit is increased by (`1,57,200 - `1,31,000) = `26,200.

Alternative presentation using incremental approach

Particulars	Amount (₹)
Incremental sales (`15,00,000 - `12,00,000)	3,00,000
Less: Incremental variable cost (`12,00,000 - `9,60,000)	(2,40,000)
Less: Incremental Bad debts (`30,000 - `24,000)	(6,000)
Less: Incremental Cash discount (`24,000 - `6,000)	(18,000)
Increase in Profit Before Tax	36,000

Less: Tax @ 30%	(10,800)
Increase in Profit After Tax	25,200
Add: Savings in opportunity cost (₹ 16,000 - ₹ 15,000)	1,000
Increase in Net Profit	26,200

Advise: Proposed policy should be adopted since the net benefit is increased by (₹ 1,57,200 - ₹ 1,31,000) = ₹ 26,200.

Q1(c): A company wants to invest in a project. This requires an initial investment of ₹ 4,50,000. Salvage value after estimated useful life of 5 years is ₹ 50,000. Other details of project are as follows:

	Worst case	Most likely	Best case
Contribution (₹)	3,30,000	5,40,000	6,31,250
Fixed cost [excluding depreciation (₹)]	75,000	1,50,000	2,00,000

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

(i) Calculate NPV in each scenario.

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

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

(5 marks)

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Solution 1(c): (i) Initial Investment = ₹ 4,50,000

Salvage Value = ₹ 50,000

Useful Life = 5 years

Calculation of cash flow in each scenario

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

The possible outcomes will be as follows:

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

Alternative presentation

(i) Computation of NPV of different scenarios

Amount in (₹)

Years	DF	Worst case		Most-likely case		Best case	
		CF	DCF	CF	DCF	CF	DCF
0	1.000	(4,50,000)	(4,50,000)	(4,50,000)	(4,50,000)	(4,50,000)	(4,50,000)
1	0.893	1,85,000	1,65,205	2,66,000	2,37,538	2,90,750	2,59,640
2	0.797	1,85,000	1,47,445	2,66,000	2,12,002	2,90,750	2,31,728
3	0.712	1,85,000	1,31,720	2,66,000	1,89,392	2,90,750	2,07,014
4	0.636	1,85,000	1,17,660	2,66,000	1,69,176	2,90,750	1,84,917
5	0.567	1,85,000	1,04,895	2,66,000	1,50,822	2,90,750	1,64,855
5	0.567	50,000	28,350	50,000	28,350	50,000	28,350
NPV			2,45,275		5,37,280		6,26,504

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

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

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

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

Alternative presentation

(ii) Computation of NPV on the basis of fixed scenarios

Amount in (₹)				
Years	Scenarios	DF	CF	DCF (DF × CF)
0	Initial Outflow	1.000	(4,50,000)	(4,50,000)
1	Most-likely case	0.893	2,66,000	2,37,538
2	Most-likely case	0.797	2,66,000	2,12,002
3	Worst case	0.712	1,85,000	1,31,720
4	Worst case	0.636	1,85,000	1,17,660
5	Best case	0.567	2,90,750	1,64,855
5	Salvage	0.567	50,000	28,350
				4,42,125

Q1(d): Following information is given for X Ltd.:

Total Contribution (₹)	4,25,000
Operating leverage	3.125
15% Preference shares (₹100 each)	1,000
Number of equity shares	2,500
Tax rate	50%

Calculate EPS of X Ltd., if 40% decrease in sales will result EPS to zero.

(5 marks)

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Solution 1(d): (i) Operating Leverage (OL) = $\frac{\text{Contribution}}{\text{EBIT}}$

$$3.125 = \frac{4,25,000}{\text{EBIT}}$$

$$\text{EBIT} = 1,36,000$$

(ii) Degree of Combined Leverage (CL) = $\frac{\% \text{ Change in EPS}}{\% \text{ Change in Sales}}$

$$= \frac{100}{40} = 2.5$$

(iii) Combined Leverage = OL × FL = 3.125 × FL

So, Financial Leverage = 2.5/3.125 = 0.8

(iv) Financial Leverage = $\frac{\text{EBIT}}{\text{EBT}}$ = $\frac{1,36,000}{\text{EBT}}$ = 0.8

$$\text{EBT} = \frac{1,36,000}{0.8} = 1,70,000$$

Calculation of EPS of X Ltd

Particulars	(₹)
EBT	1,70,000
Less: Tax (50%)	(85,000)
EAT	85,000
Preference Dividend	15,000
Net Earnings for Equity Shareholders	70,000
Number of equity shares	2,500
EPS	28

Q2: Following information and ratios are given in respect of AQUA Ltd. for the year ended 31st March, 2023:

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

Assume 360 days in a year.

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

Balance Sheet as on 31st March, 2023

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

(10 marks)

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Solution: (i) Current Ratio = $\frac{\text{Current Assets}}{\text{Current Liabilities}} = 4$ $\therefore \frac{\text{Current Assets}}{₹3,10,000} = 4$ $\therefore \text{Current Assets} = ₹12,40,000$

(ii) Acid Test Ratio = $\frac{\text{Current Assets} - \text{Inventory}}{\text{Current Liabilities}} = 2.5$ $\therefore \frac{₹12,40,000 - \text{Inventory}}{₹3,10,000} = 2.5$

$\therefore ₹12,40,000 - \text{Inventory} = ₹7,75,000$

Inventory = ₹4,65,000

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

(iv) Debtors Collection Period = $(\text{Debtors}/\text{Sales}) \times 360 = 70$ days

$\therefore (\text{Debtors} / ₹27,90,000) \times 360 = 70$

Debtors = ₹5,42,500

(v) Total Assets Turnover Ratio (on Sales) = $\frac{\text{Sales}}{\text{Total Assets}} = 0.96$

$\therefore \frac{₹27,90,000}{\text{Total Assets}} = 0.96$

Total Assets

Total Assets = ₹29,06,250

(vi) Fixed Assets (FA) = Total Assets - Current Assets = ₹29,06,250 - ₹12,40,000 = ₹16,66,250

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

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

(ix) Equity Dividend Coverage Ratio = $\frac{\text{EPS}}{\text{DPS}} = \frac{₹3.5}{\text{DPS}} = 2.1875$ $\therefore \text{DPS} = ₹2.1875$

DPS = $\frac{\text{Total Dividend}}{\text{Number of Equity Shares}} = 2.1875 = \frac{₹1,75,000}{\text{Number of Equity Shares}}$ $\therefore \text{Number of Equity Shares} = 80,000$

$\therefore \text{Equity Share Capital} = 80,000 \times ₹10 = ₹8,00,000$

Reserves & Surplus = Proprietary Fund - Equity Share Capital = ₹13,95,000 - ₹8,00,000 = ₹5,95,000

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

Balance Sheet as on 31st March 2023

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

Q3: The following information pertains to CIZA Ltd.:

Particulars	(₹)
Capital structure:	
Equity share capital (₹10 each)	8,00,000
Retained earnings	20,00,000
9% Preference share capital (₹100 each)	12,00,000
12% Long-term Loan	10,00,000
Interest coverage ratio	8
Income tax rate	30%
Price-earnings ratio	25

The company is proposed to take up an expansion plan, which requires an additional investment of ₹34,50,000. Due to this proposed expansion, earnings before interest taxes of the company will increase by ₹6,15,000 per annum. The additional fund can be raised in following manner:

- By issue of equity shares at present market price, or
- By borrowing 16% Long-term loans from bank.

You are informed that Debt-equity ratio (Debt/ shareholder's fund) in the range of 50% to 80% will bring down the price-earnings ratio to 22 whereas; Debt-equity ratio over 80% will bring down the price-earnings ratio to 18.

Required: Advise which option is most suitable to raise additional capital so that the Market price per share (MPS) is maximised.

(10 marks)

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Solution: Working Notes:

(i) Interest Coverage ratio = $\frac{\text{EBIT}}{\text{Interest}}$ = 8; $\frac{\text{EBIT}}{1,20,000}$ = 8

EBIT = ₹9,60,000

(ii) Proposed Earnings Before Interest & Tax = 9,60,000 + 6,15,000 = ₹15,75,000

Option 1: Equity option

Debt = ₹10,00,000

Shareholders Fund = 8,00,000 + 20,00,000 + 12,00,000 + 34,50,000 = ₹74,50,000

Debt Equity ratio (Debt/Shareholders fund) = $\frac{10,00,000}{74,50,000}$ = 13.42%

P/E ratio in this case will be 25 times

Number of Equity Shares to be issued = ₹34,50,000/₹150 = 23,000

Calculation of Present Earnings per Share and Market Price per share

Particulars	(₹)
Current Earnings Before Interest & Tax	9,60,000
Less: Interest	(1,20,000)
Earnings Before Tax	8,40,000
Less: Taxes	(2,52,000)
Earnings After Tax	5,88,000
Less: Preference Dividend (@9%)	(1,08,000)
Net earnings for Equity shareholders	4,80,000
Number of equity shares	80,000
Earnings Per Share	6
Price-earnings ratio	25

Market Price per share	150
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Option 2: Debt option

Debt = 10,00,000 + 34,50,000 = ₹44,50,000

Shareholders Fund = 8,00,000 + 20,00,000 + 12,00,000 = ₹40,00,000

Debt Equity ratio (Debt/Shareholders fund) = $\frac{44,50,000}{40,00,000} = 111.25\%$

Debt equity ratio has crossed the limit of 80% hence PE ratio in this case will remain at 18 times.

Calculation of EPS and MPS under two financial options

Particulars	Financial Options	
	Option I Equity Shares Issued (₹)	Option II 16% Long Term Debt Raised (₹)
Earnings before interest and Tax (EBIT)	15,75,000	15,75,000
Less: Interest on old debentures @ 12%	(1,20,000)	(1,20,000)
Less: Interest on additional loan (new) @ 16% on ₹34,50,000	NIL	(5,52,000)
Earnings before tax	14,55,000	9,03,000
Less: Taxes @ 30%	(4,36,500)	(2,70,900)
(EAT/Profit after tax)	10,18,500	6,32,100
Less: Preference Dividend (@9%)	(1,08,000)	(1,08,000)
Net Earnings available to Equity shareholders	9,10,500	5,24,100
Number of Equity Shares	1,03,000	80,000
Earnings per Share (EPS)	8.84	6.55
Price/ Earnings ratio	25	18
Market price per share (MPS)	221	117.9

Advise: Equity option has higher Market Price per Share therefore company should raise additional fund through equity option.

Question 4: Capital structure of D Ltd. as on 31st March, 2023 is given below:

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

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

Required:

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

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

(10 marks)

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Solution 4: (i) (a) Growth rate in Dividends

14.07 = 10 × FVIF (i, 7 years)

FVIF (i, 7 years) = 1.407

FVIF (5%, 7 years) = 1.407

i = 5%

Growth rate in dividend = 5%

(b) Cost of Equity

$$K_e = \frac{D_1}{P_0} + g$$

P_0

$$= \frac{16}{80} + 0.05 = 25\%$$

80

(c) Cost of Preference Shares

$$K_p = PD + \frac{(RV - NP)}{2}$$

$$= 8 + \frac{(106 - 104)}{2}$$

$$= 8 + \frac{(106 - 104)}{2}$$

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$$= 8 + \frac{(106 - 104)}{2}$$

$$= 8 + \frac{(106 - 104)}{2}$$

(d) Cost of Debt

$$K_d = I(1 - t) + \frac{(RV - NP)}{2}$$

$$= 12(1 - 0.4) + \frac{(120 - 95)}{2}$$

$$= 12(1 - 0.4) + \frac{(120 - 95)}{2}$$

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$$= 12(1 - 0.4) + \frac{(120 - 95)}{2}$$

Calculation of existing Weighted Average Cost of Capital (WACC)

Capital	Amount (₹)	Weights	Cost	WACC
Equity Share Capital	30,00,000	0.6	25%	15.00%
Preference Share Capital	10,00,000	0.2	8%	1.60%
Debenture	10,00,000	0.2	9.02%	1.80%
	50,00,000	1		18.40%

Alternative presentation

(i) Computation of existing WACC on book value weights

Source	Book value (₹)	Weight	Cost of capital (%)	Product
(1)	(2)	(3)	(4)	(2) × (4)
Equity Share Capital	30,00,000	0.60	25	7,50,000
Preference Share Capital	10,00,000	0.20	8	80,000
Debenture	10,00,000	0.20	9.02	90,200
	50,00,000	1.00		9,20,200

$$WACC = \frac{\text{Product}}{\text{Total book value}} \times 100$$

$$= \frac{9,20,200}{50,00,000} \times 100 = 18.4\%$$

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

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

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Calculation of WACC after expansion taking book value weights

Capital	Amount (₹)	Weight	Cost	WC
Equity Share Capital	30,00,000	0.3750	30%	11.25%
Preference Share Capital	10,00,000	0.1250	8%	1.00%
Debenture	10,00,000	0.1250	9.02%	1.13%
Long-Term Debt	30,00,000	0.3750	9.00%	3.38%
	80,00,000	1.0000		16.76%

Alternative Presentation

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

Source	Book value (₹)	Weight	Cost of Capital	Product
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Equity Share Capital	30,00,000	0.375	30	9,00,000
Preference Share Capital	10,00,000	0.125	8	80,000
Debenture	10,00,000	0.125	9.02	90,200
Long-Term Debt	30,00,000	0.375	9	2,70,000
	80,00,000	1.00		13,40,200

$$\text{WACC} = (\text{Product/Total book value}) \times 100$$

$$= (13,40,200/80,00,000) \times 100 = 16.76\%$$

Q5: Four years ago, Z Ltd. had purchased a machine of ₹4,80,000 having estimated useful life of 8 years with zero salvage value. Depreciation is charged using SLM method over the useful life. The company want to replace this machine with a new machine. Details of new machine are as below:

- Cost of new machine is ₹12,00,000. Vendor of this machine is agreed to take old machine at a value of ₹2,40,000. Cost of dismantling and removal of old machine will be ₹40,000. 80% of net purchase price will be paid on spot and remaining will be paid at the end of one year.
- Depreciation will be charged @20% p.a. under WDV method.
- Estimated useful life of new machine is four years and it has salvage value of ₹1,00,000 at the end of year four.
- Incremental annual sales revenue is ₹12,25,000.
- Contribution margin is 50%.
- Incremental indirect cost (excluding depreciation) is ₹1,18,750 per year.
- Additional working capital of ₹2,50,000 is required at the beginning of year one and ₹3,00,000 at the beginning of year three. Working capital at the end of year four will be nil.
- Tax rate is 30%.
- Ignore tax on capital gain.

Z Ltd. will not make any additional investment, if it yields less than 12%.

Advice, whether existing machine should be replaced or not.

Year	1	2	3	4	5
PVIF_{0.12,5}	0.893	0.797	0.712	0.636	0.567

(10 marks)
(CA Inter May 2023)

Solution 5: Working Notes:

(1) Calculation of Net Initial Cash Outflow

Particulars	(₹)
Cost of New Machine	12,00,000
Less: Sale proceeds of existing machine	(2,00,000)
Net Purchase Price	10,00,000
Paid in year 0	8,00,000
Paid in year 1	2,00,000

(2) Calculation of Additional Depreciation

Amount in (₹)

Particulars	Year			
	1	2	3	4
Opening WDV of machine	10,00,000	8,00,000	6,40,000	5,12,000
Less: Depreciation on new machine @ 20%	(2,00,000)	(1,60,000)	(1,28,000)	(1,02,400)
Closing WDV	8,00,000	6,40,000	5,12,000	4,09,600
Depreciation on old machine (4,80,000/8)	60,000	60,000	60,000	60,000
Incremental depreciation	1,40,000	1,00,000	68,000	42,400

(3) Calculation of Annual Profit before Depreciation and Tax (PBDT)

Particulars	Incremental Values (₹)
Sales	12,25,000
Contribution	6,12,500
Less: Indirect Cost	(1,18,750)
Profit before Depreciation and Tax (PBDT)	4,93,750

Calculation of Incremental NPV

Year	PVF @12%	PBTD (₹)	Incremental Depreciation (₹)	PBT (₹)	Tax @30% (₹)	Cash Inflows (₹)	PV of Cash Inflows (₹)
	(1)	(2)	(3)	(4)	(5) = (4) × 0.30	(6) = (4) - (5) + (3)	(7) = (6) × (1)

1	0.893	4,93,750	1,40,000	3,53,750	106,125	3,87,625	3,46,149.125
2	0.797	4,93,750	1,00,000	3,93,750	1,18,125	3,75,625	2,99,373.125
3	0.712	4,93,750	68,000	4,25,750	1,27,725	3,66,025	2,60,609.800
4	0.636	4,93,750	42,400	4,51,350	1,35,405	3,58,345	2,27,907.420
Add: PV of Salvage ($\text{₹} 1,00,000 \times 0.636$) Less: Initial Cash Outflow - Year 0 Year 1 ($\text{₹} 2,00,000 \times 0.893$) Less: Working Capital - Year 0 Year 2 ($\text{₹} 3,00,000 \times 0.797$) Add: Working Capital released - Year 4 ($\text{₹} 5,50,000 \times 0.636$)							11,34,039.470 63,600 (8,00,000) (1,78,600) (2,50,000) (2,39,100) 3,49,800
Incremental Net Present Value							79,739.470

Since the incremental NPV is positive, existing machine should be replaced.

Alternative Presentation

Computation of Outflow for new Machine:

	₹
Cost of new machine	12,00,000
Replaced cost of old machine	2,40,000
Cost of removal	40,000
Net Purchase price	10,00,000
Outflow at year 0	8,00,000
Outflow at year 1	2,00,000

Computation of additional depreciation

Particulars	Year			
	1	2	3	4
Opening WDV of machine	10,00,000	8,00,000	6,40,000	5,12,000
Less: Depreciation on new machine @20%	(2,00,000)	(1,60,000)	(1,28,000)	(1,02,400)
Closing WDV	8,00,000	6,40,000	5,12,000	4,09,600
Depreciation on old machine (4,80,000/8)	60,000	60,000	60,000	60,000
Incremental depreciation	1,40,000	1,00,000	68,000	42,400

Computation of NPV

	Year	0	1	2	3	4
		₹	₹	₹	₹	₹
1.	Increase in sales revenue		12,25,000	12,25,000	12,25,000	12,25,000
2.	Contribution		6,12,500	6,12,500	6,12,500	6,12,500
3.	Increase in fixed cost		1,18,750	1,18,750	1,18,750	1,18,750
4.	Incremental Depreciation		1,40,000	1,00,000	68,000	42,400
5.	Net profit before tax [1-(2+3+4)]		3,53,750	3,93,750	4,25,750	4,51,350
6.	Net Profit after tax (5 × 70%)		2,47,625	2,75,625	2,98,025	3,15,945
7.	Add: Incremental depreciation		1,40,000	1,00,000	68,000	42,400
8.	Net Annual cash inflows (6 + 7)		3,87,625	3,75,625	3,66,025	3,58,345
9.	Release of salvage value					1,00,000
10.	(investment)/disinvestment in working capital	(2,50,000)		(3,00,000)		5,50,000
11.	Initial cost	(8,00,000)	(2,00,000)			
12.	Total net cash flows	(10,50,000)	1,87,625.0	75,625	3,66,025	10,08,345
13.	Discounting Factor	1	0.893	0.797	0.712	0.636
14.	Discounted cash flows (12 × 13)	(10,50,000)	1,67,549.125	60,273.125	2,60,609.800	641,307.420

$$\text{NPV} = (\text{₹} 1,67,549 + \text{₹} 60,273 + \text{₹} 2,60,610 + \text{₹} 6,41,307) - \text{₹} 10,50,000 = \text{₹} 79,739$$

Since the NPV is positive, existing machine should be replaced.

Q6(a): List out the conditions, framed by SEBI, which a company needs to fulfil in order to issue of bonus shares. (4 marks)

Solution 6(a): To issue Bonus shares, a Company needs to fulfill all the conditions given by Securities Exchange Board of India (SEBI):

(i) As per SEBI, the bonus shares are issued not in lieu of cash dividends.

- (ii) A bonus issue should be authorized by Article of Association (AOA) and not to be declared unless all partly paid-up shares have been converted into fully paid-up shares.
- (iii) The Company should not have defaulted on re-payment of loan, interest, and any statutory dues.

Q6(b): "Permanent working capital and fluctuating (temporary) working capital, both are necessary to facilitate production and sales through the operating cycle." Describe.

(4 marks)

Solution: Both kinds of working capital i.e. permanent and fluctuating (temporary) are necessary to facilitate production and sales through the operating cycle:

Permanent working capital refers to the base working capital, which is the minimum level of investment in the current assets that is carried by the entity at all times to carry its day to day activities. It generally stays invested in the business unless the operations are scaled up or down permanently which would also result in increase or decrease in permanent working capital. It is generally financed by long term sources of finance.

Temporary working capital refers to that part of total working capital, which is required by an entity in addition to the permanent working capital. It is also called variable or fluctuating working capital which is used to finance the short-term working capital requirements which arises due to fluctuation in sales volume. For instance, an organization would maintain increased levels of inventory to meet increased seasonal demand.

Q6(c): Briefly explain concept of "Trading on Equity" in financial leverage analysis.

(2 marks)

Solution 6(c): Financial Leverage as 'Trading on Equity':

Financial leverage indicates the use of funds with fixed cost like long term debts and preference share capital along with equity share capital which is known as trading on equity. The basic aim of financial leverage is to increase the earnings available to equity shareholders using fixed cost fund. A firm is known to have a positive/favourable leverage when its earnings are more than the cost of debt. If earnings are equal to or less than cost of debt, it will be a negative/unfavourable leverage. When the quantity of fixed cost fund is relatively high in comparison to equity capital it is said that the firm is 'trading on equity'.

(OR)

Or Q6(c): Discuss features of secured premium notes.

(2 marks)

Solution 6(c): Features of Secured Premium Notes:

- SPN instruments are issued with a detachable warrant.
- These instruments are redeemable after a notified period of say 4 to 7 years.
- No interest is paid during the lock in period.
- The conversion of detachable warrant into equity shares will have to be done within time period notified by the company.