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SUGGESTED SOLUTION
IPCC NOVEMBER 2016 EXAM
FINANCIAL MANAGEMENT
Test Code - I N J 1 0 1 8
BRANCH - (MUMBAI) (Date : 15.05.2016)

Head Office : Shraddha, 3rd Floor, Near Chinai College, Andheri (E), Mumbai – 69.
Tel : (022) 26836666

Answer-1 :

Gross Profit Rs. 54,000
 Gross Profit Margin 20%

$$\therefore \text{Sales} = \frac{\text{Gross Profit}}{\text{Gross Profit Margin}} = \text{Rs.}54,000 / 0.20 = \text{Rs.}2,70,000$$

Credit Sales to Total Sales = 80%
 \therefore Credit Sales = Rs. 2,70,000 × 0.80 = Rs. 2,16,000
 Total Assets Turnover = 0.3 times

$$\therefore \text{Total Assets} = \frac{\text{Sales}}{\text{Total Assets Turnover}} = \frac{\text{Rs.}2,70,000}{0.3} = \text{Rs.}9,00,000$$

Sales – Gross Profit = COGS

$$\therefore \text{COGS} = \text{Rs.} 2,70,000 - 54,000 = \text{Rs.} 2,16,000$$

Inventory turnover = 4 times

$$\text{Inventory} = \frac{\text{COGS}}{\text{Inventory turnover}} = \frac{2,16,000}{4} = \text{Rs.}54,000$$

Average Collection Period = 20 days

$$\therefore \text{Debtors turnover} = \frac{360}{\text{Average Collection Period}} = 360/20 = 18$$

$$\therefore \text{Debtors} = \frac{\text{Credit sales}}{\text{Debtors Turnover}} = \frac{\text{Rs.}2,16,000}{18} = \text{Rs.}12,000$$

Current ratio = 1.8

$$1.8 = \frac{\text{Debtors} + \text{Inventory} + \text{Cash}}{\text{Creditors}}$$

$$1.8 \text{ Creditors} = (\text{Rs.} 12,000 + \text{Rs.} 54,000 + \text{Cash})$$

$$1.8 \text{ Creditors} = \text{Rs.} 66,000 + \text{Cash}$$

Long-term Debt to Equity = 40%

$$\text{Shareholders' Funds} = \text{Rs.} 6,00,000$$

$$\therefore \text{Long-term Debt} = \text{Rs.} 6,00,000 \times 40\% = \text{Rs.} 2,40,000$$

$$\text{Creditors (Balance figure)} = 9,00,000 - (6,00,000 + 2,40,000) = \text{Rs.} 60,000$$

$$\therefore \text{Cash} = (60,000 \times 1.8) - 66,000 = \text{Rs.} 42,000$$

(3 Marks)**Balance Sheet**

Liabilities	Rs.	Assets	Rs.
Creditors (Bal. Fig)	60,000	Cash	42,000
		Debtors	12,000
Long- term debt	2,40,000	Inventory	54,000
Shareholders' funds	6,00,000	Fixed Assets (Bal fig.)	7,92,000
	9,00,000		9,00,000

(3 Marks)

Answer-2 :

- (i) (a) **Statement showing computation of weighted average cost of capital by using Book value proportions**

Source of finance	Amount (Book value) (Rs.in crores)	Weight (Book value proportion) (a)	Cost of capital (b)	Weighted cost of capital (c)= (a)x(b)
Equity capital	15	0.256	0.16 (W.N.1)	0.04096
11% Preference capital	1	0.017	0.1543 (W.N.2)	0.00262
Retained earnings	20	0.342	0.16 (W.N.1)	0.05472
13.5% Debentures	10	0.171	0.127 (W.N.3)	0.02171
15% term loans	12.5	0.214	0.09 (W.N.4)	0.01926
	----- 58.5	----- 1.00		
Weighted average cost of capital				0.013927 or 13.93%

(4 Marks)

- (b) **Statement showing computation of weighted average cost of capital by using market value proportions**

Source of finance	Amount (Rs.in crores)	Weight (Market value proportion) (a)	Cost of capital (b)	Weighted cost of capital (c)= (a)x(b)
Equity capital (Rs. 1.5 crores x Rs. 40)	60.00	0.739 (Refer to working note 1)	0.16	0.11824
11% Preference capital (Rs. 1 lakh x Rs. 75)	0.75	0.009 (Refer to working note 2)	0.1543	0.00138
13.5% Debentures (Rs. 10 lakhs x Rs. 80)	8.00	0.098 (Refer to working note 3)	0.127	0.01245
15% Term loans	12.50	0.154 (Refer to working note 4)	0.09	0.01386
	----- 81.25	----- 1.00		
Weighted average cost of capital				0.14593 or 14.59%

Note: Since retained earnings are treated as equity capital for purposes of calculation of cost of specific source of finance, the market value of the ordinary shares may be taken to represent the combined market value of equity shares and retained earnings. The separate market values of retained earnings and ordinary shares may also be worked out by allocating to each of these a percentage of total market value equal to their percentage share of the total based on book value.

(3 Marks)

(ii) Statement showing weighted marginal cost of capital schedule for the company, if it raises Rs. 10 crores next year, given the following information:

Chunk	Source of Finance	Amount (Rs. In crores)	Weight (a)	Cost capital (b)	Weighted cost of capital (c)=(a)x(b)
1	Retained earnings	1.5	0.15	0.16	0.024
2	15% Debt	2.5	0.25	0.09	0.0225
3	Equity shares	3.5	0.35	0.1825	0.063875
4	16% of Debt	2.5	0.25	0.096	0.024
					0.134375

Weighted average cost of capital = 13.44%

(3 Marks)

Working Notes (W.N.):

1. Cost of equity capital and retained earnings (K_e)

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

Where, K_e = Cost of equity capital
 D_1 = Expected dividend at the end of year 1
 P_0 = Current market price of equity share
 g = Growth rate of dividend
 Now, it is given that $D_1 = \text{Rs. } 3.60$, $P_0 = \text{Rs. } 40$ and $g = 7\%$

$$\text{Therefore, } K_e = \frac{\text{Rs. } 3.60}{\text{Rs. } 40} + 0.07$$

$$\text{Or } K_e = 16\%$$

(1 Mark)

2. Cost of preference capital (K_p)

$$K_p = \frac{D + \left[\frac{F - P}{n} \right]}{\left[\frac{F + P}{n} \right]}$$

Where, D = Preference dividend
 F = Face value of preference shares
 P = Current market price of preference shares
 N = Redemption period of preference shares
 Now, it is given that $D = 11\%$, $F = \text{Rs. } 100$, $P = \text{Rs. } 75$ and $n = 10$ years

$$\text{Therefore } K_p = \frac{11 + \left[\frac{\text{Rs. } 100 - \text{Rs. } 75}{10} \right]}{\left[\frac{\text{Rs. } 100 + \text{Rs. } 75}{2} \right]} \times 100 = 15.43\%$$

(1 Mark)

3. Cost of debentures (K_d)

$$K_d = \frac{r(1-t) \left[\frac{F - P}{n} \right]}{\left[\frac{F + P}{n} \right]}$$

Where, r = Rate of interest
 t = Tax rate applicable to the company
 F = Face value of debentures
 P = Current market price of debentures
 n = Redemption period of debentures

Now it is given that $r = 13.5\%$, $t = 40\%$, $F = \text{Rs. } 100$, $P = \text{Rs. } 80$ and $n = 6$ years

$$\text{Therefore, } K_d = \frac{13.5(1-0.40) + \left[\frac{\text{Rs.}100 - \text{Rs.}80}{6} \right]}{\left[\frac{\text{Rs.}100 + \text{Rs.}80}{6} \right]} \times 100$$

$$= 12.70\%$$

(1 Mark)

4. Cost of term loans (K_t)

$$K_t = r(1-t)$$

Where, r = Rate of interest on term loans

t = Tax rate applicable to the company

Now, r = 15% and t = 40%

Therefore, K_t = 15% (1-0.40)

$$= 9\%$$

(1 Mark)

5. Cost of fresh equity share (K_e)

$$K_e = \left[\frac{D_1}{P} \right] + g$$

Now, D_1 = Rs. 3.60, P = Rs. 32 and g = 0.07

$$\text{Therefore, } K_e = \left[\frac{\text{Rs.}3.60}{\text{Rs.}32} \right] + 0.07$$

$$= 18.25\%$$

(1 Mark)

6. Cost of debt (K_d)

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

(For first Rs. 2.5 crores)

$$r = 15\% \text{ and } t = 40\%$$

Therefore, K_d = 15% (1-40%)

$$= 9\%$$

(For the next 2.5 crores)

$$r = 16\% \text{ and } t = 40\%$$

Therefore, K_d = 16% (1-40%) = 9.6%

(1 Mark)

Answer-3 (a) :

(i) Computation of Current Weighted Average Cost of Capital

Cost of Debentures (k_d)

$$K_d = \frac{1}{NP}(1-t) = \frac{12}{100}(1-0.30) = 8.4\%$$

Cost of Equity Share Capital (k_e)

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

$$= \frac{24}{600} + 5\%$$

$$= 0.04 + 0.05 = 0.09 = 9\%$$

Source	Amount (Rs. In crores)	Weight	Cost of Capital	weighted Cost of Capital
Equity	7.20	0.8	9%	7.20
Debentures	1.80	0.2	8.4%	<u>1.68</u>
Weighted Average Cost of Capital				<u>8.88</u>

Current Weighted Average Cost of Capital = 8.88 %

(3 Marks)

(ii) Computation of New Weighted Average Cost of Capital**Cost of Existing Debentures (k_d)**

Cost of existing debentures = 8.4%

Cost of Loan

$$\text{Cost of Loan} = \frac{18}{100} (1-0.30) = 0.18 \times 0.70 = 12.6\%$$

Cost of Equity Share Capital (k_e)

$$K_e = \frac{24(1.05)}{500} + 5\% = \frac{25.2}{500} \times 100 + 5\% = 0.504 + 0.05 = 0.1004 = 10.04\%$$

Source	Amount (Rs. In crores)	Weight	Cost of Capital	weighted Cost of Capital
Equity	7.20	0.60	10.04%	6.024
Debt (Loan)	3.00	0.25	12.6%	3.15
Debentures	1.80	0.15	8.4%	1.26
	12.00			10.434%

New Weighted Average Cost of Capital = 10.434%**(3 Marks)****Answer-3 (b) :**

The current value of equity share of D Ltd. is sum of the following:

- Presently value (PV) of dividends payments during 1-4 years; and
- Present value (PV) of expected market price at the end of the fourth year based on constant growth rate of 8 per cent.

PV of dividends – year 1-4

Year	Dividend	PV factor at 16%	Total PV (in Rs.)
1	1.50(1 + 0.12)=1.68	0.862	1.45
2	1.68 (1+0.12)= 1.88	0.743	1.40
3	1.88 (1 + 0.10)=2.07	0.641	1.33
4	2.07 (1 + 0.10)= 2.28	0.552	1.26
	Total		5.44

Present value of the market price (P₄): end of the fourth year –

$$P_4 = D_5 / (K_e - g) = \text{Rs. } 2.28 (1.08) / (16\% - 8\%) = \text{Rs. } 30.78$$

$$\text{PV of Rs. } 30.78 = \text{Rs. } 30.78 \times 0.552 = \text{Rs. } 16.99$$

$$\text{Hence, Value of equity shares Rs. } 5.44 + \text{Rs. } 16.99 = \text{Rs. } 22.43$$

(4 Marks)**Answer-4 (a) :****Computation of degree of Operating leverage, Financial leverage
and Combined leverage of two companies**

	Company A	Company B
Output units per annum	60,000	15,000
	Rs.	Rs.
Selling price / unit	30	250

Sales revenue	18,00,000	37,50,000
	(60,000 units x Rs.30)	(15,000 units x Rs.250)
Less: Variable costs	6,00,000	11,25,000
	(60,000 units x Rs.10)	(15,000 units x Rs.75)
Contribution (C)	12,00,000	26,25,000
Less: Fixed costs	7,00,000	14,00,000
EBIT	5,00,000	12,25,000
Less: Interest @ 12% on debentures	48,000	78,000
PBT	4,52,000	11,47,000

(3 Marks)

DOL = $\frac{C}{EBIT}$	2.4	2.14
	(Rs.12,00,000/ Rs.5,00,000)	(Rs.26,25,000/Rs.12,25,000)
DFL = $\frac{EBIT}{PBT}$	1.11	1.07
	(Rs.5,00,000/Rs.4,52,000)	(rs.12,25,000/Rs.11,47,000)
DCL = DOL x DFL	2.66	2.29
	(2.4 x 1.11)	(2.14 x 1.07)

(1 x 3 = 3 Marks)

Answer-4 (b) :

Project	Outflow Rs. 2,00,000					
	1	2	3	4	5	
Year	Rs.	Rs.	Rs.	Rs.	Rs.	
Profit after depreciation but before tax	85,000	1,00,000	80,000	80,000	40,000	
Less : tax (30%)	25,500	30,000	24,000	24,000	2,000	
PAT	59,500	70,000	56,000	56,000	28,000	Average=Rs.53,900
Add : depreciation	40,000	40,000	40,000	40,000	40,000	
Net cash inflow	99,500	1,10,000	96,000	96,000	68,000	Average=Rs.93,900

(2 Marks)

(i) Calculation of payback period

$$= 1 + \frac{1,00,500}{1,10,000} = 1.914 \text{ years}$$

(2 Marks)

(ii) Calculation of ARR

Initial Investment	2,00,000	1,60,000	1,20,000	80,000	40,000	
Depreciation	40,000	40,000	40,000	40,000	40,000	
Closing Investment	1,60,000	1,20,000	80,000	40,000	0	
Average Investment	1,80,000	1,40,000	1,00,000	60,000	20,000	Average=1,00,000

$$ARR = \text{Average of profit after tax} / \text{Average investment} = \frac{53,900}{1,00,000} = 53.90\%$$

(2 Marks)

(iii) Calculation of net present Value 10%

Net cash inflow	99,500.00	1,10,000.00	96,000.00	96,000.00	68,000.00	
	0.909	0.826	0.751	0.683	0.621	
Present value	90,445.50	90,860	72,096.00	65,568.00	42,228.00	3,61,197.50

Net present value = Rs. 3,61,197.50 – Rs. 2,00,000 = Rs. 1,61,197.50

Net present value index = $\frac{NPV}{PV \text{ of Cash Outflows}}$ = Rs. 1,61,197.50/Rs. 2,00,000 = 0.81

(2 Marks)

(iv) Calculation of IRR

Present value factor-Initial investment / Average annual cash inflow

2,00,000 / 93,900 = 2.13

It lies in between 38 % and 40%

Net cash Inflows	99,500.00	1,10,000.00	96,000.00	96,000.00	68,000.00	
Present value Factor @ 38%	0.725	0.525	0.381	0.276	0.200	Total=2,06,559.50
Present value @ 38% (P1)	72,137.50	57,750.00	36,576.00	26,496.00	13,600.00	
Net Cash Inflows	99,500.00	1,10,000.00	96,000.00	96,000.00	68,000.00	
Present Value factor @ 40%	0.714	0.510	0.364	0.260	0.1896	Total=1,99,695
Present value @ 40% (P2)	71.043	56,100	34,944	24,960	12.648	

IRR is calculated by Interpolation:

$$\begin{aligned}
 \text{IRR} &= \text{LDR} + (\text{P1} - \text{Q}) / \text{P1} - \text{P2} (\text{SDR} - \text{LDR}) \\
 &= 38 + (2,06,559.50 - 2,00,000) / (2,06,559.50 - 1,99,695) \times (40 - 38) \\
 &= 39.911137\% = 39.91\%
 \end{aligned}$$

(4 Marks)