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**SUGGESTED SOLUTION**

**INTERMEDIATE MAY 2019 EXAM**

**SUBJECT – ACCOUNTS, COSTING AND FM**

**Test Code - CIM 8111**

**BRANCH - () (Date :)**

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**Answer 1:****(a) Pattern of Raising Additional Finance**

Equity = 10,00,000 × 60/100 = Rs. 6,00,000

Debt = 10,00,000 × 40/100 = Rs. 4,00,000

Capital structure after Raising Additional Finance

Sources of fund	Amount (Rs.)
Shareholder's funds	
Equity capital (6,00,000 – 3,00,000)	3,00,000
Retained earnings	3,00,000
Debt at 10% p.a.	1,80,000
Debt at 16% p.a. (4,00,000 - 1,80,000)	2,20,000
Total funds	10,00,000

**(b) Post-tax Average Cost of Additional Debt**

$K_d = i(1 - t)$ , where 'Kd' is cost of debt, 'i' is interest and 't' is tax.

On Rs. 1,80,000 = 10% (1 - 0.5) = 5% or 0.05

On Rs. 2,20,000 = 16% (1 - 0.5) = 8% or 0.08

Average Cost of Debt (Post tax) i.e.

$$K_d = \frac{1,80,000 \times 0.05 + 2,20,000 \times 0.08}{4,00,000} \times 100 = 6.65\% \text{ (approx)}$$

**(c) Cost of Retained Earnings and Cost of Equity applying Dividend Growth Model**

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

$$\text{Then, } K_e = \frac{2 \times 1.1}{44} + 0.10 = \frac{22}{44} + 0.10 = 0.15 \text{ or } 15\%$$

**(d) Overall Weighted Average Cost of Capital (WACC) (After Tax)**

Particulars	Amount (Rs.)	Weights	Cost of Capital	WACC
Equity (including retained earnings)	6,00,000	0.60	15%	9.00
Debt	4,00,000	0.40	6.65%	2.66
Total	10,00,000	1.00		11.66

**Answer 2:**

**(i) Statement showing the apportionment of joint costs to A, B and X based on sales value at the point of split-off**

Products	A	B	X	Total Rs.
Output (Kg.)	18,000	10,000	54,000	-
Sales value at the point of	(50 x 18,000) = Rs.9,00,000	(40 x 10,000) Rs.4,00,000	10 x 54,000 Rs.5,40,000	18,40,000

split-off (Rs.)				
Joint cost	Rs.6,30,000*	Rs.2,80,000@	Rs.3,78,000\$	12,88,000
apportioned on the basis of sales value at the point of split off	$\left( \frac{\text{Rs.12,88,000}}{\text{Rs.18,40,000}} \times 9,00,000 \right) @ \left( \frac{\text{Rs.12,88,000}}{\text{Rs.18,40,000}} \times 4,00,000 \right) \left( \frac{\text{Rs.12,88,000}}{\text{Rs.18,40,000}} \times 5,40,000 \right)$			

**(ii) Statement showing the cost per kg. of each product (including joint costs processing cost and total costs separately)**

Products	A	B	X
Joint costs (as per (a) (i))	Rs.6,30,000	Rs.2,80,000	Rs.3,78,000
Production	18,00 kg.	10,000 kg.	54,000 kg.
Joint cost per kg. (i)	Rs.35	Rs.28	Rs.7
Further processing cost per kg (ii)	Rs.10	Rs.15	Rs.2
	(1,80,000+18,000)	(1,50,000+10,000)	(1,08,000+54,000)
Total cost per kg. (i) + (ii)	Rs.45	Rs.43	Rs.9

**(iii) Statement showing product-wise total profit for the period**

Products	A	B	X	Total
Sales value (Rs.)	12,24,000	2,50,000	7,92,000	
Add : Closing stock (Please refer to notes)	45,000	2,15,000	90,000	
Total	12,69,000	4,65,000	8,82,000	26,16,000
Less : (i) Apportioned joint cost	6,30,000	2,80,000	3,78,000	12,88,000
(ii) Further processing cost	1,80,000	1,50,000	1,08,000	4,38,000
Profit	4,59,000	35,000	3,96,000	8,90,000

**(iv) Calculation for processing decision:**

1. Products	A	B	X
Selling price per kg. at the point of split-off	Rs.50	Rs.40	Rs.10
Selling price per kg. after processing	<u>72</u>	<u>50</u>	<u>18</u>
Incremental selling price	22	10	8
Less : Further processing cost	<u>10</u>	<u>15</u>	<u>2</u>
Incremental profit (loss)	<u>12</u>	<u>(-5)</u>	<u>6</u>

Since product B does not give any further processing profit, it should not be further processed.

**Working Notes :**

1. Products	A	B	X
(i) Sales Value	Rs.12,24,000	Rs.2,50,000	Rs.7,92,000
(ii) Quantity sold	17,000 kg.	5,000 kg.	44,000 kg.

(iii) Selling price Rs./kg. (i) ÷ (ii) 72                      50                      18

**2. Valuation of closing stocks**

Products	A	B	X	Total
Closing Stock	1,000 kg.	5,000 kg.	10,000 kg	
Cost per kg.	Rs.45	Rs.43	Rs.9	
Closing Stock Value (Rs.)	45,000	2,15,000	90,000	Rs.3,50,000

Closing stock is valued at lower of cost or market value. Here cost is lower of the two and therefore closing stock is to be valued at cost. Working note 1 determines selling price per kg. for its comparison with cost per kg.

**Answer 3:**

Calculation of total Interest and Interest included in each installment

Hire Purchase Price (HPP) = Down Payment + instalments

= 30,000 + 50,000 + 50,000 + 30,000 + 20,000 = 1,80,000

Total Interest = 1,80,000 – 1,50,000 = 30,000

**Computation of IRR (considering two guessed rates of 6% and 12%)**

Year	Cash Flow	DF @6%	PV	DF @12%	PV
0	30,000	1.00	30,000	1.00	30,000
1	50,000	0.94	47,000	0.89	44,500
2	50,000	0.89	44,500	0.80	40,000
3	30,000	0.84	25,200	0.71	21,300
4	20,000	0.79	15,800	0.64	12,800
		NPV	1,62,500	NPV	1,48,600

Interest rate implicit on lease is computed below by interpolation:

$$\text{Interest rate implicit on lease} = 6\% + \frac{1,62,500 - 1,50,000}{1,62,500 - 1,48,600} \times (12 - 6) = 11.39\%$$

**Thus, repayment schedule and interest would be as under :**

Installment no.	Principal at beginning	Interest included in each installment	Gross amount	Installment	Principal at end
Cash down	1,50,000		1,50,000	30,000	1,20,000
1	1,20,000	13,668	1,33,668	50,000	83,668
2	83,668	9,530	93,198	50,000	43,198
3	43,198	4,920	48,118	30,000	18,118

4	18,118	2,064	20,182	20,000	182*
		30,182*			

\* the difference is on account of approximations.

**Answer 4 :**

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

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

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

**Note:** The cost of equity can be calculated without taking the effect of growth on dividend.

(ii) **Indicated market price per share when growth rate is 8% p.a.:**

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

OR

$$P_0 = \frac{\text{Expected Dividend per share } (D_1)}{\text{Cost of equity } (K_e) - \text{Growth rate } (g)}$$

$$P_0 = \frac{\text{Rs. } 2 \times 1.08}{0.1448 - 0.08} \text{ Or, } P_0 = \frac{\text{Rs.}2.16}{0.0648} = \text{Rs.}33.33$$

(iii) **Cost of Debenture ( $K_d$ ):**

(Using approximation method)

$$K_d = \frac{\text{Interest } (1 - \text{tax rate}) + \left( \frac{\text{RV} - \text{NP}}{12 \text{ years}} \right)}{\left( \frac{\text{RV} + \text{NP}}{2} \right)}$$

Where, Tax rate = 50%

Net Proceeds (NP) = Rs. 96

Redeemable Value (RV) = Rs. 100 (1.12) = Rs. 112

$$K_d = \frac{10\% \text{ of Rs.}100 (1 - 0.5) + \left( \frac{\text{Rs.}112 - \text{Rs.}96}{12 \text{ years}} \right)}{\left( \frac{\text{Rs.}112 + \text{Rs.}96}{2} \right)}$$

$$K_d = \frac{\text{Rs.}5 + 1.33}{\text{Rs.}104} = 0.0608 \text{ or } 6.08\%$$

OR

(Using Present Value method or YTM)

### Identification of relevant cash flows

Year	Cash flows
0	Current market price (P <sub>0</sub> ) = Rs. 96
1 to 12	Interest net of tax [I(1-t)] = 10% of Rs. 100 (1 - 0.5) = Rs. 5
12	Redemption value (RV) = Rs. 100 (1.12) = Rs. 112

### Calculation of Net Present Values (NPV) at two discount rates

Year	Cash flows	Discount factor @ 5%(L)	Present Value	Discount factor @ 10% (H)	Present Value
0	96	1.000	(96.00)	1.000	(96.00)
1 to 12	5	8.863	44.32	6.814	34.07
12	112	0.557	62.38	0.319	35.73
NPV			+10.7		-26.2

### Calculation of IRR

$$\text{IRR} = L + \frac{\text{NPV}_L}{\text{NPV}_L - \text{NPV}_H} (H - L)$$

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

Therefore, K<sub>d</sub> = 6.45%

[Any other low and high rate as discount factor may also be used.]

### Answer 5:

Ledger Accounts in the Books of Girish Transport Ltd are as under -

#### 1. Rickshaw A/c

Date	Particulars	Rs.	Date	Particulars	Rs.
01.01.15	To NCR Motors A/c	1,80,000	31.12.15	By Depreciation (1,80,000x 20%)	36,000
			31.12.15	By balance c/d	1,44,000
	<b>Total</b>	<b>1,80,000</b>		<b>Total</b>	<b>1,80,000</b>
01.01.16	To balance b/d	1,44,000	31.12.16	By Depreciation (1,44,000x 20%)	28,800
				By NCR Motors (WN 2)	58,800
				By Loss on Takeover (WN 3)	18,000
				By balance c/d (b/f)	38,400
	<b>Total</b>	<b>1,44,000</b>		<b>Total</b>	<b>1,44,000</b>
01.01.17	To balance b/d	38,400	31.12.17	By Depreciation (38,400x 20%)	7,680
				By balance c/d (b/f)	30,720
	<b>Total</b>	<b>38,400</b>		<b>Total</b>	<b>38,400</b>

Date	Particulars	Rs.	Date	Particulars	Rs.
01.01.15	To Bank A/c	30,000	01.01.15	By Rickshaw A/c	1,80,000
31.12.15	To Bank A/c [50,000 + 15,000]	65,000	31.12.15	By Interest A/c [1,80,000 - 30,000] x 10%	15,000
31.12.15	To balance c/d (b/f)	1,00,000			
	<b>Total</b>	<b>1,95,000</b>		<b>Total</b>	<b>1,95,000</b>
31.12.16	To Rickshaw A/c	58,800	01.01.16	By balance b/d	1,00,000
31.12.16	To balance c/d	51,200	31.12.16	By Interest A/c [1,00,000 x 10%]	10,000
		<b>1,10,000</b>			<b>1,10,000</b>
31.12.17	To Bank A/c (Note)	56,320	01.01.17	By balance b/d	51,200
			31.12.17	By Interest A/c [51,200 x 10%]	5,120
	<b>Total</b>	<b>56,320</b>		<b>Total</b>	<b>56,320</b>

**Note:** It is assumed that the balance amount is settled along with interest, on 31.12.2017.

**Working Notes:**

**1. Valuation of Rickshaw**

Particulars	Value as per Purchaser	Value as per Vendor
Depreciation Rate	20% WDV	30% WDV
Value of Rickshaw [60,000 x 3]	1,80,000	1,80,000
Less: Depreciation for the year 2015	(36,000)	(54,000)
Value of Rickshaw as on 31.12.2015	1,44,000	1,26,000
Less: Depreciation for the year 2016	(28,800)	(37,800)
Value of Rickshaw as on 31.12.2016	1,15,200	88,200
Less: Value of Rickshaws repossessed [1,15,200 x 2/3]	(76,800)	
Price of the Remaining Rickshaw [1,15,200 x 1/3]	38,400	
Less: Depreciation for the year 2017	(7,680)	
Value of Rickshaw as on 31.12.2017	30,720	

**2.** Takeover Value of Rickshaws repossessed:  $2/3 \times \text{Rs. } 88,200 = \text{Rs. } 58,800$

**3.** Loss on Takeover = Book Value of Rickshaws Repossessed Rs. 76,800 (-) Takeover Value Rs. 58,800 = Rs. 18,000.