

# CA Nitin Guru

Subject- **Financial Management - By CA NITIN GURU**

**Mock Test – 4 - SOLUTIONS**

Cost of Capital & Capital Structure

Time: 40 Minutes

M.M. – 25 Marks

## Instructions-

1. This is a self paced test series, where you can do the test anytime after you complete your chapter and attempt the test and email it to us for checking or self evaluation with help of the solution set provided. For video solutions and test paper to be checked please email us at email id provided below.
2. Answer Sheet is in a single pdf format.
3. First Sheet contains all the information- Name, Registered Email id, Registered Mobile No., Test Number with Subject, website name through which you are watching our class..
4. NO late submission will be entertained.
5. NO answer sheet will be accepted over a chat box or telegram or any other mode other than email.
6. Test solutions should be emailed to [test.canitinguru@gmail.com](mailto:test.canitinguru@gmail.com)
7. Please give us at least 10 working days time to check and send back your test copy.
8. Sir, will record test paper discussion video as well, which you can watch and clarify your doubts if you have any. Solution videos will be available on youtube and please join our telegram channel [@canitinguru](https://t.me/canitinguru) to be updated with any announcement about test discussion.

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**Solution 1.**

**[5 Marks]**

**Computation of Rate of Preference Dividend**

$$\frac{(\text{EBIT} - \text{Interest}) (1 - t)}{\text{No. of Equity Shares (N}_1)} = \frac{\text{EBIT} (1 - t) - \text{Preference Dividend}}{\text{No. of Equity Shares (N}_2)}$$

$$\frac{(\text{₹ } 4,80,000 - \text{₹ } 48,000) (1 - 0.30)}{80,00,000 \text{ Shares}} = \frac{\text{₹ } 4,80,000 (1 - 0.30) - \text{Preference Dividend}}{80,00,000 \text{ Shares}}$$

$$\frac{\text{₹ } 3,02,400}{80,00,000 \text{ Shares}} = \frac{\text{₹ } 3,36,000 - \text{Preference Dividend}}{80,00,000 \text{ Shares}}$$

$$\text{₹ } 3,02,400 = \text{₹ } 3,36,000 - \text{Preference dividend}$$

$$\text{Preference Dividend} = \text{₹ } 3,36,000 - \text{₹ } 3,02,400 = \text{₹ } 33,600$$

$$\text{Rate of Dividend} = \frac{\text{Preference Dividend}}{\text{Preference Share Capital}} \times 100$$

$$= \frac{\text{₹ } 33,600}{4,00,000} \times 100 = 8.4\%$$

**Solution 2.**

**[10 Marks]**

Workings:

$$\text{Market Value of Equity} = \frac{\text{Net income (NI) for equity holders}}{K_e}$$

$$\text{₹ } 1,750 \text{ lakhs} = \frac{\text{Net income (NI) for Equity holders}}{0.20}$$

Net Income to equity holders/EAT = ₹ 350 lakhs  
 Therefore EBIT =  $\frac{\text{EAT}}{(1-t)} = \frac{\text{₹ } 350 \text{ Lakhs}}{(1-0.3)} = \text{₹ } 500 \text{ lakhs}$

**Income Statement**

	All Equity (₹ In lakhs)	Equity & Debt (₹ In lakhs)
EBIT (as calculated above)	500	500
Interest on ₹ 275 lakhs @ 15%	-	41.25
EBT	-	458.75
Tax @ 30%	500	137.63
Income available to equity holders	150	321.12
	350	

(i) Market value of the company

$$\begin{aligned} \text{Market value of levered firm} &= \text{Value of unlevered firm} + \text{Tax Advantage} \\ &= \text{₹ } 1,750 \text{ lakhs} + (\text{₹ } 275 \text{ lakhs} \times 0.3) \\ &= \text{₹ } 1,832.5 \text{ lakhs} \end{aligned}$$

$$\begin{aligned} \text{Change in market value of the company} &= \text{₹ } 1,832.5 \text{ lakhs} - \text{₹ } 1,750 \text{ lakhs} \\ &= \text{₹ } 82.50 \text{ lakhs} \end{aligned}$$

The impact is that the market value of the company has increased by ₹ 82.50 lakhs due to replacement of equity with debt.

(ii) Overall Cost of Capital

$$\begin{aligned} \text{Market Value of Equity} &= \text{Market value of levered firm} - \text{Equity repurchased} \\ &= \text{₹ } 1,832.50 \text{ lakhs} - \text{₹ } 275 \text{ lakhs} = \text{₹ } 1,557.50 \text{ lakhs} \end{aligned}$$

$$\text{Cost of Equity (Ke)} = (\text{Net Income to equity holders} / \text{Market value of equity}) \times 100$$

$$= (\text{₹ } 321.12 \text{ lakhs} / \text{₹ } 1,557.50 \text{ lakhs}) \times 100 = 20.62\%$$

$$\text{Cost of debt (Kd)} = I(1 - t) = 15(1 - 0.3) = 10.50\%$$

Components	Amount (₹ In lakhs)	Cost of Capital %	Weight	WACC (Ko) %
Equity	1,557.50	20.62	0.85	17.53
Debt	275.00	10.50	0.15	1.58
	1,832.50		1	19.11

The impact is that the Overall Cost of Capital or Ko has fallen by 0.89% (20% - 19.11%) due to the benefit of tax relief on debt interest payment.

(iii) Cost of Equity

The impact is that cost of equity has risen by 0.62% (20.62% - 20%) due to the presence of financial risk i.e. introduction of debt in capital structure.

Note: Cost of Capital and Cost of equity can also be calculated with the help of following formulas, though there will be no change in the final answers.

$$\text{Cost of Capital (Ko)} = \text{Keu} [1 - (t \times L)]$$

Where,

Keu = Cost of equity in an unlevered company

t = Tax rate

$$L = \frac{\text{Debt}}{\text{Debt} + \text{Equity}}$$

$$\text{So, Ko} = 0.20 \left[ 1 - \left( 0.3 \times \frac{\text{₹ } 275 \text{ lakhs}}{\text{₹ } 1,832.5 \text{ lakhs}} \right) \right] = 0.191 \text{ or } 19.10\% \text{ (approx.)}$$

$$\text{Cost of Equity (K}_e\text{)} = \text{K}_{eu} + (\text{K}_{eu} - \text{K}_d) \frac{\text{Debt (1-t)}}{\text{Equity}}$$

Where,

Keu = Cost of equity in an unlevered company

Kd = Cost of debt

t = Tax rate

$$\text{So, K}_e = 0.20 + \left( (0.20 - 0.15) \times \frac{\text{₹ } 275 \text{ lakhs} (1 - 0.3)}{\text{₹ } 1,557.5 \text{ lakhs}} \right) = 0.2062 \text{ or } 20.62\%$$

**Solution 3.**

**10 Marks**

(i) Cost of Equity (K<sub>e</sub>) = D<sub>1</sub>/(P<sub>0</sub> - F) + g =  $\frac{\text{Rs } 15}{\text{Rs } 125 - \text{Rs } 5} + 0.06$  (refer to working note)

$$K_e = 0.125 + 0.06 = 0.185$$

Working Note: Calculation of 'g'

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

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

(ii) Cost of Retained Earnings (K<sub>r</sub>) = D<sub>1</sub>/P<sub>0</sub> + g =  $\frac{\text{Rs } 15}{\text{Rs } 125 - \text{Rs } 5} + 0.06 = 0.18$

$$(iii) \quad \text{Cost of Preference Shares (K}_p) = PD/P_0 = \frac{\text{Rs 125}}{\text{Rs 105}} = 0.1429$$

$$(iv) \quad \text{Cost of Debentures (K}_d) = \frac{I(1-t) + \frac{(RV-NP)}{n}}{\frac{(RV+NP)}{2}}$$

$$= \frac{\text{Rs 15}(1-0.35) + \frac{(\text{Rs } 100 - \text{Rs } 91.75^*)}{11 \text{ Years}}}{\frac{(\text{Rs } 100 + \text{Rs } 91.75^*)}{2}}$$

$$= \frac{\text{Rs } 15 \times 0.65 + \text{Rs } 0.75}{\text{Rs } 95.875} = \frac{\text{Rs } 10.5}{\text{Rs } 95.875} = 0.1095$$

\*Since yield on similar type of debentures is 16 per cent, the company would be required to offer debentures at discount.

Market price of debentures (approximation method)

$$= \text{Rs } 15 \div 0.16 = \text{Rs } 93.75$$

Sale proceeds from debentures = Rs 93.75 – Rs 2 (i.e., flotation cost) = Rs 91.75

Market value (P<sub>0</sub>) of debentures can also be found out using the present value method:

P<sub>0</sub> = Annual Interest × PVIFA (16%, 11 years) + Redemption value × PVIF (16%, 11 years)

$$P_0 = \text{Rs } 15 \times 5.029 + \text{Rs } 100 \times 0.195$$

$$P_0 = \text{Rs } 75.435 + \text{Rs } 19.5 = \text{Rs } 94.935$$

Net Proceeds = Rs 94.935 – 2% of Rs 100 = Rs 92.935

Accordingly, the cost of debt can be calculated

Cost of Capital

(amount in Lakh Rupees)

[BV weights and MV weights]

Source of Capital	Weights		Specific Cost (K)	Total Cost	
	BV	MV		(BV x K)	(MV x K)
Equity Shares	120	160*	0.1850	22.2	29.6
Retained Earnings	30	40*	0.1800	5.4	7.2
Preference Shares	36	33.75	0.1429	5.14	4.82
Debentures	9	10.4	0.1095	0.986	1.139
<b>Total</b>	<b>195</b>	<b>244.15</b>		<b>33.73</b>	<b>42.76</b>

\*Market Value of equity has been apportioned in the ratio of Book Value of equity and retained earnings

Weighted Average Cost of Capital (WACC):

$$\text{Using Book Value} = \frac{\text{Rs } 33.73}{\text{Rs } 195} = 0.1729 \text{ Or } 17.29\%$$

$$\text{Using Market Value} = \frac{\text{Rs } 42.76}{\text{Rs } 244.15} = 0.1751 \text{ Or } 17.51\%$$

(a)