

Chapter

6

Cost of Capital

INTRODUCTION

Cost of capital is an integral part of investment decision as it is used to measure the worth of investment proposal provided by the business concern. It is used as a discount rate in determining the present value of future cash flows associated with capital projects. Cost of capital is also called as cut-off rate, target rate, hurdle rate and required rate of return. When the firms are using different sources of finance, the finance manager must take careful decision with regard to the cost of capital; because it is closely associated with the value of the firm and the earning capacity of the firm.

Meaning of Cost of Capital

Cost of capital is the rate of return that a firm must earn on its project investments to maintain its market value and attract funds.

Cost of capital is the required rate of return on its investments which belongs to equity, debt and retained earnings. If a firm fails to earn return at the expected rate, the market value of the shares will fall and it will result in the reduction of overall wealth of the shareholders.

Definitions

The following important definitions are commonly used to understand the meaning and concept of the cost of capital.

According to the definition of **John J. Hampton** “ Cost of capital is the rate of return the firm required from investment in order to increase the value of the firm in the market place”.

According to the definition of **Solomon Ezra**, “Cost of capital is the minimum required rate of earnings or the cut-off rate of capital expenditure”.

According to the definition of James **C. Van Horne**, Cost of capital is “A cut-off rate for the allocation of capital to investment of projects. It is the rate of return on a project that will leave unchanged the market price of the stock”.

According to the definition of **William and Donaldson**, “Cost of capital may be defined as the rate that must be earned on the net proceeds to provide the cost elements of the burden at the time they are due”.

Assumption of Cost of Capital

Cost of capital is based on certain assumptions which are closely associated while calculating and measuring the cost of capital. It is to be considered that there are three basic concepts:

1. It is not a cost as such. It is merely a hurdle rate.
2. It is the minimum rate of return.
3. It consists of three important risks such as zero risk level, business risk and financial risk.

Cost of capital can be measured with the help of the following equation.

$$K = r_j + b + f.$$

Where,

K = Cost of capital.

r_j = The riskless cost of the particular type of finance.

b = The business risk premium.

f = The financial risk premium.

CLASSIFICATION OF COST OF CAPITAL

Cost of capital may be classified into the following types on the basis of nature and usage:

- Explicit and Implicit Cost.
- Average and Marginal Cost.
- Historical and Future Cost.
- Specific and Combined Cost.

Explicit and Implicit Cost

The cost of capital may be explicit or implicit cost on the basis of the computation of cost of capital.

Explicit cost is the rate that the firm pays to procure financing. This may be calculated with the help of the following equation;

$$CI_o = \sum_{t=1}^n \frac{CO_t}{(t + C)^t}$$

Where,

CI_o = initial cash inflow

C = outflow in the period concerned

N = duration for which the funds are provided

T = tax rate

Implicit cost is the rate of return associated with the best investment opportunity for the firm and its shareholders that will be forgone if the projects presently under consideration by the firm were accepted.

Average and Marginal Cost

Average cost of capital is the weighted average cost of each component of capital employed by the company. It considers weighted average cost of all kinds of financing such as equity, debt, retained earnings etc.

Marginal cost is the weighted average cost of new finance raised by the company. It is the additional cost of capital when the company goes for further raising of finance.

Historical and Future Cost

Historical cost is the cost which has already been incurred for financing a particular project. It is based on the actual cost incurred in the previous project.

Future cost is the expected cost of financing in the proposed project. Expected cost is calculated on the basis of previous experience.

Specific and Combined Cost

The cost of each source of capital such as equity, debt, retained earnings and loans is called as specific cost of capital. It is very useful to determine the each and every specific source of capital.

The composite or combined cost of capital is the combination of all sources of capital. It is also called as overall cost of capital. It is used to understand the total cost associated with the total finance of the firm.

IMPORTANCE OF COST OF CAPITAL

Computation of cost of capital is a very important part of the financial management to decide the capital structure of the business concern.

Importance to Capital Budgeting Decision

Capital budget decision largely depends on the cost of capital of each source. According to net present value method, present value of cash inflow must be more than the present value of cash outflow. Hence, cost of capital is used to capital budgeting decision.

Importance to Structure Decision

Capital structure is the mix or proportion of the different kinds of long term securities. A firm uses particular type of sources if the cost of capital is suitable. Hence, cost of capital helps to take decision regarding structure.

Importance to Evolution of Financial Performance

Cost of capital is one of the important determine which affects the capital budgeting, capital structure and value of the firm. Hence, it helps to evaluate the financial performance of the firm.

Importance to Other Financial Decisions

Apart from the above points, cost of capital is also used in some other areas such as, market value of share, earning capacity of securities etc. hence, it plays a major part in the financial management.

COMPUTATION OF COST OF CAPITAL

Computation of cost of capital consists of two important parts:

1. Measurement of specific costs
2. Measurement of overall cost of capital

Measurement of Cost of Capital

It refers to the cost of each specific sources of finance like:

- Cost of equity
- Cost of debt
- Cost of preference share
- Cost of retained earnings

Cost of Equity

Cost of equity capital is the rate at which investors discount the expected dividends of the firm to determine its share value.

Conceptually the cost of equity capital (K_e) defined as the “Minimum rate of return that a firm must earn on the equity financed portion of an investment project in order to leave unchanged the market price of the shares”.

Cost of equity can be calculated from the following approach:

- Dividend price (D/P) approach
- Dividend price plus growth (D/P + g) approach
- Earning price (E/P) approach
- Realized yield approach.

Dividend Price Approach

The cost of equity capital will be that rate of expected dividend which will maintain the present market price of equity shares.

Dividend price approach can be measured with the help of the following formula:

$$K_e = \frac{D}{N_p}$$

Where,

K_e = Cost of equity capital

D = Dividend per equity share

N_p = Net proceeds of an equity share

Exercise 1

A company issues 10,000 equity shares of Rs. 100 each at a premium of 10%. The company has been paying 25% dividend to equity shareholders for the past five years and expects to maintain the same in the future also. Compute the cost of equity capital. Will it make any difference if the market price of equity share is Rs. 175?

Solution

$$\begin{aligned} K_e &= \frac{D}{N_p} \\ &= \frac{25}{100} \times 100 \\ &= 22.72\% \end{aligned}$$

If the market price of a equity share is Rs. 175.

$$\begin{aligned} K_e &= \frac{D}{N_p} \\ &= \frac{25}{175} \times 100 \\ &= 14.28\% \end{aligned}$$

Dividend Price Plus Growth Approach

The cost of equity is calculated on the basis of the expected dividend rate per share plus growth in dividend. It can be measured with the help of the following formula:

$$K_e = \frac{D}{N_p} + g$$

Where,

K_e = Cost of equity capital

D = Dividend per equity share

g = Growth in expected dividend

N_p = Net proceeds of an equity share

Exercise 2

- (a) A company plans to issue 10000 new shares of Rs. 100 each at a par. The flotation costs are expected to be 4% of the share price. The company pays a dividend of Rs. 12 per share initially and growth in dividends is expected to be 5%. Compute the cost of new issue of equity shares.

- (b) If the current market price of an equity share is Rs. 120. Calculate the cost of existing equity share capital

Solution

$$\begin{aligned} \text{(a)} \quad K_e &= \frac{D}{N_p} + g \\ &= \frac{12}{100 - 4} + 5 = 17.5\% \end{aligned}$$

$$\begin{aligned} \text{(b)} \quad K_e &= \frac{D}{N_p} + g \\ &= \frac{12}{120} + 5\% = 15\% \end{aligned}$$

Exercise 3

The current market price of the shares of A Ltd. is Rs. 95. The floatation costs are Rs. 5 per share amounts to Rs. 4.50 and is expected to grow at a rate of 7%. You are required to calculate the cost of equity share capital.

Solution

Market price Rs. 95

Dividend Rs. 4.50

Growth 7%.

$$\begin{aligned} K_e &= \frac{D}{N_p} + g \\ &= \frac{4.50}{95} \times 100 + 7\% \\ &= 4.73\% + 7\% = 11.73\% \end{aligned}$$

Earning Price Approach

Cost of equity determines the market price of the shares. It is based on the future earning prospects of the equity. The formula for calculating the cost of equity according to this approach is as follows.

$$K_e = \frac{E}{N_p}$$

Where,

K_e = Cost of equity capital

E = Earning per share

N_p = Net proceeds of an equity share

Exercise 4

A firm is considering an expenditure of Rs. 75 lakhs for expanding its operations. The relevant information is as follows :

Number of existing equity shares = 10 lakhs

Market value of existing share = Rs.100

Net earnings = Rs.100 lakhs

Compute the cost of existing equity share capital and of new equity capital assuming that new shares will be issued at a price of Rs. 92 per share and the costs of new issue will be Rs. 2 per share.

Solution

Cost of existing equity share capital:

$$K_e = \frac{E}{N_p}$$

$$\text{Earnings Per Share(EPS)} = \frac{100\text{lakhs}}{10\text{lakhs}} = \text{Rs.}10$$

$$\begin{aligned} K_e &= \frac{10}{100} \times 10 \\ &= 10\% \end{aligned}$$

Cost of Equity Capital

$$\begin{aligned} K_e &= \frac{E}{N_p} \\ &= \frac{10}{92-2} \times 100 \\ &= 11.11\% \end{aligned}$$

Realized Yield Approach

It is the easy method for calculating cost of equity capital. Under this method, cost of equity is calculated on the basis of return actually realized by the investor in a company on their equity capital.

$$K_e = PVf \times D$$

Where,

K_e = Cost of equity capital.

PVf = Present value of discount factor.

D = Dividend per share.

Cost of Debt

Cost of debt is the after tax cost of long-term funds through borrowing. Debt may be issued at par, at premium or at discount and also it may be perpetual or redeemable.

Debt Issued at Par

Debt issued at par means, debt is issued at the face value of the debt. It may be calculated with the help of the following formula.

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

Where,

K_d = Cost of debt capital

t = Tax rate

R = Debenture interest rate

Debt Issued at Premium or Discount

If the debt is issued at premium or discount, the cost of debt is calculated with the help of the following formula.

$$K_d = \frac{I}{N_p} (1 - t)$$

Where,

K_d = Cost of debt capital

I = Annual interest payable

N_p = Net proceeds of debenture

t = Tax rate

Exercise 5

- A Ltd. issues Rs. 10,00,000, 8% debentures at par. The tax rate applicable to the company is 50%. Compute the cost of debt capital.
- B Ltd. issues Rs. 1,00,000, 8% debentures at a premium of 10%. The tax rate applicable to the company is 60%. Compute the cost of debt capital.
- A Ltd. issues Rs. 1,00,000, 8% debentures at a discount of 5%. The tax rate is 60%, compute the cost of debt capital.
- B Ltd. issues Rs. 10,00,000, 9% debentures at a premium of 10%. The costs of floatation are 2%. The tax rate applicable is 50%. Compute the cost of debt-capital.

In all cases, we have computed the after-tax cost of debt as the firm saves on account of tax by using debt as a source of finance.

Solution

$$(a) \quad K_{da} = \frac{I}{N_p} (1-t)$$

$$\begin{aligned}
 &= \frac{8,000}{1,00,000} \times (1 - 0.5) \\
 &= \frac{8,000}{1,00,000} \times 0.5 \\
 &= 4\%
 \end{aligned}$$

$$K_{da} = \frac{I}{N_p} (1 - t)$$

$$(b) N_p = \text{Face Value} + \text{Premium} = 1,00,000 + 10,000 = 1,10,000$$

$$\begin{aligned}
 &= \frac{8,000}{1,10,000} \times (1 - 0.6) \\
 &= \frac{8,000}{1,10,000} \times 0.6 \\
 &= 2.91\%
 \end{aligned}$$

$$\begin{aligned}
 (c) \quad K_{da} &= \frac{I}{N_p} (1 - t) \\
 &= \frac{8,000}{95,000} \times (1 - t) \\
 &= 3.37\%
 \end{aligned}$$

$$\begin{aligned}
 (d) \quad K_{da} &= \frac{I}{N_p} (1 - t), N_p = \text{Rs. } (10,00,000 + 1,00,000) \times \frac{2}{100} \\
 &= \frac{90,000}{10,78,000} \times (1 - 0.5) \\
 &= 4.17\% = 11,00,000 - 22,000 = \text{Rs. } 10,78,000
 \end{aligned}$$

Cost of Perpetual Debt and Redeemable Debt

It is the rate of return which the lenders expect. The debt carries a certain rate of interest.

$$K_{db} = \frac{I + 1/n(P - N_p)n}{1/n(P + N_p)/2}$$

Where,

I = Annual interest payable

P = Par value of debt

N_p = Net proceeds of the debenture

n = Number of years to maturity

K_{db} = Cost of debt before tax.

Cost of debt after tax can be calculated with the help of the following formula:

$$K_{da} = K_{db} \times (1-t)$$

Where,

K_{da} = Cost of debt after tax

K_{db} = Cost of debt before tax

t = Tax rate

Exercise 6

A company issues Rs. 20,00,000, 10% redeemable debentures at a discount of 5%. The costs of floatation amount to Rs. 50,000. The debentures are redeemable after 8 years. Calculate before tax and after tax. Cost of debt assuring a tax rate of 55%.

Solution

$$\begin{aligned} K_{db} &= \frac{I = 1/n (P - N_p)}{1/2(P + N_p)} \\ &= \frac{20,00,000 + 1/8(20,00,000 + 18,50,000)}{1/2(20,00,000 + 18,50,000)} \end{aligned}$$

Note $N_p = 20,00,000 - 10,00,000 - 50,000$

$$\begin{aligned} &= \frac{2,00,000 + 18750}{19,25,000} \\ &= 11.36\% \end{aligned}$$

After Tax Cost of Debt K_{db}

$$\begin{aligned} &= K_{da} (1-t) \\ &= 11.36 (1-0.55) \\ &= 5.11\% \end{aligned}$$

Cost of Preference Share Capital

Cost of preference share capital is the annual preference share dividend by the net proceeds from the sale of preference share.

There are two types of preference shares irredeemable and redeemable. Cost of redeemable preference share capital is calculated with the help of the following formula:

$$K_p = \frac{D_p}{N_p}$$

Where,

K_p = Cost of preference share

D_p = Fixed preference dividend

N_p = Net proceeds of an equity share

Cost of irredeemable preference share is calculated with the help of the following formula:

$$K_p = \frac{D_p + (P - N_p)/n}{(P + N_p)/2}$$

Where,

K_p = Cost of preference share

D_p = Fixed preference share

P = Par value of debt

N_p = Net proceeds of the preference share

n = Number of maturity period.

Exercise 7

XYZ Ltd. issues 20,000, 8% preference shares of Rs. 100 each. Cost of issue is Rs. 2 per share. Calculate cost of preference share capital if these shares are issued (a) at par, (b) at a premium of 10% and (c) of a debentures of 6%.

Solution

Cost of preference share capital $K_p = \frac{D_p}{N_p}$

$$\begin{aligned} \text{(a)} \quad K_p &= \frac{1,60,000}{20,00,000 - 40,000} \times 100 \\ &= 8.16\% \end{aligned}$$

$$\begin{aligned} \text{(b)} \quad K_p &= \frac{1,60,000}{20,00,000 + 2,00,000 - 40,000} \times 100 \\ &= 7.40\% \end{aligned}$$

$$\begin{aligned} \text{I } K_p &= \frac{1,60,000}{20,00,000 - 1,20,000 - 40,000} \times 100 \\ &= \frac{1,60,000}{18,40,000} \times 100 \\ &= 8.69\% \end{aligned}$$

Exercise 8

ABC Ltd. issues 20,000, 8% preference shares of Rs. 100 each. Redeemable after 8 years at a premium of 10%. The cost of issue is Rs. 2 per share. Calculate the cost of preference share capital.

$$K_p = \frac{D_p + (P - N_p)/n}{(P + N_p)/2}$$

$$= \frac{1,60,000 + 1/8 (22,00,000 - 19,60,000)}{1/2(22,00,000 + 19,60,000)}$$

$$= \frac{1,60,000 + 30,000}{20,80,000}$$

$$= 9.13\%$$

where

$$D_p = 20,000 \times 100 \times 8\% = 1,60,000$$

$$P = 20,00,000 + 2,00,000 = 22,00,000$$

$$N_p = 20,00,000 - 40,000 = 19,60,000$$

$$n = 8 \text{ years}$$

Exercise 9

ABC Ltd. issues 20,000, 8% preference shares of Rs. 100 each at a premium of 5% redeemable after 8 years at par. The cost of issue is Rs. 2 per share. Calculate the cost of preference share capital.

Solution

$$K_p = \frac{D_p + (P - N_p)/n}{(P + N_p)/2}$$

$$= \frac{1,60,000 + 1/8 (20,00,000 - 20,60,000)}{1/2 (20,00,000 + 20,60,000)}$$

$$= \frac{1,60,000 - 7,500}{20,30,000}$$

$$= 7.51\%$$

where

$$D_p = 20,000 \times 100 \times 8\% = 1,60,000$$

$$P = 20,00,000$$

$$n = 8 \text{ years}$$

$$N_p = 20,00,000 + 10,00,000 - 40,000 = 20,60,000$$

Cost of Retained Earnings

Retained earnings is one of the sources of finance for investment proposal; it is different from other sources like debt, equity and preference shares. Cost of retained earnings is the same as the cost of an equivalent fully subscribed issue of additional shares, which is measured by the cost of equity capital. Cost of retained earnings can be calculated with the help of the following formula:

$$K_r = K_e (1 - t) (1 - b)$$

Where,

K_r = Cost of retained earnings

K_e = Cost of equity

t = Tax rate

b = Brokerage cost

Exercise 10

A firm's K_e (return available to shareholders) is 10%, the average tax rate of shareholders is 30% and it is expected that 2% is brokerage cost that shareholders will have to pay while investing their dividends in alternative securities. What is the cost of retained earnings?

Solution

Cost of Retained Earnings, $K_r = K_e (1 - t) (1 - b)$

Where,

K_e = rate of return available to shareholders

t = tax rate

b = brokerage cost

$$\begin{aligned} \text{So, } K_r &= 10\% (1 - 0.3) (1 - 0.02) \\ &= 10\% \times 0.7 \times 0.98 \\ &= 4.9\% \end{aligned}$$

Measurement of Overall Cost of Capital

It is also called as weighted average cost of capital and composite cost of capital. Weighted average cost of capital is the expected average future cost of funds over the long run found by weighting the cost of each specific type of capital by its proportion in the firm's capital structure.

The computation of the overall cost of capital (K_o) involves the following steps.

- Assigning weights to specific costs.
- Multiplying the cost of each of the sources by the appropriate weights.
- Dividing the total weighted cost by the total weights.

The overall cost of capital can be calculated with the help of the following formula;

$$K_o = K_d W_d + K_p W_p + K_e W_e + K_r W_r$$

Where,

K_o = Overall cost of capital

K_d = Cost of debt

K_p = Cost of preference share

K_e = Cost of equity

K_r = Cost of retained earnings

W_d = Percentage of debt of total capital

W_p = Percentage of preference share to total capital

W_e = Percentage of equity to total capital

W_r = Percentage of retained earnings

Weighted average cost of capital is calculated in the following formula also:

$$K_w = \frac{\sum XW}{\sum W}$$

Where,

K_w = Weighted average cost of capital

X = Cost of specific sources of finance

W = Weight, proportion of specific sources of finance.

Exercise 11

A firm has the following capital structure and after-tax costs for the different sources of funds used :

Source of Funds	Amount Rs.	Proportion %	After-tax cost %
Debt	12,000	20	4
Preference Shares	15,000	25	8
Equity Shares	18,000	30	12
Retained Earnings	15,000	25	11
Total	<u>60,000</u>	<u>100</u>	

You are required to compute the weighted average cost of capital.

Exercise 12

A company has on its books the following amounts and specific costs of each type of capital.

Type of Capital	Book Value Rs.	Market Value Rs.	Specific Costs (%)
Debt	4,00,000	3,80,000	5
Preference	1,00,000	1,10,000	8
Equity	6,00,000	9,00,000	15
Retained Earnings	2,00,000	3,00,000	13
	<u>13,00,000</u>	<u>16,90,000</u>	

Determine the weighted average cost of capital using:

- (a) Book value weights, and
- (b) Market value weights.

How are they different? Can you think of a situation where the weighted average cost of capital would be the same using either of the weights? **(MBA – P.U. Nov. 2005)**

Solution

Computation of Weighted Average Cost of Capital

A. Book Value

Source of Funds	Amount	Cost % (X)	Weighted Cost Proportion X Cost (XW)
Debt	4,00,000	5	20,000
Preference Shares	1,00,000	8	8,000
Equity Shares	6,00,000	15	90,000
Retained Earnings	2,00,000	13	26,000
	ΣW = 13,00,000		ΣXW = 1,44,000

$$K_w = \frac{\Sigma XW}{\Sigma W}$$

$$K_w = \frac{1,44,000}{13,00,000} \times 100 = 11.1\%$$

Computation Weighted Average Cost of Capital

B. Market Value

Source of Funds	Amount	Cost % (X)	Weighted Cost Proportion X Cost (XW)
Debt	3,80,000	5	19,000
Preference Shares	1,10,000	8	8,800
Equity Shares	9,00,000	15	13,500
Retained Earnings	3,00,000	13	39,000
	ΣW = 16,90,000		ΣXW = 2,01,800

$$K_w = \frac{\Sigma XW}{\Sigma W}$$

$$K_w = \frac{2,01,800}{16,90,000} \times 100 = 11.9\%$$

Exercise 13

ABC Ltd. has the following capital structure.

	Rs.
Equity (expected dividend 12%)	10,00,000
10% preference	5,00,000
8% loan	15,00,000

You are required to calculate the weighted average cost of capital, assuming 50% as the rate of income-tax, before and after tax.

Solution

Solution showing weighted average cost of capital:

Particulars	Rs.	After	Weights	Cost
Equity	10,00,000	12%	33.33%	3.99
Preference	5,00,000	10%	16.67	1.67
8% Loan	15,00,000	4%	50.00	2.00
				7.66%

Weight average cost of capital = 7.66%

MODEL QUESTIONS

1. What is cost of capital?
2. Define cost of capital.
3. Cost of capital computation based on certain assumptions. Discuss.
4. Explain the classification of cost.
5. Mention the importance of cost of capital.
6. Explain the computation of specific sources of cost of capital.
7. How over all cost of capital is calculated?
8. Explain various approaches for calculation of cost of equity.
9. Rama company issues 120000 10% debentures of Rs. 10 each at a premium of 10%. The costs of floatation are 4%. The rate of tax applicable to the company is 55%. Complete the cost of debt capital. (Ans. 4.26%)
10. Siva Ltd., issues 8000 8% debentures for Rs. 100 each at a discount of 5%. The commission payable to underwriters and brokers is Rs. 40000. The debentures are redeemable after 5 years. Compute the after tax cost of debt assuming a tax rate of 60%. (Ans. 3.69%)
11. Bharathi Ltd., issues 4000 12% preference shares of Rs. 100 each at a discount of 5%. Costs of raising capital are Rs. 8000. Compute the cost of preference capital. (Ans. 12.90%)

12. Firm pays tax at 60%. Compute the after tax cost of capital of a preferred share sold at Rs. 100 with a 8%. Dividend and a redemption price of Rs.110, if the company redeems in five years. (Ans. 9.52%)
13. Your company share is quoted in the market at Rs. 40 currently. The company pays a dividend of Rs. 5 per share and the investors market expects a growth rate of 7.5% per year:
- Compute the company's equity cost of capital.
 - If the anticipated growth rate is 10% p.a. Calculate the indicated market price per share.
 - If the company's cost of capital is 15% and the anticipated growth rate is 10% p.a. Calculate the indicated market price if the dividend of Rs. 5 per share is to be maintained. (Ans. (i) 20%, (ii) 1/10%, (iii) 1/5%)
14. Mr. Subramanian is a shareholder in Alpha Company Ltd. Although earnings for the Alpha company have varied considerably, Subramanian has determined that long turn average dividends for the firm have been Rs. 5 per share. He expects a similar pattern to prevail in the future. Given the volatility of the Alpha's minimum rate of 40%, should it be earned on a share, what price would Subramanian be willing to pay for the Alpha is shares? (Ans. Rs. 12.50%)
15. A Beta Ltd., iron steel reserves are being depleted and its costs of recovering a declining quantity of iron steel are rising each year. As a equal to it the company earnings and dividends are declining at a rate of 12% p.a. If the previous year's dividend (DO) was Rs. 40 and the required rate of return is 15%. What would be the current price of the equity share of the company? (Ans. Rs. 95.14)
16. The following items have been extracted from the liabilities side of the balance sheet of Vivekananda company as on 31st December 2004.

Paid up capital	Rs.
2500 Equity shares of Rs. 100 each	250000
Reserve and Surplus	350000
Loans:	
10% Debentures	100000
12% Institutional Loans	300000

Other information about the company as relevant is given below:

Year ended Market Price	Dividend Per share	Earnings Per share	Average Per share
31st Dec. 2004	(Rs.) 7.00	(Rs.) 11.00	(Rs.) 80.00
2003	6.00	10.00	60.00
2002	7.00	8.00	50.00

You are required to calculate the weighted average cost of capital, using book values as weights and earnings/price (E/P) ratio as the basis of cost of equity. Assume 50% tax rate.

(Ans. Weighted average cost of capital = 10.55%)

17. The following is an extract from the financial statements of Ramakrishna Ltd.

	(Rs. Lakhs)
Operating Profit	90
Less: Interest on Debentures	<u>24</u>
	66
Less: Income Tax (50%)	<u>33</u>
Net Profit	<u>33</u>
Equity share capital (share of Rs. 10)	150
Reserve and Surplus	75
10% Debentures	<u>150</u>
	<u>375</u>

The market price per equity share is 11 and per debenture Rs. 95.

(i) What is the earning per share?

(ii) What is the percentage cost of capital to the company for the equity and debentures funds? (Ans. (i) Rs. 2.20, (ii) 20%)

(iii) Cost of debenture funds

Book Value = 5%

Market Price = 5.26%

18. Raj Ltd. is currently earning Rs. 2,00,000 and its share is selling at a market price of Rs. 160. The firm has 20,000 shares outstanding and has no debt. The earnings of the firm are expected to remain stable, and it has a payout ratio of 100%. What is the cost of equity? If the firm earns 15% rate of return on its investment opportunities then what would be the firm's cost of equity if the payout ratio is 60%?

(Ans. (i) When the payout ratio is 100%, 12.5%

(ii) When the payout ratio is 60%, 13.5%)

19. Kumar Industries Ltd. has assets of Rs. 80,000 which have been financed with Rs. 26,000 of debt and Rs. 45,000 of equity and a general reserve of Rs. 9,000. The firm's total profit after interest and taxes for the year ended 31st March 2000 were Rs. 6,750. It pays 10% interest on borrowed funds and is in the 60% tax bracket. It has 450 equity shares of Rs. 100 each selling at a market price of Rs. 120 per share. What is the weighted average cost of capital?

(i) EPS Rs. 15

(ii) Cost of equity 12.5%

(iii) Average cost of capital 9.74.