

As per New CBCS Syllabus of 6th Semester, B.Com.
(Accounting and Finance Group), Tumkur University w.e.f. 2016-2017

ADVANCED FINANCIAL MANAGEMENT



G. Sudarsana Reddy

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*[As per New CBCS Syllabus of Sixth Semester, B.Com. (Accounting and Finance Group),
Tumkur University w.e.f. 2016-2017]*

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ISO 9001:2015 CERTIFIED

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First Edition : 2019

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- Published by** : Mrs. Meena Pandey for **Himalaya Publishing House Pvt. Ltd.**,
Ramdoot, Dr. Bhalerao Marg, Girgaon, Mumbai - 400 004
Phone: 022-23860170/23863863; **Fax:** 022-23877178
E-mail: himpub@vsnl.com; **Website:** www.himpub.com
- Branch Offices** :
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Phone: 033-32449649; Mobile: 07439040301
- DTP by** : **Rajani Jadhav**
- Printed at** : M/s. Sri Sai Art Printer Hyderabad. On behalf of HPH.

PREFACE

Financial Management is an integral part of Business education. Keeping this in mind, Tumkur University introduced a full paper titled "Financial Management," in Semester V as core paper. But just having fundamental knowledge on Financial Management may not help those who want to specialize in finance. So, the students need to understand Finance Theories for effective financial strategies. Thus, Tumkur University introduced "**Advanced Financial Management**" for the Semester VI, B.Com. (Accounting and Finance Group) students, which is a welcome step.

I have brought out "**Advanced Financial Management**," to meet the need of the Semester VI B.Com. students, Tumkur University. I am aware of the fact that there are several good books already available at expensive price and majority of them cover much of material which is out of syllabi.

I claim uniqueness for my book on the following:

- ◆ Comprehensive coverage of the subject — for the targeted students.
- ◆ Presentation of subject, which is direct and which is free from verbosity and tautology.
- ◆ Pedagogic aids comprising 50 illustrations and 70 solved problems.
- ◆ Self-taught tools comprising 70 fill in the blanks statements with answers, 70 true or false statements with answers, and 70 problems with answers.

Though the book is targeted at Semester VI, B.Com. students of Tumkur University, others also will find the book highly useful, who are keen in learning advance topics in Financial Management.

I hope that the book would serve the propose for which it is being brought out.

G. Sudarsana Reddy

SYLLABUS

Advanced Financial Management

Objective

To familiarize the students with Advanced Financial Management decisions.

Unit 1: Cost of Capital

Concept of Cost of Capital, Meaning, Factors Affecting Cost of Capital, Measurement of Cost of Capital – Cost of Debt, Cost of Preference Capital, Cost of Equity, Cost of Retained Earnings and Overall Cost of Capital – Problems, Marginal Cost of Capital – Meaning only.

Unit 2: Capital Structure Theories

NI Approach, NOI approach and MM Models — Problems.

Unit 3: Capital Budgeting

Risk and Uncertainty – Sources and Perspectives of Risk, Risk Analysis in Capital Budgeting – Sensitivity Analysis, Certainty Equivalent Approach, Probability Approach, Standard Deviation Approach, Decision Tree Analysis — Problems.

Unit 4: Dividend Theories

Relevance and Irrelevance Theories — Walter's Model, Gordon's Model and MM Model — Problems.

Unit 5: Working Capital Management

Introduction, Meaning, Concepts, Types, Sources of Working Capital, Factors Affecting Working Capital Requirements, Need for Adequate Working Capital, Dangers of Excess or Inadequate Working Capital, Estimation of Working Capital Requirements — Operating Cycle Method and Current Assets — Current Liability Methods — Problems.

Unit 6: Depository System and Dematerialisation

Introduction, Depository System, Players in Depository System, Facilities Offered by Depository System, Merits of Depository System, Demat of Shares, Steps, Remat of Shares, The Depositories Act, 1996.

Skill Development

- ◆ Visit an organisation in your town and collect data about the financial objectives.
- ◆ Design a statement showing different capital structures.
- ◆ Compute different cost of capital of an organisation, you have visited.
- ◆ Analyse working capital requirement of small concern.
- ◆ Collect the data relating to dividend policies practices by any two companies.

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CHAPTER 1 Cost of Capital

LEARNING OBJECTIVES

After reading this Chapter, you should be able to:

- Define cost of capital
- Understand the importance of cost of capital
- List out the basic aspects of cost of capital
- Explain different cost concepts
- List out the steps involved in computation of cost of capital
- Know computation of cost of equity
- Calculate cost of preference share capital and debenture capital
- Compute weighted average cost of capital
- Determine marginal cost of capital
- Discuss the factors affecting cost of capital.

Cost of capital is an important concept in formulating a firm's capital structure and it is the central concept in financial management, because it is viewed as one of the cornerstones of the theory of financial management. It has received considerable attention from both theorists and practitioners. *Two major schools* of thought have emerged having basic difference on the relevance of cost of capital. In *one camp*, Modigliani Miller argued that a firm's cost of capital is constant and it is independent of the method and level of financing. In *another camp* (traditionalists) cost of capital is varying and dependent on capital structure. Both camps have different opinions on cost of capital but both agree that there is an optimal capital structure at which, the value of a company is maximum.

Cost of capital is still largely an academic term and the problem of measuring it in operational terms is a recent phenomena. Prior to this development, problem was either ignored or bypassed. In modern times, it is widely used as a basis of investment projects and evaluating the alternative sources of finance.

COST OF CAPITAL - CONCEPT

The term cost of capital is a concept having different meanings. Cost of capital from the *three viewpoints* is given below. From:

1. *The Investors' Viewpoint:* It may be defined as “the measurement of the sacrifice made by him/her in order to capital formation.” For example, Mr. A an investor invested in a company's equity shares, an amount of ₹ 1,00,000, instead of investing in a bank deposit which pays seven per cent interest. Here, investor had sacrificed seven per cent interest for not having invested in the bank.
2. *The Firm's Viewpoint:* It is the minimum required rate of return needed to justify the use of capital. For example, a firm raised ₹ 50 lakhs through the issues of 10 per cent debentures, for justifying this issue it has to earn a 10 per cent minimum rate of return on investment.
3. *Capital Expenditure's Viewpoint:* The cost of capital is the minimum required rate of return or the hurdle rate or target rate or cut off rate or any discounting rate used to value cash flows. For example, Firm 'A' is planning to invest in a project, that requires ₹ 20 lakhs as an initial investment and it provides cash flows for 5 years period, here for conversion of the future 5 years cash inflows into present values, we need cost of capital.

Cost of capital represents the rate of return that a firm must pay to the suppliers of capital for use of their funds. In other words, cost of capital is the weighted average cost of various sources of finance used by the firm in capital formation. The sources are, equity shares, preference shares, long-term debt and short-term debt.

Thus, from the above, we can say that cost of capital is that minimum rate of return, which a firm must and is expected to earn on its investments so as to maintain the market value of its shares. It is also known as Weighted Average Cost of Capital (WACC), composite cost of capital or combined cost of capital. It is expressed in terms of percentage.

BASIC ASPECTS OF COST OF CAPITAL

From the above discussion, we can see that the following are the three basic aspects of the concept of cost of capital. They are:

1. *Rates of Return:* Cost of Capital is not a cost as such, in fact, it is the rate of return that a firm requires to earn from its investment projects.
2. *Minimum Rate of Return:* Cost of capital of any firm is that minimum rate of return that will at least maintain the market value of the shares.

3. *Cost of Capital (K_o)*: Cost of capital comprises three components:
- (a) The risk less cost of the particular type of financing (r_j)
 - (b) The business risk premium (b) and
 - (c) The financial risk premium (f)

Symbolically, cost of capital may be represented as: $K_o = r_j + b + f$

IMPORTANCE OF COST OF CAPITAL

The concept of cost of capital is very important and it is useful in the following financial management decisions. The decisions in which it is useful are:

1. Designing Optimal Capital Structure

Cost of Capital is helpful in formulating a sound and economical capital structure for a firm. The debt policy of a firm is significantly influenced by the cost consideration. Capital structure involves determination of proportion of debt and equity in capital structure where cost of capital is minimum.

While designing a firm's capital structure, financial executives always keep in mind minimisation of the overall cost of capital and to maximise value of the firm. The measurement of specific cost of each source of fund and calculation of weighted average cost of capital helps to come to a balanced capital structure. By comparing various (sources of finance) specific costs, he/she can choose the best and most economical source of finance and can succeed in designing a sound and viable capital structure.

2. Investment (Capital Budgeting) Evaluation

Wilson R.M.S., states that the cost of capital is a concept, which should be expressed in quantitative terms if it is to be useful, as a cut-off rate for capital expenses. Capital expenditure means investment in long-term projects like investment on new machinery. It is also known as Capital Budgeting expenditure. Capital budgeting decisions require a financial standard (cost of capital) for evaluation. In the net present value (NPV) method, an investment project is accepted, if the present value of cash inflows are greater than the present value of cash outflows.

The present values of cash inflows are calculated by discounting with a discount rate known as Cost of Capital. If a firm has adopted internal rate of return (IRR) as the technique for capital budgeting evaluation, investment proposal should be accepted only when cost of capital is less than the calculated IRR. Hence, the concept of cost of capital is very much useful in capital budgeting decisions, particularly if a firm is adopting discounted cash flow methods of project evaluation.

3. Financial Performance Appraisal

Cost of capital framework can be used to evaluate the financial performance of top management. Financial performance evaluation involves a comparison of actual profitability of the project with the project's overall cost of capital. If the actual profitability rate is more than the projected cost of capital, then the financial performance may be said to be satisfactory and *vice versa*.

The above discussion clearly shows the role of cost of capital in financial management. Apart from the above areas (decisions), cost of capital is also useful in (distribution of profits) capitalisation of profits, issue of rights shares and investment in owner assets.

CLASSIFICATION OF COST

Before going to discuss the computation of specific cost of each source of fund and cost of capital, it is wise to know various relevant costs associated with the problem of measurement of cost of capital. The relevant costs are:

Marginal Cost of Capital: Marginal cost of capital is the additional cost incurred to obtain additional funds required by a firm. It refers to the change in the total cost of capital resulting from the use of additional funds. The marginal cost of capital is a very important concept in investment decisions (capital budgeting decisions).

Average Cost/Overall Cost: It is the average cost of various specific costs of the different components (equity, preference shares, debentures, retained earnings) of capital structure at a given time and this is used as the acceptance criteria for (capital budgeting) investment proposals.

Historic Cost (Book Cost): The book cost has its origin in the accounting system. They are related to the past. It is in common use for computation of cost of capital. For example, cost of capital may be computed based on the book value of the components of capital structure. Historical costs act as a guide for future cost estimation.

Future Cost: It is the cost of capital that is expected to raise funds to finance a capital budget or investment proposal.

Specific Cost: It is the cost associated with a particular source of finance. It is also known as component cost of capital. For example, cost of equity (K_e) or cost of preference share (K_p), or cost of debt (K_d), etc.

Spot Costs: These are the costs that are prevailing in the market at a certain time. For example, a few years back cost of bank loans (house loans) was around 18 per cent, now it is at 12 per cent. The 12 per cent is the spot cost.

Opportunity Cost: The opportunity cost is the benefit that the shareholder foregoes by not putting his/her funds elsewhere because they have been retained by the management. For example, an investor who had invested in a company's equity shares (100 shares each share at ₹ 10). The company decided to declare a dividend of 10 per cent on book value of share, but due to capital requirements it has retained to invest on one project that has return on investment (ROI) of four per cent. Outside the project, rate of interest (banks) is at six per cent. Here, the opportunity cost to the investor is (6-4) two per cent.

Explicit Cost: Cost of capital can be either explicit or implicit. Knowing the distinction between explicit and implicit is important from the point of view of computation of cost of capital. *An explicit cost* of any source of capital is the discount rate that equates the present value of the cash inflows that are incremental to the taking of the financing opportunity with present value of its incremental cash outflows. In other words, the discount rate that equates the present value of cash inflows with present value of cash outflows.

It is also called as internal rate of return. For example, a firm raises ₹ 1,00,000 through the sale of 12 per cent perpetual debentures. There will be a cash outflow of ₹ 1,00,000 and a cash inflow of ₹ 12,000 every year for 20 years. The rate that equates the PV of cash outflows (₹ 1,00,000) and PV of cash inflows (₹ 12,000 per year) would be the explicit cost. Computation of explicit cost is almost similar to the computation of IRR.

Implicit Cost: It is the opportunity cost, which is given up in order to pursue a particular action. It is also known as implicit cost of capital. The implicit cost of capital of funds raised and invested by the firm may, therefore be defined as “the rate of return associated with the best investment opportunity for the firm and its shareholders that would be foregone, if the projects presently under consideration by the firm were accepted”. The cost of retained earnings is an opportunity cost or implicit cost for a shareholder and is deprived of the opportunity to invest retained earnings elsewhere. Funds raised by any form of financing have implicit capital costs once they are invested.

Thus, in a sense, implicit costs may also be viewed as opportunity costs. This implies that a project should be reflected if it has a negative PV when its cash flows are discounted by the explicit cost of capital.

COMPUTATION OF OVERALL COST OF CAPITAL (WACC)

The term cost of capital (K_o) refers to the overall composite cost of capital, defined as the weighted average of the cost of each specific type of fund. It is also known as composite cost or weighted average cost of capital (WACC). In order to compute the WACC or composite cost of capital, a finance manager has to follow certain steps. They are: (1) Determination of the total funds required and share of individual source of finance in the firm's capitalisation; (2) Computation of cost of specific source of funds; (3) Assignment of weights to specific source of funds; (4) Multiply the cost of each source of funds by appropriate assigned weights; and (5) Add individual source weight cost to get cost of capital. But students need not involve in step 1, because generally first step information would be given in the problem.

COMPUTATION - COST OF SPECIFIC SOURCE

Financial manager has to compute the specific cost of each source of funds needed in the capitalisation of a company. Company may resort to different financial sources (equity share, preference share, debentures, retained earnings, public deposits). It may prefer internal source (retained earnings) or external source (equity, preference and public deposits). Generally, the component cost of a specific source of capital is equal to the investors' required rate of return. Investors required rate of return is interest, and discount on debt; dividend, capital appreciation, and earnings per share on equity shareholders, dividend and share of profit on preference shareholders' funds. But investors' required rate of return should be adjusted for taxes while calculating the cost of a specific source of fund.

Computation of specific source of finance, *viz.*, equity, preference shares, debentures, retained earnings, public deposits is discussed below:

Cost of Equity

Firms may obtain equity capital in two ways: (a) retention of earnings, and (b) issue of (additional) equity shares to the public. The cost of equity or the return required by the equity shareholders is the same in both the cases, since in both cases, shareholders are providing funds to the firm to finance firm's investment proposals. Retention of earnings involves an opportunity cost. Shareholders could receive the earnings as dividends and invest the same in alternative investments of comparable risk to earn returns. So, irrespective of whether a firm raises equity finance by retaining earnings or issue of additional equity shares, the cost of equity is the same. But issue of additional equity shares to the public involves a flotation cost whereas there is no flotation cost for retained earnings. Hence, issue of additional equity shares to the public for raising equity finance involves a bigger cost when compared to the retained earnings.

The following discussion details the computation of cost of equity from both sources of point of view (i.e., retained earnings and issue of equity shares to the public).

I. Cost of Retained Earnings (K_{re})

Retained earnings is one of the internal sources of funds to raise equity funds. Retained earnings are those part of (amount) net earnings which is retained by the firm for investing in capital budgeting proposals instead of paying them as dividends to shareholders. Corporate executives and some analysts too normally consider that the retained earnings are cost free, because there is no legal binding for the firm to pay dividends to equity shareholders. But it is not so. They involve opportunity cost. The opportunity cost of retained earnings is the rate of return the shareholder forgoes by not putting his/her funds elsewhere, because the management has retained the funds. The opportunity cost can be well computed with the following formula:

$$K_{re} = K_e (1 - T_i) (1 - T_b)$$

where, K_e = Cost of equity capital [$D \div P$ or $(E/P) + g$]

T_i = Marginal tax rate applicable to the individuals concerned

T_b = Cost of purchase of new securities/brokerage

D = Expected dividend per share

NP = Net proceeds of equity share or Equity stock price or Book Value

g = Growth rate (%)

Illustration 1: A company declared a dividend of ₹ 2 per share, market price per share is ₹ 20, income tax rate is 60 per cent and expected brokerage is to be 2 per cent. Compute cost of retained earnings.

Solution:

$$\begin{aligned} K_{re} &= \frac{D}{NP} (1 - T_i) (1 - T_b) \\ &= \frac{2}{20} (1 - 0.60) (1 - 0.02) \\ &= 3.92 \text{ per cent} \end{aligned}$$

Illustration 2: ABC Company's cost of equity (K_e) is 14 per cent, the average tax rate of an individual shareholder is 40 per cent and it is expected to spend 2 per cent on brokerage cost that shareholders will have to pay while investing their dividends in alternative securities. What is the cost of retained earnings?

Solution:

$$\begin{aligned} &= 0.14 (1 - 0.4) (1 - 0.02)100 \\ &= 8.23 \text{ per cent} \end{aligned}$$

Illustration 3: Life Style Garment Manufacturing Co., has a net earnings of ₹ 20 lakhs and all of its stockholders are in the tax bracket of 50 per cent. The management estimates that under present conditions stockholder's required rate of return is 10 per cent. 3 per cent is the expected brokerage to be paid if stockholders want to invest in alternative securities. Compute cost of retained earnings.

Solution:

$$\begin{aligned} &= 0.10 (1 - 0.5) (1 - 0.03)100 \\ &= 4.85 \text{ per cent} \end{aligned}$$

Illustration 4: BPL Company's equity share is currently selling at ₹ 350.75 and it is currently paying a dividend of ₹ 5.25 per share. The dividend is expected to grow at a 15 per cent per annum for one year. Income tax rate is 40 per cent and brokerage is 2 per cent . Calculate cost of retained earnings.

Solution:

$$\begin{aligned} &= \left(\frac{5.25}{350.75} + 0.15 \right) (1 - 0.40) (1 - 0.02) 100 \\ &= 9.70 \text{ per cent} \end{aligned}$$

II. Cost of Issue of Equity Shares (K_e)

Calculation of cost of equity (K_e) poses a host of problems. It is the most difficult and controversial cost to measure because there is no one common basis for computation. For example, calculation of cost of debt (K_d) is based on interest rate, preference dividend is the base for calculation of cost of preference shares (K_p). Interest on debt and dividend on preference shares is fixed in terms of the stipulations following the issue of such debentures and preference shares, respectively. In contrast, the return on equity shareholders solely depends on the discretion of the company management. Apart from this, there is no stipulation for payment of dividend to equity shareholders. They are ranked at the bottom as claimants on the assets of the company at the time of liquidation. All these show that equity capital does not carry any cost. But this is not true, equity capital has some cost.

The cost of equity capital (K_e) may be defined as the minimum rate of return that a firm must earn on the equity financed portions of an investment project in order to leave unchanged the market price of the shares. The cost of equity is not the out-of-pocket cost of using equity capital as the equity shareholders are not paid dividend at a fixed rate every year.

Approaches to Calculate Cost of Equity

There are six approaches available to calculate the cost of equity capital. They are:

1. Dividends Capitalisation Approach

According to this approach, the cost of equity capital is calculated on the basis of the required rate of return in terms of the future dividends to be paid on the shares. Accordingly, K_e is defined as the discount rate that equates the present value of all expected future dividends per share, with the net proceeds of the sale (or the current market price) of a share. It means investor arrives at a market price for a share by capitalising dividends at a normal rate of return. The cost of equity capital can be measured with the following formula:

$$K_e = D/\text{CMP or NP}$$

where, K_e = Cost of equity

D = Dividends per share

CMP = Current market price per share

NP = Net proceeds per share

This method assumes that investor gives prime importance to dividends and risk in the firm remains unchanged and it does not consider the growth in dividend.

Illustration 5: XYZ Ltd. is currently earning ₹ 1,00,000, its current market price per share is ₹ 100, outstanding equity shares are 10,000. The company decided to raise an additional capital of ₹ 2,50,000 through issue of equity shares to the public. It is expected to pay 10 per cent as flotation cost. Equity shares are issued at a discount of 10 per cent. The company is interested to pay a dividend of ₹ 8 per share. Calculate cost of equity.

Solution:

$$K_e = \frac{D}{NP} \times 100$$

$$K_e = \frac{\text{₹ } 8}{(100 - 10 - 10)} \times 100 = \mathbf{10 \text{ per cent}}$$

Limitations of D/CMP Approach

Dividend Capitalisation approach, suffers from the following limitations:

- It does not consider future earnings.
- It ignores the earnings on retained earnings.
- It ignores the fact that market price rise may be due to retained earnings and not on account of high dividends.
- It does not take into account the capital gains.

2. Earnings Capitalisation Approach

According to this approach, cost of equity (K_e) is the discount rate that equates the present value of expected future earnings per share with the net proceeds (or current market price) of a share. The advocates of this approach establishes a relationship between earnings and market price of share. Computation of retained earnings cost separately leads to double the company's cost of capital. This approach is employed under the following conditions. They are:

- (a) Constant earnings per share over the future period
- (b) There should be either 100 per cent retention ratio or 100 per cent dividend payout ratio and
- (c) Company satisfies the requirements with equity shares and does not employ debt.

Cost of equity can be calculated with the following formula:

$$K_e = \frac{E}{\text{CMP or NP}}$$

where, K_e = Cost of equity

E = Earnings per share

CMP = Current market price per share

NP = Net proceeds per share

Illustration 6: Well Do Company Ltd. is currently earning 15 per cent operating profit on its share capital of ₹ 20 lakhs (FV of ₹ 200 per share). It is interested to go for an expansion programme for which the company requires an additional share capital of ₹ 10 lakhs. The company is raising this amount by issue of equity shares at 10 per cent premium and the expected flotation cost is 5 per cent. Calculate cost of equity.

Solution:

$$\begin{aligned} K_e &= \frac{E}{\text{NP}} \times 100 \\ &= \frac{\text{₹ } 30}{(\text{₹ } 200 + 20 - 10)} \times 100 = \mathbf{14.29 \text{ per cent}} \end{aligned}$$

Working Notes:

1. Calculation of EPS

$$\text{Operating Profit} = \text{₹ } 20,00,000 \times 0.15 = \text{₹ } 3,00,000$$

$$\text{No. of Equity Shares} = 20,00,000 / 200 = 10,000 \text{ Shares}$$

$$\text{EPS} = 3,00,000 / 10,000 = \mathbf{\text{₹ } 30}$$

2. Net Proceeds (NP) = Face value + premium – Flotation cost

$$= 200 + 20 - 10 = \mathbf{\text{₹ } 210}$$

Illustration 7: A firm is currently earning ₹ 1,00,000 and its share is selling at a market price of ₹ 90. The firm has 10,000 shares outstanding and has no debt. Compute cost of equity.

Solution:

$$\begin{aligned}\text{EPS} &= \text{Total Earnings} \div \text{No. of Equity Shares} \\ &= ₹ 1,00,000 \div 10,000 = ₹ 10\end{aligned}$$

$$\begin{aligned}K_e &= \frac{E}{MP} \times 100 \\ &= \frac{₹ 10}{90} \times 100 = \mathbf{11.11 \text{ per cent}}\end{aligned}$$

Limitations of E/CMP Approach

Earnings Capitalisation approach has the following limitations:

- All earnings are not distributed to the equity shareholders as dividends.
- Earnings per share may not be constant.
- Share price also does not remain constant.

3. Dividend Capitalisation plus Growth Rate Approach

Computation of cost of equity capital based on a fixed dividend rate may not be appropriate, because the future dividend may grow. The growth in dividends may be constant perpetually or may vary over a period of time. It is the best method over dividend capitalisation approach, since it considers the growth in dividends. Generally, investors invest in equity shares on the basis of the expected future dividends rather than on current dividends. They expect increase in future dividend. Growth in dividends will have positive impact on share prices.

(a) Cost of Capital under Constant Growth Rate Perpetually. The formula for computation of cost of equity under constant growth rate is:

$$K_e = \frac{D}{\text{NP or CMP}} + g$$

where, K_e = Cost of equity capital

D = Dividends per share

NP = Net proceeds per share

CMP = Current market price per share

g = Growth rate (%)

Illustration 8: Equity share of a paper manufacturing company is currently selling at ₹ 100. It wants to finance its capital expenditure of ₹ 1 lakh either by retaining earnings or selling new shares. If a company seeks to sell share, the issue price will be ₹ 95. The expected dividend for the next year is ₹ 4.75 and it is expected to grow at 6 per cent perpetually. Calculate the cost of equity capital (internal and external).

Solution:

Cost of Internal Equity

$$(K_e) = \frac{D}{MP} + g$$

$$K_e = \frac{4.75}{100} + 0.06$$

$$= 0.048 + 0.06 = \mathbf{10.75 \text{ per cent}}$$

Cost of external equity (Issue of shares)

$$(K_e) = \frac{D}{MP} + g$$

$$K_e = \frac{4.75}{95} + 0.06$$

$$= 0.050 + 0.06 = \mathbf{11 \text{ per cent}}$$

(b) Cost of Capital under Variable Growth Rate. Computation of cost of equity after a specific period, is based on the estimation of growth rate in dividends. Expected growth rate will be calculated based on the past trend in dividends. It may not be unreasonable to project the trend into the future, based on the past trend. Financial manager must estimate the internal growth rate in dividends on the basis of long-range plans of the company. Expected growth rate in the internal context requires to be adjusted. Compound growth rate in dividends can be computed with the following formula:

$$gr: D_0 (1 + r)^n = D_n$$

where, gr = Growth rate in dividends

D_0 = First year dividend payment

$(1 + r)^n$ = Present value factor for 'nth' year

D_n = Last year dividend payment

Illustration 9: From the following dividends, record of a company compute expected growth rate.

Year	1996	1997	1998	1999	2000	2001	2002	2003
Dividends per share (₹)	21	22	23	24	25	26	27	28

Solution: gr: $D_0 (1 + r)^n = D_n$

$$21 (1 + r)^7 = 28$$

$$(1 + r)^7 = 28 \div 21 \quad (1 + r)^7 = 1.333$$

During seven years, the dividends have increased by ₹ 7 giving a compound factor of 1.334. The growth rate is 4 per cent since the sum of Re. 1 would accumulate to ₹ 1.333 in the same year at 4 per cent interest.

Illustration 10: Mr. A an investor purchases an equity share of a growing company for ₹ 210. He expects the company to pay dividends of ₹ 10.5, ₹ 11.025 and ₹ 11.575 in years 1, 2 and 3 respectively. He expects to sell the shares at a price of ₹ 243.10 at the end of three years.

- Determine dividend growth rate.
- Calculate the current dividend yield.
- What is the required rate of return on Mr. A's equity investment?

Solution: (a) Computation of Growth Rate (gr)

$$\begin{aligned} \text{gr: } D_0 (1 + r)^n &= D_n \\ ₹ 10.5 (1 + r)^2 &= ₹ 11.575 \\ (1 + r)^2 &= \frac{11.575}{10.5} \\ (1 + r)^2 &= 1.102 \\ \text{gr} &= \mathbf{5 \text{ per cent}} \end{aligned}$$

(b) Calculation of the Current Dividend Yield

$$\begin{aligned} 3^{\text{rd}} \text{ year dividend } & ₹ 11.575 \\ \text{Current dividend yield} &= \frac{11.575}{100} \times 105 = ₹ 12.154 \\ \text{Growth in dividend is } & [12.154 - 11.575] = 0.579 \\ \text{Current dividend yield} &= \frac{0.579}{11.575} \times 100 = 5 \text{ per cent} \end{aligned}$$

In simple, current dividend yield is equal to growth rate in dividends.

(c) Mr. A's required rate of return

$$\begin{aligned} K_e &= \frac{D}{\text{Expected Sales Price (MP)}} + g \\ &= \frac{₹ 12.154}{243.10} + 0.05 \\ &= 0.050 + 0.05 = 0.10 \times 100 = \mathbf{10 \text{ per cent}} \end{aligned}$$

4. Bond Yield Plus Risk Premium (BYRP) Approach

According to this approach, the rate of return required by the equity shareholder of a company is equal to

$$K_e = \text{Yield on long-term Bonds} + \text{Risk Premium}$$

The logic of this approach is very simple, equity investors bear a higher risk than bond investors, hence their required rate of return should include a premium for their higher risk. In other words, bondholder and equity shareholder both are providing funds to the company, but the company assures a fixed rate of interest to the bondholders and not equity shareholders, hence, there is risk involved due to uncertainty of expected dividends. Therefore, it makes a sense determining the cost of equity on a readily observable cost of debt. The problem involved in this approach is the addition of premium, should it be 1 per cent, 2 per cent, 3 per cent or 'n' per cent. There is no theoretical basis for estimating the risk premium. Most analysts look at the operating and financial risks of the business and arrive at a subjectively determined risk premium that normally ranges between 3 per cent to 5 per cent. Cost of equity capital calculated based on this approach is not a precise one, but it is a ball park estimation.

Illustration 11: XYZ Company is planning to sell equity shares. Mr. A is requesting planning to invest in XYZ Company equity shares. Bond yield of XYZ Company is 12 per cent. Mr. A an investor is requesting you to calculate his required rate of return on equity with 3 per cent risk premium.

Solution: $K_e = \text{Bond yield} + \text{risk premium} = 12\% + 3\% = \mathbf{15 \text{ per cent}}$

5. Capital Asset Pricing Model Approach (CAPM)

Capital Asset Pricing Model (CAPM) was developed by William F. Sharpe.

This is another approach that can be used to calculate cost of equity. From cost of capital point of view, CAPM explains the relationship between the required rate of return, and the non-diversifiable or relevant risk, of the firm as reflected in its index of non-diversifiable risk that is beta (β). It shows the relationship between risk and return for efficient and inefficient portfolios. Symbolically,

$$K_e = R_f + (R_{mf} - R_f) \beta$$

where, K_e = cost of equity capital

R_f = Rate of return required on a risk free security (%)

β = Beta coefficient

R_{mf} = Required rate of return on the market portfolio of assets, that can be viewed as the average rate of return on all assets.

Assumptions of CAPM

CAPM approach is based on the following assumptions.

(A) *Perfect Capital Market:* All investors have same information about securities

- There are no restrictions on investments (buying and selling).
- Securities are completely divisible.

- There are no transaction costs.
- There are no taxes.
- Competitive market – means no single investor can affect market price significantly.

(B) *Investors' Preferences:* Investors are risk averse

- Investors have homogenous expectations regarding the expected returns, variances and correlation of returns among all securities.
- Investors seek to maximise the expected utility of their portfolios over a single period planning horizon.

Illustration 12: The Capital Ltd. wishes to calculate its cost of equity capital using the Capital Asset Pricing Model (CAPM). Company's analyst found that its risk free rate of return equals 12 per cent, beta equals 1.7 and the return on market portfolio equals 14.5 per cent.

$$\begin{aligned} K_e &= R_f + (R_{mf} - R_f) \beta \\ &= 12 + [14.5 - 12] 1.7 \\ &= 12 + 4.25 = \mathbf{16.25 \text{ per cent}} \end{aligned}$$

COST OF PREFERENCE SHARES

Preference share is one of the types of shares issued by the companies to raise funds from the public. Preference share is the share that has two preferential rights over equity shares: (i) preference in payment of dividend, from distributable profits, and (ii) preference in the payment of capital at the time of liquidation of the company.

The cost of preference share capital is a function of the dividend expected by the investors. Generally, preference share capital is issued with an intention (a fixed rate) to pay dividends. In case if dividends are not paid, it will affect the firm's fund raising capacity. For this reason, dividends on preference share capital should be paid regularly except when the firm does not make profits.

There are different types of preference shares, cumulative and non-cumulative, redeemable and irredeemable, participating and non-participating and convertible and non-convertible. But here computation of cost of preference share will be only for redeemable and irredeemable.

(a) Cost of Irredeemable (Perpetual) Preference Share

The share that cannot be paid till the liquidation of the company is called as irredeemable preference shares. The cost is measured by the following formulas.

$$K_p \text{ (without tax)} = \frac{D}{\text{CMP or NP}}$$

where, K_p = Cost of preference share

D = Dividend per share

CMP = Current market price per share

NP = Net proceeds

Cost of irredeemable preference stock (with dividend tax)

$$K_p \text{ (with tax)} = \frac{D(1 + Dt)}{\text{CMP or NP}}$$

where, Dt = Tax on preference dividend

Illustration 13: HHC Ltd. issues 12 per cent perpetual preference shares with face value of ₹ 200 each. Compute cost of preference share assuming (without tax).

Solution:

$$K_p = \frac{D}{NP} \times 100$$

$$K_p = \frac{24}{200} \times 100 = \mathbf{12 \text{ per cent}}$$

Illustration 14: Sai Ram & Co. is planning to issue 14 per cent perpetual preference shares, face value of ₹ 100 each. Flotation cost is estimated to be at 4 per cent. Compute: (a) cost of preference shares if they are issued at (i) face value, (ii) 10 per cent premium, and (iii) 5 per cent discount, (b) compute cost of preference share in these situation assuming 5 per cent dividend tax.

Without Dividend Tax	With Dividend Tax
(i) Issued at face value $K_p = \frac{14}{100 - 4} = 14.58 \text{ per cent}$	(i) Issued at face value $K_p = \frac{14(1 + 0.05)}{96} = 15.31 \text{ per cent}$
(ii) Issued at 10% premium $K_p = \frac{14}{110 - 4} = 13.21 \text{ per cent}$	(ii) Issued at 10% premium $K_p = \frac{14(1 + 0.05)}{106} = 13.87 \text{ per cent}$
(iii) Issued at 5% discount $K_p = \frac{14}{95 - 4} = 15.38 \text{ per cent}$	(iii) Issued at 5% discount $K_p = \frac{14(1 + 0.05)}{91} = 16.15 \text{ per cent}$

(b) Cost of Redeemable Preference Share

Shares that are issued for a specific maturity period or redeemable after a specific period are known as redeemable preference shares. The explicit cost of redeemable preference shares is the discount rate that equates the net proceeds of the sale of preference shares with the present value of the future dividend and principal repayments. In other words, cost of preference share is the discount rate that equates the present value of cash inflows (sale proceeds) with the present value of cash outflows (dividend + principal repayment). Dividends will be paid at the end of every year, but principal amount will be paid either in lump sum amount at the end of the maturity period or in installments (equal or unequal). If the principal amount is paid in installments, then the cash outflow

for each year equal to dividend plus part of principal amount. Cost of preference share when the principal amount is repaid in one lump sum amount.

$$K_p: NP = \sum_{t=1}^n \frac{D_t}{(1+K_p)^t} + \dots + \frac{D_n}{(1+K_p)^n} + \frac{P_n}{(1+K_p)^n}$$

where: K_p = Cost of preference share

NP = Net sales proceeds (after discount, flotation cost)

D = Dividend on preference share

P_n = Repayment of principal amount at the end of 'n' years

Illustration 15 (Lump sum repayment): A company issues ₹ 1,00,000, 10 per cent preference shares of ₹ 100 each redeemable after 10 years at face value. Cost of issue is 10 per cent. Calculate cost of preference share.

Solution:

$$K_p: NP = \sum_{t=1}^n \frac{D_t}{(1+K_p)^t} + \frac{D_n}{(1+K_p)^n} + \frac{P_n}{(1+K_p)^n}$$

$$90 = \sum_{t=1}^{10} \frac{10}{(1+K_p)^t} + \frac{10_{10}}{(1+K_p)^{10}} + \frac{₹100}{(1+K_p)^{10}}$$

For computation of cost of preference share, trial and error method is used here.

Computation of Cost of Preference Share

Year	Cash Outflow (₹)	PV Factor		Present Value (₹)	
		10%	12%	10%	12%
1 - 10	10	6.145	5.650	61.45	56.5
10	100	0.386	0.322	38.60	32.2
Total PV of Cash outflow	100.05	88.70			
(-) PV of Cash inflow	90.00	90.00			
Net present value	10.05	(-)1.3			

In trials, PV of cash outflow did not equal to the PV of cash inflow (₹ 90). Hence, cost of preference share is calculated by using interpolation formula.

$$K_p = LDF\% + \left[HDF - LDF \frac{PVLDF - CIF}{PVLDF - PVHDF} \right]$$

where, LDF = Lower discounting factor in %

PVLDF = PV at lower discounting factor

PVHDF = PV at higher discounting factor

COF = Cash outflow

$$\begin{aligned}
K_p &= 10\% + \left[(12 - 10) \frac{100.05 - 90}{100.05 - 88.7} \right] \\
&= 10\% + \left[2 \times \frac{10.05}{11.35} \right] \\
&= 10\% + (2 \times 0.0886) = 10\% + 1.772 \\
&= 11.77 \text{ per cent}
\end{aligned}$$

Shortcut formula:

$$K_p = \frac{D + (f + d + pr - pi)/N_m}{(RV + NP)/2}$$

where, D = Dividend per share

f = Flotation cost (₹)

d = Discount on issue of preference share (₹)

pr = Premium on redemption of preference share (₹)

pi = Premium on issue of preference share (₹)

N_m = Term of preference share

RV = Redeemable value of preference share

NP = Net proceeds realised

$$\begin{aligned}
K_p &= \frac{10 + (10 + 0 + 0 - 0)/10}{(100 + 90)/2} \\
&= \frac{10 + 1}{95} = 11.58 \text{ per cent}
\end{aligned}$$

COST OF DEBT

Companies may raise debt capital through issue of debentures or raise loans from financial institutions or accept deposits from the public. All these resources involve a specific rate of interest. The interest paid on these sources of funds is a charge on the profit and loss account of the company. In other words, interest payments made by the firm on debt issue qualify tax deduction in determining net taxable income. Computation of cost of debenture or debt is relatively easy, because the interest rate that is payable on debt is fixed by the agreement between the firm and the creditors. Computation of cost of debenture or debt capital depends on their nature. The debt/debentures can be perpetual or irredeemable and redeemable, cost of debt capital is equal to the interest paid on that debt, but from company point of view it will be less than the interest payable when the debt is issued at par since the interest is tax deductible. Hence, computation of debt is always after tax cost.

(a) Cost of Irredeemable Debt

Perpetual debt provides permanent funds to the firm, because the funds will remain in the firm till liquidation. Cost of perpetual debt is the rate of return that lender expects (i.e., fixed interest rate). The coupon rate or the market yield on debt can be said to represent an approximation of cost of debt. Bonds/debentures can be issued at: (i) par/face value, (ii) discount and (iii) premium. The following formulae as used to compute cost of debentures or debt of bond.

(i) Pre-tax cost

$$K_{di} = \frac{I}{P \text{ or } NP}$$

(ii) Post-tax cost

$$K_d = \frac{I(1-t)}{P \text{ or } NP}$$

where, K_{di} = Pre-tax cost of debentures

I = Interest

P = Principal amount or face value

NP = Net sales proceeds

T = Tax rate

Illustration 16: XYZ Company Ltd., decides to float 12 per cent, perpetual debentures of ₹ 100 each. The tax rate is 50 per cent. Calculate cost of debenture (pre- and post-tax cost).

Solution:

(i) Pre-tax cost

$$K_{di} = \frac{₹ 12}{100} = 12 \text{ per cent}$$

(ii) Post-tax cost

$$K_d = \frac{12(1-0.5)}{100} = 6 \text{ per cent}$$

Generally, pre-tax cost of debenture is equal to interest rate, when debenture is issued at par and without taking into tax. Cost will be less than the interest rate when it is calculated after considering tax since it is tax deductible. From cost of capital point of view, debenture cost is always post-tax cost.

Sometimes, debentures may be issued at a premium or discount. A company, which has good track record, will issue debenture at premium and a company that is new to the public or running with nominal or poor track record will issue debentures at discount, because no investor would show interest to buy at par value or at discount. Whenever debentures are issued at premium or discount, the cost of debenture will be affected, decrease or increase respectively.

Illustration 17: Rama & Co. has 15 per cent irredeemable debentures of ₹ 100 each for ₹ 10,00,000. The tax rate is 35 per cent. Determine debenture cost assuming it is issued at: (i) face value/par value, (ii) 10 per cent premium and (iii) 10 per cent discount.

Issued at	Pre-tax	Post-tax
(i) Face value	$\frac{₹ 15}{100} = 15 \text{ per cent}$	$\frac{15(1 - 0.35)}{100} = 9.75 \text{ per cent}$
(ii) 10% premium	$\frac{₹ 15}{110} = 13.64 \text{ per cent}$	$\frac{15(1 - 0.35)}{110} = 8.86 \text{ per cent}$
(iii) 10% discount	$\frac{₹ 15}{90} = 16.67 \text{ per cent}$	$\frac{15(1 - 0.35)}{90} = 10.83 \text{ per cent}$

(b) Cost of Redeemable Debt

Redeemable debentures are those having a maturity period or repayable after a certain given period of time. In other words, these type of debentures are under legal obligation to repay the principal amount to its holders either at a certain agreed intervals during the duration of loan or a lump sum amount at the end of maturity period. These type of debentures are issued by many companies when they require capital for temporary needs.

(i) Cost of Redeemable Debentures (Lump Sum)

$$K_d: NP = \sum_{t=1}^n \frac{NI_t}{(1 + K_d)^t} + \dots + \frac{NI_n}{(1 + K_d)^n} + \frac{P_n}{(1 + K_d)^n}$$

where, K_d = Cost of debentures

n = Maturity period

NI = Net interest (after tax adjustment)

P_n = Principal repayment in the year 'n'

Illustration 18: BE Company issues ₹ 100 par value of debentures carrying 15 per cent interest. The debentures will be redeemed after 7 years at face value. The cost of issue is 3 per cent and tax rate is 35 per cent. Calculate cost of debenture.

Solution:

$$(100 - 3) = \sum_{t=1}^7 \frac{15(1 - 0.35)}{(1 + K_d)^t} + \frac{100}{(1 + K_d)^7}$$

Year	Cash Outflow (₹)	DF		PV of Cash Outflow (₹)	
		10%	12%	10%	12%
1-7	9.75	4.863	4.564	47.414	44.499
7	100	0.513	0.452	51.300	45.200
PV of cash out flows				98.714	89.699
(-) PV of Cash inflows				97.00	97.00
Net present value				1.714	(-) 7.301

Cost of debenture lies between 10 per cent and 12 per cent, because net present value ₹ 97 lies between the PV of 10 per cent and 12 per cent. Exact cost can be computed only with the use of interpolation formula:

$$K_d = 10\% + \left(2 \times \frac{98.714 - 97}{98.714 - 89.699} \right)$$

$$= 10\% + 0.38 = \mathbf{10.38 \text{ per cent}}$$

Shortcut method

$$K_d = \frac{I(1-t) + (f + d + pr - pi)/N_m}{(RV + NP)/2}$$

where, I = Interest

t = Tax rate

f = Flotation cost

d = Discount

pr = Premium on redemption

pi = Premium on issue

RV = Redeemable value

NP = Net proceed

N_m = Maturity period of debt

$$K_d = \frac{15(1 - 0.35) + (3 + 0 + 0 - 0)/7}{(100 + 97)/2}$$

$$K_d = \frac{10.179}{98.50} = \mathbf{10.33 \text{ per cent}}$$

Illustration 19 (Installment repayment): Hari Ram & Co. issued 14 per cent debentures aggregating to ₹ 2,00,000. The face value of debenture is ₹ 100. Issue cost is 5 per cent. The company has agreed to redeem the debenture in 5 equal installments at par value (at the end of each year). The company's tax rate is 35 per cent. Compute cost of debenture.

Solution: Sales proceeds = Face value – Flotation cost = ₹ 100 – 5 = ₹ 95.

Installment amount = Face value ÷ No. of installments = 100 ÷ 5 = ₹ 20.

Year	Cash Outflow (₹) (NI + Installment)	DF		PV of Cash Outflow (₹)	
		8%	13%	8%	13%
1	9.1 + 20 = 29.1	0.926	0.885	26.947	25.754
2	7.28 + 20 = 27.28	0.857	0.783	23.379	21.360
3	5.46 + 20 = 25.46	0.794	0.693	20.215	17.644
4	3.64 + 20 = 23.64	0.735	0.613	17.375	14.491
5	1.82 + 20 = 21.82	0.681	0.543	14.860	11.848
PV of cash outflows				102.776	91.097
PV of cash inflows				95.000	95.000
Net present value				(+) 7.776	(-) 3.903

$$\begin{aligned}
 K_d &= 8\% + \left[(13 - 8) + \frac{102.776 - 95}{102.776 - 91.097} \right] \\
 &= 8\% + \left[5 \times \frac{7.776}{11.689} \right] \\
 &= 8\% + 3.33 = \mathbf{11.33 \text{ per cent}}
 \end{aligned}$$

WEIGHTED AVERAGE (OVERALL) COST OF CAPITAL (WACC)

A company has to employ a combination of creditors and owners funds. The composite cost of capital lies between the least and most expensive funds. This approach enables the maximisation of profits and the wealth of the equity shareholders by investing the funds in projects earning in excess of the overall cost of capital.

The composite cost of capital implies an average of the costs of each of the source of funds employed by the firm properly weighted by the proportion they hold in the firm's capital structure.

Steps Involved in Computation of WACC

1. Determination of the source of funds to be raised and their individual share in the total capitalisation of the firm.
2. Computation of cost of specific source of funds.
3. Assignment of weight to specific source of funds.
4. Multiply the cost of each source by the appropriate assigned weights.
5. Add individual source weight cost to get cost of capital.

Once the company decides the funds that will be raised from different sources and the computation of specific cost of each component or source is completed, then the third step in computation of cost of capital is assignment of weights to specific costs, or specific sources of funds. How to assign weights? Is there any base to assign weights? Are there any types of weights?

Assignment of Weights

The weights to specific funds may be assigned based on the following:

- (i) *Book Values*: Book value weights are based on the values found on the balance sheet. The weight applicable to a given source of fund is simply the book value of the source of fund divided by the book value of total funds.

Merits of Book Values Weights

- Calculation of weights is simple.
- Book values provide a base, when firm is not listed or security are not actively traded.
- Book values are easily available from the published records of the firm.
- Analysis of capital structure in terms of debt-equity ratio is based on book value.

Disadvantages of Book Value Weights

- There is no relation between book values and present economic value of various sources of capital.
 - Book value proportions are not consistent with the concept of cost of capital because the latter is defined as the minimum rate of return to maintain the market value of the firm.
- (ii) *Capital Structure Weights:* Under this method, weights are assigned to the components of capital structure based on the targeted capital structure. Depending on target, capital structures have some difficulties in using it. They are:
- A company may not have a well-defined target capital structure.
 - It may be difficult to precisely estimate the components of capital costs, if the target capital is different from present capital structure.
- (iii) *Market Value Weights:* Under this method, assigned weights to a particular component of capital structure is equal to the market value of the component of capital divided by the market value of all components of capital and capital employed by the firm.

Advantages of Market Value Weights

- Market values of securities are closely approximate to the actual amount to be received from their sale.
- Costs of the specific sources of funds that constitute the capital structure of the firm, are calculated using prevailing market prices.

Disadvantages of Market Value Weights

- Market values may not be available when a firm is not listed or when the securities of the firm are very thinly traded.
- Market value may be distorted when securities prices are influenced by manipulation loading.
- Equity capital gets greater importance.

Most of the financial analysts prefer to use market value weight because it is theoretically consistent and sound.

Illustration 20: A firm has the following capital structure as the latest statement.

Sources of Finance	Amount (₹)	After Tax Cost (%)
Debt Capital	30,00,000	4.0
Preference Share	10,00,000	8.5
Capital Equity Share	20,00,000	11.5
Capital Retained Earnings	40,00,000	10.0
Total		100,00,000

Based on the book values, compute cost of capital.

Solution:

Computation of Cost of Capital

Sources of Finance	Weights	Specific Cost (%)	Weighted Cost (%)
Debt	0.30*	4.0	1.2
Preference share	0.10	8.5	0.85
Equity share	0.20	11.5	2.3
Retained earnings	0.40	10.0	4.0
	1.00		8.35

Note:* Debt weight = $\frac{\text{Debt Capital}}{\text{Total Capital}} = \frac{30,00,000}{1,00,00,000} = 0.30$

Illustration 21: XYZ Company supplied the following information to you and requested to compute cost of capital based on book values as well as market values.

Sources of Finance	Book Value (₹)	Market Value (₹)	After Tax Cost (%)
Equity capital	10,00,000	15,00,000	12
Long-term debt	8,00,000	7,50,000	7
Short-term debt	2,00,000	2,00,000	4
Total	20,00,000	24,50,000	

Solution:

Computation of Cost of Capital (based on Book Value Weight)

Source of Finance	Book Value (₹)	Weights (%)	Specific Cost (%)	Weighted
(1)	(2)	(3)	(4)	(5) = (3) × (4)
Equity capital	10,00,000	0.50	12	6.0
Long-term debt	8,00,000	0.40	07	2.8
Short-term debt	2,00,000	0.10	04	0.4
Total	20,00,000	1.00		9.2

Cost of Capital (based on Market Value Weight)

Sources of Finance	Book Value (₹)	Weights (%)	Specific Cost (%)	Weighted
(1)	(2)	(3)	(4)	(5) = (3) × (4)
Equity capital	15,00,000	0.613	12	7.356
Long-term debt	7,50,000	0.307	07	2.149
Short-term debt	2,00,000	0.080	04	0.320
Total	24,50,000	1.000		9.825

Cost of capital = $100 \times 0.098 = 9.8$ per cent

Weighted Average Cost of Capital (alternative method)

Sources of Finance (1)	Market Value (₹) (2)	Cost (%) (3)	Total Cost (₹) (4) = (2) × (3)
Equity capital	15,00,000	0.12	1,80,000
Long-term debt	7,50,000	0.07	52,500
Short-term debt	2,00,000	0.04	8,000
Total	24,50,000		2,40,500

$$\begin{aligned} \text{WAAC} &= \frac{\text{Total Cost in ₹}}{\text{Total Capital}} \\ &= \frac{2,40,500}{24,50,000} \times 100 = \mathbf{9.82 \text{ per cent}} \end{aligned}$$

FACTORS AFFECTING WACC

Weighted average cost of capital is affected by a number of factors. They are divided into two categories such as:

- (A) Controllable Factors (Internal factor)
- (B) Uncontrollable Factors (External factor)

(A) Controllable Factors: Controllable factors are those factors that are within the control of the firm. They are:

(i) *Capital Structure Policy:* As we have assumed that a firm has a given target capital structure where we assigned weights based on that target capital structure to calculate WACC. However, a firm can change its capital structure or proportions of components of capital that affect its WACC. For example, a firm decides to use more debt and less equity, which will lead to reduction of WACC. At the same time, increasing proportion of debt in capital structure increases the risk of both debt and equity holder, because it increases fixed financial (commitment) charges.

(ii) *Dividend Policy:* The required capital may be raised by equity or debt or by combination of both the sources. Equity capital can be raised by issue of new equity shares or through retained earnings. Sometimes companies may prefer to raise equity capital by retention of earnings, because it involves no flotation costs. Firms may feel that retained earnings is less costly when compared to issue of new equity. But it is different it is more costly, since the retained earnings is the income that is not paid as dividends. Hence, investors expects more return so it affects cost of capital.

(iii) *Investment Policy:* While estimating initial cost of capital, generally, we use the starting point for the required rates of return on the firm's existing stock and bonds. Therefore, we implicitly assume that new capital will be invested in assets of the same type and with the same degree of risk. But it is not correct as no firm invests in assets similar to what they currently operate, when a firm changes its investment policy. For example, investment in diversified business.

(B) Uncontrollable Factors: The factors that are not possible to be controlled by the firm that mostly affects the cost of capital. This type of factors are known as external factors.

(i) *Tax Rates:* Tax rates that are beyond the control of a firm, have an important effect on the overall cost of capital. Computation of debt involves consideration of tax. In addition to lowering capital gains tax rate relative to the rate on ordinary income makes stocks more attractive and that reduces cost of equity and it would lower the overall cost of capital.

(ii) *Level of Interest Rates:* Cost of debt is interest rate. If interest rates increases, automatically cost of debt also increases. On the other hand, if interest rates are low, then the cost of debt is less. The reduced cost of debt reduces WACC and this will encourage an additional investment.

(iii) *Market Risk Premium:* Market risk premium is determined by the risk in investing proposed stock and the investor's aversion to risk. Market risk is out of control risk, i.e., firms have no control on this factor.

The above are the important factors that affect cost of capital.

SUMMARY

- Cost of capital is the weighted average cost of various sources of finance used by the firm. It comprises the risk less cost of the particular type of financing (r_j), the business risk premium, (b) and the financial risk premium (f). Symbolically $(K_o) = r_j + b + f$.
- The cost of capital is useful in designing optimal capital structure, investment evaluation, and financial performance appraisal.
- Financial manager has to compute the specific cost of each type of funds needed in the capitalisation of a company. Company may resort to different financial sources (equity share, preference share, debentures, retained earnings and public deposits).
- Retained earnings are one of the internal sources to raise equity finance. The opportunity cost of retained earning is the rate of return the shareholder foregoes by not putting his funds elsewhere.
- Cost of equity capital, is the minimum rate of return that a firm must earn on the equity financed portions of an investment project in order to leave unchanged the market price of the shares. There are six approaches available to compute K_e .
- Cost of preference share capital (K_p) is a function of the dividend expected by the investors.
- Cost of perpetual debenture/debt – Perpetual debt provides permanent funds to the firm. The coupon rate or the market yield on debt can be said to represent an approximation of cost of debt. Bonds/ debentures can be issued at (i) par/face value, (ii) discount and premium.
- Computation of cost of capital by assignment of weights to specific costs, there are three types of weights: book value weights, capital structure weights, and market value weights.
- The marginal cost of capital is the weighted average cost of new capital using the marginal weights. The marginal weights represent the proportion of various sources of funds to be employed in raising additional funds.
- The important factors that affect WACC are divided into two: (a) Controllable factors – Controllable factors are those factors that can be controllable by the firm. They are: capital structure policy, dividend policy, and investment policy. (b) Uncontrollable factors: The factors that are not possible to control by the firm they are: tax rates, and level of interest rates.

SOLVED PROBLEMS

P.1.1 A company has earnings available to ordinary shareholders ₹ 5,00,000. It has equity capital of ₹ 50,00,000 face value of ₹ 100 each. The company's share is selling at ₹ 200. Compute cost of equity (Assuming 100% dividend payout ratio).

Solution:

$$\text{DPS} = \frac{\text{Earnings available shareholder (equity)}}{\text{No. of equity share outstanding}} = \frac{\text{₹ } 5,00,000}{50,000^*} = \text{₹ } 10 \text{ per share}$$

$$\begin{aligned} \text{*No. of equity shares outstanding} &= \frac{\text{Paid up Equity Share Capital}}{\text{Face Value of Share}} \\ &= \text{₹ } 10 \text{ per share} \end{aligned}$$

$$\frac{50,00,000}{100} = 50,000 \text{ share}$$

(a) Cost of equity based on face value:

$$K_e = \frac{D}{FV} = \frac{\text{₹ } 10}{100} \times 100 = \text{10 per cent}$$

(b) Cost of equity based on market price:

$$K_e = \frac{D}{CMP} = \frac{\text{₹ } 10}{200} \times 100 = \text{5 per cent}$$

P.1.2 P & G Company's current earnings per share is ₹ 6 and its share is currently selling at ₹ 25 per share. Compute cost of equity capital.

Solution:

$$K_e = \frac{E}{CMP} = \frac{\text{₹ } 6}{25} \times 100 = \text{24 per cent}$$

P.1.3 VS International is thinking of raising funds by the issue of equity shares to the public. The current market price of the firm's share is ₹ 150. The firm is expected to pay a dividend of ₹ 3.9 next year. At present the firm can sell the new share for ₹ 140 each and it involves a flotation cost of ₹ 10. Calculate cost of new issue.

Solution:

$$K_e = \frac{D}{NP} = \frac{\text{₹ } 3.9}{(140 - 10)} \times 100 = \frac{3.9}{130} \times 100 = \text{3 per cent}$$

P.1.4 SSS Company is currently earning ₹ 10,00,000 and its share is selling at a market price ₹ 160. The firm has 2,00,000 shares outstanding and has no debt. The earnings of the firm are expected to remain stable and it has a payout ratio of 100 per cent. What is K_e ? If firm's payout ratio is assumed to be 70 per cent and that it earns 15 per cent of return on its investment opportunities, then what would be the firm's K_e ?

Solution:

$$K_e \text{ (with 100\% payment)} = \frac{D}{\text{CMP}} = \frac{5^*}{160} \times 100 = \mathbf{3.125 \text{ per cent}}$$

$$* \text{ Dividend per share} = \frac{10,00,000}{2,00,000} = ₹ 5 \text{ per share}$$

$$K_e \text{ (with 70\% payout)} = \frac{₹ 3.5}{160} + 0.045 = \mathbf{6.687 \text{ per cent}}$$

$$\text{growth} = br; g = (0.30 \times 0.15) = 0.045$$

where, b = (rate × rate of returns)

P.1.5 Woodlands Company's share is currently selling at ₹ 134. Current dividend per share is ₹ 3.5 and it is expected to grow at 8 per cent for the next 4 years and that at a rate of 15 per cent for every year. Calculate company's cost of equity.

Solution:

Year	Dividend	Year	Dividend
1	3.5 (1.08) = 3.78	3	4.08 (1.08) = 4.41
2	3.78 (1.08) = 4.08	4	4.41 (1.08) = 4.76

$$K_e = \frac{D}{\text{CMP}} + g = \frac{4.76}{134} + 15\% = \mathbf{18.55 \text{ per cent}}$$

P.1.6 ABB is contemplating an issue of new equity shares. The company's equity share is currently selling at ₹ 250 per share. The dividend payment record for past 6 years is as follows:

Year	1	2	3	4	5	6
Dividend per share (₹)	22	25	26	27	28	29

The company is expected to spend a flotation cost at 3% of the current selling price of the share. The company has requested for:

- (a) growth rate in dividends
- (b) cost of equity assuming growth rate calculated under continuous forever
- (c) cost of new equity

Solution: (a) **Growth rate in dividends:** $D_0(1+r)^n = D_n$

$$22(1+r)^5 = 29$$

$$(1+r)^5 = 29/22 = 1.318$$

The compound sum of one rupee table suggests that Re. 1 compounds to ₹ 1.318 in 5 years at the compound rate of 6 per cent/growth rate is 6 per cent.

$$(a) \text{ Cost of equity} = \frac{29(1.06)}{250} + 0.06 = \mathbf{18.3 \text{ per cent}}$$

$$(b) \text{ Cost of new equity} = \frac{30.74}{242.5} + 0.06 = \mathbf{18.67 \text{ per cent}}$$

P.1.7 Kavery Ltd. is planning to sell equity shares. Mr. Ram wishes to invest in Kavery Ltd. by purchasing equity shares. The company's bond has been yielding at 13 per cent. You are requested by Mr. Ram to calculate his expected rate of return on equity, based on bond yield plus risk premium approach (assuming 3 per cent as risk premium).

Solution: $K_e = \text{Bond yield} + \text{Risk premium} = 13\% + 3\% = \mathbf{16 \text{ per cent}}$

P.1.8 Calculate the required rate of return on four equity stocks with the beta values shown against them.

Stock	A	B	C	D
Beta	0.9	1.1	1.6	1.9

The risk free rate is 20 per cent and rate of return on the market portfolio is 32 per cent.

Solution: Required rate of returns (K_e) = $R_f + (R_{mf} - R_f) \beta$

A	B	C	D
$20 + (32 - 20)0.9$	$20 + (32 - 20)1.1$	$20 + (32 - 20)1.6$	$20 + (32 - 20)1.9$
= 30.8 per cent	= 33.2 per cent	= 39.2 per cent	= 42.8 per cent

P.1.9 Weekly returns of XYZ Company for the period January 2003 to July 20, 2003 containing 223 observations with the weekly returns for the same period on the Economic Times price index, they obtained the beta of 1.20. The average market return (based on weekly returns) during the same period is approximately 21.3 per cent. If the risk free rate is assumed to be 10 per cent, how much is XYZ's cost of equity?

Solution: $K_e = 10 + (21.3 - 10) 1.18 = \mathbf{23.33 \text{ per cent}}$

P.1.10 Om Sai Enterprises issued 9 per cent preference shares (irredeemable) four years ago. The preference share that has a face value of ₹ 100 is currently selling at ₹ 93. What is the cost of preference share with 8 per cent dividend tax?

Solution:

$$K_p = \frac{D(1 + D_t)}{\text{CMP}} = \frac{9(1 + 0.08)}{93} \times 100 = \mathbf{10.45 \text{ per cent}}$$

P.1.11 A company is considering the most desirable capital structure, the following estimates of the debt and equity capital (after tax) have been made at various levels of debt-equity mix.

Debt as a Percentage of Total	Cost of Debt (%) Capital Employed	Cost of Equity (%)
0	6.0	13
10	6.0	13
20	6.0	13.5
30	6.5	14.0
40	7.0	15.0
50	7.5	17.0

Determine the optimal debt-equity mix for the company by calculation of overall cost of capital.

Solution: Overall Cost of Capital

Debt (%)	Equity (%)	Cost of Debt (%)	Cost of Equity (%)	Overall Cost of Capital (%) $(K_d \times W_d) + (K_e \times W_e)$ 100
0	100	6.0	13	$(6 \times 0) + (13 \times 10) = 13.0$
10	90	6.0	13	$(6 \times 0.10) + (13 \times 0.9) = 12.3$
20	80	6.0	13.5	$(6 \times 0.20) + (13.5 \times 0.8) = 12.0$
30	70	6.5	14.0	$(6.5 \times 0.30) + (14 \times 0.7) = 11.75$
40	60	7.0	15.0	$(7 \times 0.40) + (15 \times 0.6) = 11.80$
50	50	7.5	17.0	$(7.5 \times 0.50) + (17 \times 0.5) = 12.25$

30 per cent debt and 70 per cent equity gives the optimal debt-equity mix or optimal capital structure, since at that proportion of debt-equity the overall cost of capital is minimum.

P.1.12 From the following information of Excel Ltd., determine the WACC using: (a) book value weights and (b) market value weights. How are they different? Can you think of a situation where the WACC would be the same using either of the weights?

Sources of Finance	Book Value (₹)	Market Value (₹)	Cost (%)
Equity capital	3,00,000	6,00,000	15
Retained earnings	1,00,000		13
Preference capital	50,000	60,000	8
Debt capital	2,00,000	1,90,000	6
	6,50,000	8,50,000	

Solution: (a) WACC based on book value weights

Sources of Finance	Book Value Weights	Specific Cost (%)	Weighted Cost (%)
Equity capital	0.461	15	6.915
Retained earnings	0.154	13	2.002
Preference capital	0.077	8	0.616
Debt capital	0.308	6	1.848
	1.000		11.38

K_0 or WACC = 11.3 per cent

(b) WACC based on market value weights

Sources of Finance	Market Value (₹)	MV Weights (%)	Specific Cost	Weighted Cost (%)
Equity capital	4,50,000*	0.53	15	7.95
Retained earnings	1,50,000*	0.18	13	2.34
Preference capital	60,000	0.07	8	0.56
Debt capital	1,90,000	0.22	6	1.32
	8,50,000	1.00		12.17

WACC = 12.17 per cent

* **Note 1:** According to Gitman, retained earnings are treated as equity capital for purpose of calculation of cost of specific source of funds, the market value of equity shares may be taken to represent the combined market value of equity shares and retained earnings. The total market value of equity shares and retained earnings is apportioned $\frac{3}{4}$ and $\frac{1}{4}$ respectively, on the basis of their book values.

- We can observe that there is difference between MV weights of COC and BV weights of COC. WACC calculated based on market value weights is considerably larger than the book value weights WACC, since, the sources of long-term funds have higher specific costs (in terms of rupees).
- The WACC would be the same with both the book value weights and market value weights when there is no difference between the book value and market value of source of finance used in raising the capital.

P.1.13 The following information is available for your perusal.

Company's present BV capital structure is as follows:

	₹
Debentures (₹ 100 per debenture)	7,00,000
Preference shares (₹ 100 per share)	3,00,000
Equity shares (₹ 10 each)	10,00,000
	<u>20,00,000</u>

All these securities are traded in the capital market and their recent prices are:

Debentures ₹ 110 per debenture; Preference stock ₹ 120 per share; and Equity share ₹ 22 per share

Anticipated external financing opportunities are:

- (a) ₹ 100, redeemable debenture at face value after 8 years, 13 per cent interest rate, 4 per cent flotation cost.
- (b) 14 per cent redeemable preference shares (5 years), it involves a flotation cost of 5 per cent and the sales price ₹ 100.
- (c) Equity share: ₹ 2 per share brokerage, ₹ 22 sales price.

In addition, the dividend expected as the equity share at the end of the year is ₹ 2 per share. The anticipated growth rate in dividends is 6 per cent and the firm has the practice of paying all its earnings in the form of dividends. The corporate tax rate is 35 per cent.

Solution: Calculation of specific cost

$$(a) K_d = \frac{I(1-t) + (f \div N_m)}{(RV + NP)/2} = \frac{₹13(1-0.35) + (4 \div 8)}{(100 + 96)/2} = 9.13 \text{ per cent}$$

$$(b) K_p = \frac{D + (f \div N_m)}{(RV + NP)/2} = \frac{14 + (5 \div 5)}{(100 + 95)/2} = 15.38 \text{ per cent}$$

$$(c) K_e = \frac{D}{NP} + g = \frac{2}{22 - 2} + 0.06 = 16 \text{ per cent}$$

WACC based on Book Value Weights

Sources of Finance	Book Value (₹)	Cost (%)	Costs (%)
Debenture Capital	7,00,000	9.13	63,910
Preference shares Capital	3,00,000	15.38	46,140
Equity share Capital	10,00,000	16.00	1,60,000
	20,00,000		2,70,050

$$K_o = \frac{2,70,050}{20,00,000} \times 100 = 13.50 \text{ per cent}$$

WACC based on Market Value Weights

Source of Finance	Book Value (₹)	Cost (%)	Costs (%)
Debentures Capital (7,000 × ₹ 110)	7,70,000	9.13	70,301
Preference Share Capital (3,000 × ₹ 120)	3,60,000	15.38	55,368
Equity Share Capital (1,00,000 × ₹ 22)	22,00,000	16.00	3,52,000
Total	33,30,000		4,77,669

$$K_o \text{ or WAAC} = \frac{4,77,669}{33,30,000} \times 100 = 14.34 \text{ per cent}$$

TEST QUESTIONS

1. Fill in the blanks with appropriate word(s)

- Cost of capital is the _____ required rate of return expected by investors.
- Cost of capital, is the measurement of sacrifice made by _____ in order to capital formation.
- According to _____, cost of capital is the minimum required rate of earnings or the cut off rate of capital expenditure.
- Cost of Capital (K_o) = r_f + _____ + f
- The explicit cost is the _____, which equates the present value of cash inflows with present value of cash outflows.
- An average of the cost of each source of funds employed by the firm for capital formation is called as _____.
- Cost of capital is not useful in capital budgeting if a firm is dependent on _____ methods.
- _____ is the additional cost incurred to obtain additional funds required by a firm.
- Bond yield plus _____ is one of the approaches available to calculate cost of equity capital.
- _____ is the cost associated with particular component of capital structure.

[Answers: (a) Minimum, (b) Investor, (c) Soloman Izra, (d) 'b' business risk premium, (e) discount rate, (f) Overall cost of capital, (g) Traditional approach, (h) Marginal cost, (i) Risk premium, (j) Specific cost.]

2. State whether each of the following statement is True or False

- Cost of capital comprises three components.
- Cost of capital is the minimum required rate of return needed to justify investing in a project.
- There is no cost for internally generated funds.
- According to the traditional approach, cost of capital is affected by debt-equity mix.
- Cost of capital is useful in capital budgeting, evaluation is based on discounted cash flow techniques only.
- CAPM approach is one of the approaches used in computation of equity capital.
- Bond yield plus risk premium approach of cost of equity, risk premium ranges between 2% to 6%.
- Opportunity costs are technically referred to as implicit cost.
- Existence of perfect capital market is one of the assumptions of CAPM.
- Incremental value is the sum of the present value of dividend payments during the holding period and present value of expected market price at the end of the specified period.

[Answers: (a) True, (b) True, (c) False, (d) True, (e) True, (f) True, (g) True, (h) True, (i) True, (j) True.]

REVIEW QUESTIONS**Conceptual Type**

1. What is cost of capital?
2. Define Explicit Vs Implicit Cost.
3. Define marginal cost of capital.
4. How do you compute growth rate?
5. What does CAMP say?
6. What do you understand by bond yield plus risk premium approach to K_e calculation ?
7. How is cost of perpetual debt computed?
8. What is retained earnings?
9. How is cost of retained earnings computed?
10. List out any two approaches to calculate cost of equity.

Analytical Type

1. Define cost of capital. Explain the significance of cost of capital in financial management.
2. What is the relevance of cost of capital in capital budgeting decisions.
3. Write a note on CAPM approach for calculation of cost of equity.
4. State any four methods of computing cost of equity.
5. Distinguish between WACC and MCC.
6. "Marginal cost of capital is nothing but the average cost of capital". Explain.
7. The basic formula to calculate the cost of equity is $D/P + g$. Explain its rationale.
8. How is cost of debt calculated?
9. How is cost of preference share calculated?
10. Discuss the following bases for determining the weights in cost of capital calculation, book values, target capital structure and market values.
11. How should you handle the flotation costs in determination of cost of capital?
12. What are the steps involved in calculating a firm's WACC?

Essay Type

1. What is cost of equity? Write a detailed note on the approaches available for computation of cost of equity.
2. Define cost of capital. Discuss in detail the steps involved in computation of WACC.
3. "Evaluating capital budgeting proposals without cost of capital is not possible". Discuss.
4. Critically evaluate the different approaches to the calculation of cost of equity capital.

5. Explain the problems faced in determining the WACC? How is it relevant to capital budgeting decisions?
6. WACC may be determined by using book value and market value weights. Compare the pros and cons of using market value weights rather than book value weights in calculating K_o .
7. What are the components of cost of capital? Discuss in detail individual components of cost of capital.

PROBLEMS

1. A company's share is listed in BSE and it is currently selling at ₹ 56. The company pays a dividend of ₹ 7 per share. Calculate cost of equity.
[Ans: 12.5%]
2. A company is currently paying a dividend of Re. 1 per share, whose face value is ₹ 10. Calculate cost of equity.
[Ans: 10%]
3. Well Do Company is planning to raise ₹ 1,00,000 through issue of equity shares, at par value of ₹ 10. It expects that the brokerage cost involves Re. 1. At present, the company is paying a dividend of ₹ 2 per share. Dividend payment at the current rate will be maintained in future. Compute cost of equity share.
[Ans: 11.11%]
4. Dreams True Bank wishes to raise additional capital required by way of issuing equity share of ₹ 70, face value ₹ 10 plus ₹ 60 premium, which involves a flotation cost at 5 per cent. Current dividend per share is ₹ 8, and it is expected to be stable over the near future. Calculate cost of equity.
[Ans: 12.03%]
5. Play Well Toy's manufacturing company is planning to sell equity shares. Mr. Rama who is planning to invest in that company by investing in equity shares requests you to calculate his required rate of returns on equity with 4 per cent risk premium. Bond yield of the company is 11 per cent.
[Ans: 15%]
6. HMV Coy is interested to calculate the K_e using CAPM approach. The following information is provided by the firm's investment advisors along with the firm's own analysis, it is found that the risk free rate of return equals to 6 per cent and the firm's beta equals to 1.6 and the return on market portfolio equals 13 per cent.
[Ans: 17.2%]
7. Sri Ram Company's cost of capital is 15 per cent. The company maintains a debt-equity ratio of 1 : 3. The company's debt is issued at 12 per cent interest rate and it is in the tax bracket of 25 per cent. Calculate cost of equity.
[Ans: 8.25%]

8. A company issues 10 per cent preference share of ₹ 100 each at a discount of 5 per cent, it involves floatation cost of 4 per cent. (a) Compute cost of equity capital. (b) Also calculate K_p with 8 per cent dividend tax.
[Ans: (a) 10.99%, (b) 11.87%]
9. Ashok & Co. issues 12 per cent irredeemable preference share of the face value of ₹ 100 per share. Flotation costs are estimated at 5 per cent of the face value. What is K_p if issued at: (a) Face value, (b) 10 per cent discount and (c) 10 per cent premium?
[Ans: (a) 12.63%, (b) 14.46% and (c) 10.90%]
10. TVS Ltd., issued ₹ 10, 8 per cent preference shares, on a price of ₹ 110 with a provision to redeem after 5 years. Calculate cost of preference by using: (a) yield to maturity method and (b) trial and error method.
[Ans: (a) 6.674, (b) 7%]
11. XYZ Company Ltd., issued 14 per cent preference shares of face value of ₹ 100 each to be redeemed after 10 years. It involves brokerage cost 3 per cent, advertising expenditure cost 1 per cent and printing expenses 1 per cent. Determine cost of preference share.
[Ans: 15%]
12. Nice Walk Shoe Company issues ₹ 1,00,000, 9 per cent debentures. Applicable tax rate is 35 per cent. Calculate cost of debenture capital.
[Ans: 5.85%]
13. Shye Electronic Company is planning to raise ₹ 4,00,000 by way of 14 per cent perpetual debt. The tax rate is 40 per cent. Determine cost of debt capital (pre-tax and post-tax) if the debt is raised at (a) face value, (b) 10 per cent premium and (c) 10 per cent discount.
[Ans: (a) Pre-tax – 14%, post-tax – 8.4%; (b) Pre-tax – 12.72%, post-tax – 7.64%; (c) Pre-tax – 15.56%, post-tax – 9.33%]
14. ME Company issues ₹ 100 par value of debentures carrying 15 per cent interest. The debentures are repayable after 7 years at a premium of 10 per cent. The cost of issue is 3 per cent. The tax rate of the company is 45 per cent. The issue cost can be amortized evenly over the life of the debenture. What is the cost of debenture?
[Ans: 7.16%]
15. A company wishes to float 12 per cent debentures worth ₹ 3 lakhs. The flotation cost is 10 per cent. The company's tax rate is 50 per cent. The debenture amount will be redeemed in 5 equal years installments commencing at the end of year 1. Calculate the cost of debenture.
[Ans: 7%]
16. A company is planning to raise ₹ 50 lakhs by issue of 5 years repayable public deposits at 10 per cent. The issue involves 3 per cent, brokerage 2 per cent, printing and stationery and 2 per cent advertising expenditure. The company's tax rate is 40 per cent. Calculate cost of public deposit capital.
[Ans: 6.45%]

17. From the following capital structure of a firm, compute WACC based on existing capital structure.

Source of Finance	Amount (₹)	Specific Cost (%)
Equity shares	9,00,000	18
Retained earnings	3,00,000	–
Preference capital	2,00,000	11
Debentures	6,00,000	8

[Ans: 14.3%]

18. A company's after-tax, cost of capital of the specific sources is as follows:

Source of Finance	Book value (₹)	Market Value (₹)	Specific Cost (%)
Equity Capital	16,00,000	30,00,000	17
Retained earnings	4,00,000		
Preference capital	8,00,000	10,80,000	14
Debt capital	12,00,000	10,80,000	8
	40,00,000	50,00,000	

Compute WACC based on: (a) Book value weight and (b) Market value weights.

[Ans: (a) 13.7%, (b) 14.5%]

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