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CS-EXECUTIVE

(MODULE-2)

# **FINANCIAL AND STRATEGIC MANAGEMENT**

**(Vol.-1)**

**BY:-**

**H. L. GUPTA**

(MBA FINANCE, B.Sc. Math)

*with 15 Years of Teaching Experience*

**CS. SWETA CHUGH**

(COMPANY SECRETARY M.NO. A54013)

*with 7 Years of Teaching Experience*

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**EXECUTIVE PROGRAMME**  
**Module 2**  
**Paper 8**  
**FINANCIAL AND STRATEGIC MANAGEMENT**

**SYLLABUS**

**Objectives**

Part I : To provide knowledge of practical aspects of financial management so as to develop skills in taking financial and investment decisions.

Part II : To enable students to acquire multidimensional skills as to equip them to comprehend the process of strategy formulation.

**PART – I: FINANCIAL MANAGEMENT (60 MARKS)**

1. Nature, Significance and Scope of Financial Management
2. Capital Budgeting
3. Capital Structure
4. Sources of raising Long term Finance and Cost of Capital
5. Project Finance
6. Dividend Policy
7. Working Capital
8. Security Analysis
9. Portfolio Management
10. Practical Problems and Case Studies

**PART – II: STRATEGIC MANAGEMENT (40 MARKS)**

11. Introduction to Management
12. Introduction to Strategic Management
13. Business Policy and Formulation of Functional Strategy
14. Strategic Analysis and Planning
15. Strategic Implementation and Control
16. Analysing Strategic Edge

# **FINANCIAL AND STRATEGIC MANAGEMENT (VOL-1)**

*{Strictly as per new syllabus (2017) prescribed by  
The Institute of Company Secretaries of India (ICSI)}*

## **CONTENTS**

### **PART – I FINANCIAL MANAGEMENT**

S. NO.	CHAPTER NAME	PAGE NO.
1.	NATURE OF FINANCIAL MANAGEMENT	1 – 14
2.	TIME VALUE OF MONEY	15 – 36
3.	COST OF CAPITAL	37 – 64
4.	LEVERAGE ANALYSIS	65 – 90
5.	EBIT-EPS ANALYSIS	91 – 96
6.	CAPITAL STRUCTURE THEORY	97 – 110
7.	DIVIDEND POLICY	111 – 130
8.	WORKING CAPITAL	131 – 154
9.	RECEIVEABLE MANAGEMENT	155 – 176
10.	INVENTORY MANAGEMENT	177 – 184
11.	MANAGEMENT OF CASH AND MARKETABLE SECURITIES	185 – 188
12.	PROJECT PLANNING AND CONTROL	189-192
13.	FINANCIAL SERVICES	193-204
14.	INDIAN CAPITAL MARKET : EMERGING TRENDS	205-206

**This book should be read along with “FMS Vol-2” containing  
additional 11 Chapter of FSM Part - II**

**This book is updated  
With all amendments  
Till 30<sup>th</sup> June 2019**

***(Afterwards amendments will be included / discussed  
in live lectures at classroom)***

# 1. Nature of Financial Management

## APPROACHES/ MEANING OF F.M.

The basic message behind the statement “Financial Management is concerned with the solutions of the three major decisions a firm must make the investment decision, the financing decision and the dividend decision”, is self-evident.

A firm created because the founders of the firm believe that there is an opportunity to make profitable investment. This profitable investment need to be financed and profit distributed amongst those who have contributed the capital. Hence, there is need for decisions such as how to finance investment? How to distribute profit among shareholders?

Modern Approach of financial management basically provides a conceptual and analytical framework for financial decisions making. It emphasizes on an efficient and broken down into three different decisions:-

- 1) Investment Decisions;
- 2) Financing Decisions; and
- 3) Dividend Decisions

### **1) Investment Decisions**

These involve the allocation of resources among various type of assets. What portion of the firm's fund should be invested in various current assets such as cash, marketable securities and receivable and what portion in fixed assets, such as inventories and plant and equipment. The assets mix affects the amount of income the firm can earn.

For examples, a manufacturer is in business to earn income with fixed assets such as machinery and not with current assets. However, placing too high a percentage of its asset in new building or new machinery may leave the firm short of cash to meet an unexpected need or exploit sudden opportunity.

The firm's financial managers must invest in fixed assets, but not too much. Besides determining the assets mix, financial manager must also decide what type of fixed and current assets to acquire. All this covers area pertaining to capital budgeting and working capital management.

### **2) Financial Decision**

It is the next step in financial management for executing the investment decisions once taken. A look at the balance – sheet of a company indicates that it obtains finance from shareholders ordinary, preference, debenture holders, or long - term loans from the institutions, banks and other sources.

These are variations in the provisions contained in preference shares, debentures, loans papers etc. thus financing decisions are concerned with the determination of how much to obtain from one source and how much from other or others i.e. the financing mix of capital structure. Efforts are made to obtain an optimal financing mix for a particular company.

This necessities study of capital structure is also the short and intermediate term financing plans of the company. In more advanced companies financing decision today, has become fully – integrated with top – management policy formulation via capital budgeting, long – range planning, evaluation of alternate uses of funds, and establishment of measurable standards of performance in financial terms.



### 3) Dividend Decisions

The third major decision of financial management is the decision relating to the dividend policy. The dividend decision should be analysed in relation to the financing decision in relation to the financing decision of a firm.

Two alternatives are available in dealing with the profits of a firm; they can be retained in the business. Which courses should be followed – dividend or retention?

One significant element in the dividend decision is therefore the dividend payout ratio, i.e. what proportion of net profits should be paid out to the shareholders.

The decision will depend upon the preference of the shareholders and investment opportunities available within the firm.

The second major aspect of the dividend decision is the factors determining dividend policy of a firm in practice

- Q. 1. (CS Dec 2008)** Investment, financing and dividend decisions are inter-related.  
**(CS June 2005)** State with reasons whether the investment financing and dividend decisions are inter-related.

**Ans. 1. Objective**

- The underlying objective of all the three decisions viz. — Investment, Financing and Dividend decisions, is “maximization of Shareholders’ wealth”.
- The Finance Manager has to consider the joint impact of these three decisions on the market price of the Company’s Shares.

**2. Linkage**

- A new project (investment) needs finance. Also, a Company may have to expand/develop its operations, which require funds. Hence Investment Decisions is based on the Financing Decision.
- The Financing decision is influenced by, and influences the Dividend decision, since Retained Earnings used in internal financing means reduction in dividends paid to Shareholders.
- So, the inter-relationship between the three types of decisions should be analyzed jointly, in order to maximize the Shareholders’ wealth.

**3. Decision-Making:**

The three decisions can be linked to maximize Shareholders’ Wealth, in the following manner —

- a) Investment Decisions:
- ✓ Investment in Long Term Projects should be made after Capital Budgeting and uncertainty analysis.
  - ✓ Projects which give reasonable returns (higher than cost) in order to add to the surplus of the Shareholders’, should be selected.
  - ✓ The returns should be high enough as to distribute reasonable dividends and also retain adequate resources for the Company’s growth prospects.

## b) Financing Decisions:

- ✓ Proper balancing between long-term and short-term funds, as well as own funds and loan funds, will help the Firm to minimize its overall cost of capital and increase its wealth/value.
- ✓ Low cost of funds will mean higher profit margins, which can be used for dividend distribution as well as internal financing of new projects/growth plans.

## c) Dividend Decisions:

- ✓ The optimum dividend pay-out ratio ensures that shareholders' wealth is optimized.
- ✓ Where the funds at the disposal of the Company earn a higher return than if distributed to shareholders, wealth maximization can be achieved by retaining the funds, rather than declaration of dividend.

**Q. 2. [June 2003]** Write short notes on "Profit maximisation" vs. "Wealth maximisation"?

**Ans.**

**Profit Maximisation**

Profit maximisation is one of the objectives of financial management since profit act as a reward for taking risk and is also an icon of business performance.

Evaluation of profit maximisation as one of the objectives of financial management:-

**Advantages of Profit Maximisation**

- 1) The ultimate objective of each business is profit maximisation.
- 2) Profit acts as a reward for taking risk.
- 3) It helps to counteract with the future uncertainties.
- 4) Profit is also an icon of business performance.
- 5) Last but not the least; profit is the measuring rod which measures the financial soundness of any organisation.

**Disadvantages of Profit Maximisation**

Reasons as to why profit maximisation is not an objective of financial management:-

- 1) Profit maximisation is a narrow approach and ignores many obligations.
- 2) Profit is a vague term since different persons have different perspective for the very same term.
- 3) It ignores the timing of return.
- 4) Does not take into account the risk factor.
- 5) Lastly, it is a short term concept only.

**Wealth Maximisation**

It is a long term objective of financial management whereby the business strives to increase the wealth of the shareholders i.e. the stockholding of individual shareholder by maximising the market price per share.



### Advantages of Wealth Maximisation

- 1) As against the profit maximisation, the approach of wealth maximisation is long term in nature.
- 2) It does consider the timing impact.
- 3) It takes into account the concept of risk and uncertainty.

### Disadvantages of Wealth Maximisation

- 1) Lack of direct relationship between financial decisions and prices of shares.
- 2) Merely an increase in shareholder's wealth does not lead to wealth maximisation since there exist a large number of other stake holders also.

**Q. 3. [Dec 2006]** Write a short note on 'Economic Value Added'.

**(June 2009)** Discounted cash flow is very close to economic value added. Comment.

**(CS Dec 2006)** Economic value added (EVA) and wealth maximization.

**(CS Dec 2005)** Economic value added (EVA) concept is in conformity with the objective of wealth maximization. Explain.

**Ans.**

- Economic value added (EVA) is the after tax cash flow generated by a business minus the cost of the capital.
- EVA underlines shareholder value. Discounted cash flow is very close to economic value added, with the discount rate being the cost of capital.
- There are two key components to EVA.
  - The net operating profit after tax (NOPAT) and
  - the capital charge, which is the amount of capital times the cost of capital.
- In other words, it is the total pool of profits available to provide cash return to those who provided capital to the firm.
- $EVA = (\text{Operating Profit}) - (\text{A Capital Charge})$   
 $EVA = \text{NOPAT} - (\text{Cost of Capital} \times \text{Capital})$
- Although EVA is a value based measure, and it gives in valuations exactly same answer as discounted cash flow, the periodic EVA values still have some accounting distortions.
- That is because EVA is after all an accounting-based concept and suffers from the same problems of accounting rate of returns (ROI etc.) In other words, the historical assets values that distort ROI distort EVA values also.

**Q. 4. [June 2007]** Write notes on Financial Distress?

**Ans.** The term 'financial distress' denotes a situation wherein the financial position and affairs of any firm is endangered.

- A Capital structure with high quantum of debt can prove adverse in case there is paucity of cash inflows.
- Failure to pay interest and principal can further worsen the situation since there will be a mounting pressure from providers of finance.
- Further, it may lead the organisation to what is known as financial distress.

- Under financial distress the firm repays the debt taken and accumulated interest by resorting to such practices like selling asset at low prices which consequentially prove quite disastrous to the organisation as a whole.
- But if the organisation is unable to settle out its dues, there arises the situation of what is known as bankruptcy.

**Q. 5. [June 2007]** Distinguish between of the following: 'Financial Distress' and 'Insolvency'?

**Ans.**

S No.	Financial Distress	Insolvency
1	It is a condition where the obligations of the firm are met with great difficulty.	It is a condition where the obligations of the firm are not met.
2	It is short term.	It is forever.
3	Firm can recover from this situation.	Firm has to close down in this situation.
4	It is majorly caused due to external factors.	It is majorly caused by both external & internal factors.
5	Financial Distress slowly leads to bankruptcy.	Insolvency is another form of bankruptcy.
6	This is the cause.	This is the effect.

**Q. 6. [June 1999]** "The financial manager's primary task is to plan for the acquisition and use of funds so as to maximise the value of the firm". Do you agree? Comment.

**Ans.**

- Financial management is concerned with the effective procurement, utilisation and ultimate disposal of funds.
- It is the function of financial managers to maximise the wealth of the owners.
- It is the financial manager who strikes out the balance between profitability and liquidity.
- Financial manager has the following responsibilities on his shoulder:-
  - Forecasting the funds so required.
  - Procurement of funds.
  - Effective utilisation of funds.
  - Keeping cost control
  - Maintaining liquidity.
  - Forecasting high profitability.
- He is thus concerned with the triple decisions of investment, financing and dividend which lay the very foundation of financial management.
- In the modern day world, the responsibilities of financial manager have increased drastically covering a wide scope of activities.
- Thus, it can be concluded that financial manager is concerned with the acquisition and use of funds so as to maximise the value of firm.

**Q. 7. [June 2001]** Explain the salient features of financial sector reforms in India.

**Ans.** Salient / peculiar features of financial sector reforms undertaken in India are as follows:-

**1) Policy framework**

Financial sector reforms in relation to policy framework means simplification of certain factor being:-



- Allowing banks to freely determine the interest rate policy thereby freeing them from the clutches of administered interest rates.
- Lowering down the requirements for depositing the amounts in relation to Capital Reserve Ratio (CRR) and Statutory Liquidity Ratio (SLR) enhances the bank's accessibility to funds and thus create more credit.
- Granting funds to priority sectors with higher demands at general interest rate is surely a step towards bank's profitability since this caters both to the needs of the country ensuring that the funds are channelised to priority sector and at the same time guarantees the same to be lucrative assignment to banks also.

## 2) **Improvement in Financial health**

With a view to improve the financial health, following two initiatives were taken:-

- Prudential norms and regulations
- Greater transparency and accountability.

## 3) **Institutional Strengthening**

Measures were taken to strengthen the banking system by introducing competitiveness so as to gear them to face challenges and threat created from other banks and NBFC.

**Q. 8. [Dec 2001]** "In the current economic scenario, financial management has assumed much greater significance. It is now a question of survival of entities in the total spectrum of economic activity, with the pragmatic re-adjustment of financial management." Comment.

**Ans.** Financial management is concerned with the efficient procurement and utilisation of the funds.

It embraces in it all the activities concerned with raising funds, investing them in the desired areas and distributing surplus so earned to the shareholders termed as financing, investment and dividend decisions respectively.

### **Investment decision**

These decisions are concerned with allocation of funds which will result in future benefits. Before making investment, cut off rate needs to be decided. Also, evaluation of the various projects has to be done in terms of net present value and decide which project to invest in.

### **Financing decision**

Once it is decided where to invest, the next question is to decide how to acquire funds for investing the same in the desired projects. Financing decision also ambits in itself the decision regarding the proportion of debt and equity. It aims towards achieving what is known as optimum capital mix.

### **Dividend decisions**

This decision takes into account the manner in which the surplus generated is to be distributed and how much to retain. Determination of dividend payout ratio and retention ratio depends upon a large number of factors.

**Q. 9. [June 2002]** “The responsibilities of the financial managers are linked to the goal of ensuring liquidity, profitability or both and are also related to the management of assets and funds of any business enterprise.” Comment.

**Ans.** Finance manager occupies a pivotal position in the organizational structure. Some of the functions performed by a finance manager are as follows:-

### **Forecast**

Finance manager has to forecast the financial requirement of the organisation.

### **Procurement**

He has to decide the correct proportion between debts and capital. He tries to set an optimum capital structure. A large number of options are available at his disposal from where he tries to select the best.

### **Investment**

After the finance manager forecasts I estimate the fund requirement, he chalks out the course of action to be taken and procures the desired amount of funds from the best source. There is need for actual execution by investing the funds in the desired projects.

### **Dividend decision**

It is upon the finance manager to decide how to dispose off the surplus considering the various relevant factors. He is to decide the optimum dividend payout ratio and retention ratio.

### **Liquidity maintenance**

Liquidity maintenance is of crucial importance since liquidity mismanagement may even lead to situation of financial distress and eventually insolvency / bankruptcy.

### **Cash management**

Financial manager has to ensure that neither there is shortage of cash nor there is situation of idle cash. Thus, he has to properly channelise idle cash and also carefully handle situations wherein deficit cash balance exist.

**Q.10. [Dec 2002]** “Financial sector reforms aim at promoting a diversified, efficient and competitive financial sector with ultimate objective of improving the allocative efficiency of available resources, increasing the return on investments and promoting an accelerated growth of real sectors of economy.” Comment.



**Ans.** Financial sector reforms aims at promoting diversified, efficient and competitive financial sector with ultimate objective of improving the allocative efficiency of available resources, increasing the return on investments and promoting an accelerated growth of real sectors of economy.

Following reforms in the field of financial system were needed:-

- Structural reforms in indigenous financial systems.
- Easy reach to international financial system.
- Developing markets for long term as well as short term financial instruments.
- Formulation of policies to handle up cases of bankruptcy of financial intermediaries.
- Introduction of prudential norms and regulation.
- Injecting weaker banks by means of restructuring.
- Altering the policy framework of financial sector by allowing them to freely determine interest rate and relaxing the CRR and SLR requirements.
- Strengthening financial infrastructure and also managerial.
- Competence.
- 

**Q.11. [June 2007]** 'Wealth maximisation' objective of the financial management is redefined as 'value maximisation'. Comment.

**Ans.**

- Wealth maximisation objective of the financial management is redefined as value maximisation.
- The objective of wealth maximisation talks about increasing the wealth of equity shareholders.
- Increase in wealth of shareholders calls for increase in market price of shares.
- Thus, what is required ultimately is the increase in market price or market value of shares.
- Therefore, the concept of wealth maximisation can better be construed as value maximisation.

**Q.12. [Dec 2007]** Taxation provisions have a significant effect on financial planning of a company. Comment.

**Ans.**

- It is true to say that taxation provisions have a significant effect on financial planning of a company.
- Financial management is concerned with the effective procurement and utilisation of funds.
- The scope of financial management is wide enough and covers in its purview the investment, financing and dividend decisions.
- Finance manager has to assess and consider the impact of taxes in relation to each of these three decisions.
- While determining investment decisions the amount of debt should be taken into consideration since interest on debt is a charge also the amount of tax on distribution of dividend in case of dividend decisions are to be taken care off.

**Q.13. [June 2008]** “An investor suffers dilution of financial interest when he does not exercise his pre-emptive rights.” Comment.

**Ans.**

- Section 81 of the Companies Act, 1956 covers the concept of pre-emptive rights.
- According to Section 81, the company shall be bound to offer the new issue to existing shareholders before making them available to the new ones.
- Existing shareholders shall have the option whether to subscribe the new shares or not.
- In case shareholder does not exercise his pre-emptive rights his financial interest dilutes.

**Q.14. [Dec 2009]** Financial sector acts as conduit for the transfer of financial resources from net savers to net borrowers. Comment.

**Ans.**

- In any economy, the financial sector plays a major role in the mobilization and channelising of saving.
- Financial institutions, instruments and markets which constitute the financial sector.
- They act as conduit for the transfer of financial resources from net savers to net borrowers.
- Financial sector performs this basic economic function of intermediation essentially through transformation mechanisms.

**Q.15. [June 2010]** Traditional approach of business finance considers efficient utilization of resources. Comment.

**Ans.**

- The traditional approach of finance was concerned merely with procurement of funds.
- The approach includes passes instrument selection, institutions through which funds are raised and legal and accounting practices and their relationship with the enterprise.
- The traditional approach played very little role in financial planning and direction.
- Efficient utilization of resources alongwith financing decisions requires financial planning and proper direction.

**Q.16. [Dec 2011]** Comment on the following:

- a) **Financial gearing is a double-edged sword.**
- b) **Financial policy and corporate strategy are most significant concerns of top management.**

**Ans. a) Financial gearing is a double-edged sword**

- Financial leverage is calculated as a relation between EBIT (Earning Before Interest and Tax) and EBT (Earning Before Tax)
- A high financial leverage has a positive impact on EPS (Earning Per Share) and consequently MPS (Market Per Share)
- A higher EBIT has potential of covering interest expense and consequently result in higher EPS.



- Financial gearing is often termed as a fair weather friend.
- It is so, because a high financial leverage may prove out to be quite a risky if EBIT is not sufficient to cover the interest expense.
- Thus, financial gearing proves out to be a double edged sword since it will help to accelerate the EPS when the company is doing well. However, in case the vice versa happens i.e. the company is not performing well, EPS of geared company falls down in a greater proportion than that of a low geared company.

**b) Financial policy and corporate strategy are most significant concerns of top management**

- Financial policy & corporate strategy are the most significant concerns of the top management.
- Financial policy is the backbone and helps the top management to determine strategy.
- They are the basic tools which aid management in taking decisions & execution of plans.
- Financial policy ambits in itself all the 3 dimensions - financing, investing & dividend decision

**Q.17. [Dec 2007]** Distinguish between of the following: 'Business risk' and 'Financial risk'?

**Ans.**

S. No.	Business Risk	Financial Risk
1	It is the risk that encompasses in it the threat of variation of return	Financial risk is the risk associated with fixed rate charges like interest etc.
2	It is concerned with Earning Before Interest and Tax i.e. EBIT	It deals with EAIT i.e. Earning After Interest and Tax.
3	It is also called operating risk	Inability to manage the financial risk to lead to a situation known as financial distress.

**Q.18. [Dec 1998]** Discuss the impact of globalisation on the financial decision making of corporate enterprises. Also discuss the impact of liberalisation on Indian industry?

**Ans.**

- The New Economic Policy (N.E.P.) was introduced in the year 1991.
- Liberalisation, privatisation and globalisation were the chief sectoral reforms adopted as per the N.E.P.
- These initiatives were taken with a view to increase the country's competitiveness and meet the global challenge.
- All these sectoral reforms aimed towards effective and efficient use of the resources.
- Globalisation aims at integrating the economy of the country with that of the world's economy.
- Integration of domestic market with that of global market has surely unveiled new opportunities, though at the very same time some sort of threat in form of challenges and competition have also crept in.
- Liberalisation, on the other hand, refers to the simplification process whereby the country adopts liberalised and flexible approach like delicensing and deregulation.
- Both the processes of globalisation and liberalisation have augmented trade and had contributed a long way in the growth and development of Indian economy.



**Q.19. [June 2003]** Liquidity and profitability are competing goals for the finance manager. Comment.

**Ans.**

- Liquidity ensures the ability of the firm to honour its short term commitments, that means, the firm has adequate cash, to pay for its bills, to make unexpected large purchases and to meet contingencies, at all times.
- It also reflects the ability of the firm to convert its assets into cash and pay off liabilities quickly.
- Under liquidity management, the finance manager is expected to manage all its current assets including near cash assets in such a way as to ensure its effectively with the view to minimize its costs.
- Under profitability objective, the finance manager is expected to utilize the funds of the firm in such a manner as to ensure the highest return.
- However, the two objectives of the liquidity and profitability have inverse relationship
- If liquidity increases profitability decreases and vice-a-versa.

**MCQ QUESTION WITH ANSWERS**

1. Objective of Financial Management is:
  - (a) Management of Liquidity
  - (b) Maximization of Profit
  - (c) Maximization of Shareholders' Wealth
  - (d) Management of Fixed Assets
2. In Financial Management, cash flow is same thing as:
  - (a) Cash Profit,
  - (b) Profit before Tax,
  - (c) Operating Profit,
  - (d) None of the above.
3. What is ignored in Principle of Profit Maximization?
  - (a) Time Value of Money,
  - (b) Risk,
  - (c) Wealth Creation,
  - (d) All of the above.
4. Which of the following are two basic concepts of financial management ?
  - (a) Costs and Expenses,
  - (b) Risk and Return,
  - (c) Debit and Credit,
  - (d) Receipts and Payment.
5. In Financial Management, the term risk refers to:
  - (a) Chances of Incurring Losses
  - (b) Variability of Future Outcome,
  - (c) Chances of no Return,
  - (d) None of the above.
6. Financial Management refers to:
  - (a) Management of Current Assets,
  - (b) Management of All Assets,
  - (c) Financial Decision-making,
  - (d) Management of Liabilities.
7. Which of the following is included in financial decision making?
  - (a) Investment Decision,
  - (b) Financing Decision,
  - (c) Dividend Decision,
  - (d) All of the above.

8. Which of the following is considered as complementary to Financial Management?
- (a) Cost Accounting,
  - (b) Management Accounting,
  - (c) Financial Accounting,
  - (d) Corporate Accounting.
9. Maximization of Wealth of Shareholders is reflected in:
- (a) Sales Maximization,
  - (b) No. of Shareholders,
  - (c) Market Price of Equity Shares,
  - (d) SENSEX.
10. Which is not a part of Investment Decision in Financial Management ?
- (a) Dividend Payout Decision,
  - (b) Capital Budgeting Decision,
  - (c) Working Capital Management,
  - (d) Credit Policy towards Customers.
11. Focal Point in Financial Management is :
- (a) Increasing Sales of the firm,
  - (b) Creating Shareholders' Value,
  - (c) Increasing Profit,
  - (d) Increasing Market Share.
12. Which of the following variables defines and explains the concepts of finance?
- (a) Inflation,
  - (b) Capital Structure,
  - (c) Risk-free Rate of interest,
  - (d) Risk and Return.
13. In a Public Sector Company, the financial goal of the firm is to:
- (a) Maximize the Market Price of Equity,
  - (b) Maximize the Dividends to Govt.,
  - (c) Maximize the PV of Equity Returns,
  - (d) None of the above.
14. Maximizing the wealth of the shareholders is reflected in:
- (a) Maximizing MP of Equity Shares,
  - (b) Maximizing Cash Balance,
  - (c) Maximizing Retained Earnings,
  - (d) Maximizing Issued Capital.
15. Which of the following is not a function of a finance manager?
- (a) Procurement of Fund,
  - (b) Allocation of Fund,
  - (c) Maintaining balance between Risk and Return,
  - (d) Maneuvering the Share Price

16. Market value of the firm is a result of:
- (a) Investment Decision,
  - (b) Financing Decision,
  - (c) Working Capital Management,
  - (d) Risk-Return Trade off.
17. Which of the following represents the financing decision?
- (a) Designing Optimal Capital Structure,
  - (b) Declaring Dividend,
  - (c) Paying Interest on Loans,
  - (d) None of the above. ;
18. Dividend decision is related to:
- (a) Right Issue of share,
  - (b) Reinvestment Requirement,
  - (c) Cash Flow Statement,
  - (d) None of the above.

Answers : 1(c); 2(d); 3(d); 4(b); 5(b); 6(c); 7(d); 8(c); 9(c); 10(a); 11(b); 12(d); 13(c); 14(a); 15(d); 16(d); 17(a); 18(b)



## 2. TIME VALUE OF MONEY

### LEARNING OBJECTIVES

After studying this chapter, you should be able to understand

- What is the Time Value of Money?
- What is Interest?
- What is the Future Value of Money?
- What are the Different Kinds of Interest?
- What is Simple Interest?
- What is Compound Interest?
- What is Effective Rate of Interest?
- What is Present Value?
- What is an Annuity?
- What is Sinking Fund?
- What is Perpetuity?

Numbers	Concept	Number of solved questions	Number of unsolved questions
1	Present value factors	2/a	1, 2, 3, 16, 20
2	Present value annuity factors	2/b,c,d	4, 5, 6, 7
3	Present value for perpetuity	9	8, 9, 10, 11
4	Concept of present value	7	18
5	Equal annual loan installment	13	22
6	Differed annuity	8	
7	Sinking Fund	6	12, 13
8	Effective rate of interest	1	14
9	Simple interest		15, 17
10	Compound interest		19, 21

### Time Value of Money

The time value of money has been referred to as an axiom of financial management. The concept of TVM refers to the fact that money received today is different in its worth from the money receivable at some other time in future. In other words, the same principle can be stated as that the money receivable in future is less valuable than the money received today. There are several reasons for this preference for current money as follows:

1. Future Certainty
2. Preference for present consumption.
3. Reinvestment opportunity.

The Future Value (FV) of Present Value (PV) Money is calculated as follows:

$$FV = PV (1+r)^n$$

Where

FV	=	future value
PV	=	present value
r	=	% rate of interest
n	=	Time gap

Example:

The above formula can be also written in terms of finance as

$$FV = PV (CV f(r,t))$$

Note:

If compounding is made N number of times in a year then FV is calculated as follows:

$$FV = PV (1+r/M)^{M.n.}$$

Or

$$FV = PV \times CV f(r/M, Mn)$$

## Effective Rate of Interest

The effective rate of interest is the annually compounded rate of interest that is equivalent to an annual interest rate compounded more than once per year. The effective rates of interest are equal whenever they generate the F.V.

Mathematically:

$$1+r_e = (1+r/M)^{Mn} - 1$$

where

$r_e$  = effective rate of interest

$r$  = normal rate of interest p.a.

$M$  = number of compounding period in a year.

## Future value of a series of equal cash flows or annuity of cash flows:

When same amount is deposited under same interval of time in that case future value is determined by using the formula of compound value annuity factor.

$$FV = \text{Annuity amount} \times CVAf_{(r,n)}$$

## Discounting Technique

The reverse of compounding technique is known as discounting technique. In case of discounting technique the future cash inflow determined in terms of present cash inflow. There are two way of finding PV of FV.

### 1. Present Value Factor

In case of present value factor the cash inflow in future in a particular point of time. for example. If we receive Rs. 1000 after five years then PV is calculated as

$$PV = 1000 \times PV f(r,5)$$

### 2. Present Value Annuity Factor

Present value annuity factor is used. If certain amount in each year received for example. If

Rs. 1000 is received at the end of each year from 1 to 5.

$$PV = 1000 \times PVA f(r,5)$$

Perpetuity: - A perpetuity may be defined as an infinity series of equal cash flows occurring at regular intervals.

$$PV_p = \frac{\text{Annual Cash Flow}}{r}$$

For example:

Find out the present value of an investment which is expected to give a return of Rs. 2500 p.a. indefinitely & the rate of interest is 12%.

$$PV_p = \frac{2500}{0.12} = 20833.33$$

$$PV_p = \frac{\text{Annual Cash Flow}}{r}$$

$$\text{at } r = 8\% = 0.08$$

$$PV_p = \frac{80}{0.08} = 1000 \text{ No.}$$

$$\text{at } r = 5\% = 0.05$$

$$PV_p = \frac{80}{0.05} = 1600 \text{ Yes}$$

### Annuity Due: -

The discussion of FV or the PV of an annuity was based on the presumption that the cash flows occur at the end of each of the periods starting from now. However, in practice the cash flow may also occur in the beginning of each period. Such a situation is known as annuity due.

FV of an annuity due

$$FV = [\text{Annuity amount} \times CVA f(r,n)] (1+r)$$

PV of an annuity due

$$PV = [\text{Annuity amount} \times CVA f(r,n)] (1+r)$$

### Sinking Funds

It is a fund which is created to accumulate a target amount over a given period inclusive of interest for a period in such a way that the annual amount being subscribed over the period is same for all years.

FV of an annuity due

$$FV = [\text{Annuity amount} \times CVA f(r,n)]$$

It may be noted that factor  $1/CVA f(r,n)$  is also known as the sinking fund value factor.

### Capital Recovery

Some times, one may be interested to find out the equal amount paid in order to redeem a loan of a specified amount over a specified period together with the interest at a given rate for that period. For example, Rs.1,00,000 borrowed today is to be repaid in five equal installments payable at the end of each next 5 years in such a way that the interest at 10% p.a. this annuity amount is calculated as follows:

$$PV = [\text{Annuity amount} \times PVAf(r,n)]$$

$$\begin{aligned} \text{Annuity Amount} &= \frac{PV}{PVAf(r,n)} \\ &= \frac{1,00,000}{3.791} = 26.378 \end{aligned}$$

- INTRODUCTION
- COMPOUNDING TECHNIQUE
- EFFECTIVE RATE OF INTEREST

**Q. 1.** A deposit of Rs. 10, 000 is made in a bank for a period of 1 year. The bank offers two options:

- (i) to receive interest at 12% p.a. compounded monthly or **Ans. 12.68 %**  
 (ii) to receive interest at 12.25% p.a. compounded half yearly.

Which option should be accepted? **Ans. 12.65%**

### • DISCOUNTING TECHNIQUE

**Q. 2.** Find out present values of the following:

- a) Rs. 1, 500 receivables in 7 years a discount rate of 15%; **Ans. 564**  
 b) an annuity of Rs. 760 starting after 1 year for 6 years at an interest rate of 12%.

**Ans. 3125**



- c) an annuity of Rs. 5, 500 starting in 7 years time lasting for 7 years at a discount rate of 10%;

Ans. 15110

- d) an annuity of Rs. 1, 000 starting immediately and lasting until 9<sup>th</sup> year at a discount rate of 20%;

Ans. 4837

### • DISCOUNTING TECHNIQUE IN CASE OF PERPETUITY

- Q. 3. Find out the present value of an investment which is expected to give a return of Rs. 2, 500 p.a. indefinitely and the rate of interest is 12% p.a.

Ans. 20833.33

- Q. 4. A finance company makes an offer to deposit a sum of Rs. 1, 100 and then receive a return of Rs. 80 p.a. perpetually. Should this offer be accepted if the rate of interest is 8%? Will the decision change if the rate of interest is 5%?

Ans. 1000

- Q. 5. Find out present values of the following:

A perpetuity of Rs. 400 starting in year 3 at a discount rate of 18%.

Ans. 1596

### • SINKING FUNDS

- Q. 6. An amount of Rs. 1, 00, 000 is required at the end of 5 years from now to repay a debenture liability. What amount should be accumulated every year at 10% rate of interest so that it ultimately becomes Rs. 1, 00, 000 after 5 years?

Ans. 16380

### • CAPITAL RECOVERY

- Q. 7. Calculate yearly installment to be paid for Rs. 1, 00, 000 borrowed today is to be repaid in five equal installments payable at the end of each of next 5 years in such a way that the interest at 10% p.a. for the intervening period is also repaid.

Ans. 26378

### • DEFERRED ANNUITY

- Q. 8. A loan of Rs. 1, 00, 000 is taken on which interest is payable @ 10%. However, the repayment is to start only at the end of third year from now. What should be the annual payment is the total loan and interest is to be repaid in six installments?

Ans. 27784

- Q. 9. What is the present value of cash flows of Rs. 750 per year forever (a) at an interest rate of 8% (b) at an interest rate of 10% ?

Ans. 9375, 7500

- Q.10. A company has issued debentures of Rs. 50 lacs to be repaid after 7 years. How much should the company invest in a sinking fund earning 12% in order to be able to repay debentures ?

Ans. 495589

- Q.11. What is the present worth of operating expenditures of Rs. 1, 00, 000 per year which are assumed to be incurred continuously throughout in 8 year period if the effective annual rate of interest is 12% ?

Ans. 496763

**Q.12.** A firm purchases a machinery for Rs. 8, 00, 000 by making a down payment of Rs. 1, 50, 000 and remainder in equal installments of Rs. 1, 50, 000 for six years. What is the rate of interest to the firm?

**Ans.** 10%

**Q.13.** Mr. X borrows Rs. 1, 00, 000 at 8% compounded annually. Equal annual payments are to be made for 6 years. However, at the time of fourth payment, the individual elects to pay off the loan. How much should be paid ?

**Ans.** 60207

**Q.14.** Ten year from now Mr. X will start receiving a pension of Rs. 3, 000 a year. The payment will continue for sixteen years. How much is the pension worth now, if his interest rate is 10% ?

**Ans.** 9952

**Q.15.** Novelty Industries is establishing a sinking fund to redeem Rs. 50, 00, 000 bond issue which matures in 15 years. How much do they have put into the fund at the end of each year to accumulate the Rs. 50, 00, 000, assuming the funds are compounded at 7% annually?

**Ans.** 19873

**Q.16.** XYZ Ltd. is creating a sinking fund to redeem its Preference capital of Rs. 5 lac issued on Jan 1, 1998 and maturing on Dec 31, 2009. The annual payment will start on Jan 1, 1998. The company will make equal payments and expects that the fund will earn 12% per year. How much will be the amount of sinking fund payment?

**Ans.** 18500

## Solved Questions

### Q.1.

Determine the present value of Rs. 78,67,597 receivable at the end of 4th year at an effective rate of interest of 12%p.a?

**SOLUTION:**

$$\text{Present Value} = \frac{\text{FV}}{(1+r)^t} = \frac{\text{₹ } 78,67,597}{(1+0.12)^4} = \frac{\text{₹ } 78,67,597}{1.57353} = \text{₹ } 50,00,000$$

### Q.2

Calculate the present value of Rs. 25,00,000, Rs. 30,00,000 and Rs. 40,00,000 receivable at the end of 1<sup>st</sup> year, 2<sup>nd</sup> year and 3<sup>rd</sup> year respectively at an effective rate of interest of 12% p.a.

**SOLUTION:**

$$\text{Present Value (PV)} = \frac{\text{Future Value (FV)}}{(1+r)^t}$$

#### STATEMENT SHOWING THE CALCULATION OF PRESENT VALUE

Particulars	Year 1	Year 2	Year 3	Total
A. Future Value	25,00,000	30,00,000	40,00,000	95,00,000
B. Years (n)	1	2	3	
C. Rate of interest (r)	0.12	0.12	0.12	
D. P.V Factor [1/(1+r) <sup>n</sup> ]	0.8929	0.7972	0.7118	
E. Present Value (A x D)	22,32,250	23,91,600	28,47,200	74,71,050

### Q.3.

Calculate the present value of Rs. 20,000, Rs. 30,000 Rs. 40,000 and Rs. 50,000 receivable at the end of 6 months, 1 year, 18 months and 2 years respectively at an effective rate of interest of 12% p.a.

**SOLUTION:**

#### STATEMENT SHOWING THE CALCULATION OF PRESENT VALUE

Particulars	6 months	1 year	18 months	2 years	Total
A. Amount	20,000	30,000	40,000	50,000	1,40,000
B. Years (n)	0.5 (6/12)	1	.5(18/12)	2	
C. Rate of interest (r)	0.12	0.12	0.12	0.12	
D. P.V Factor [1/(1+r) <sup>n</sup> ]	0.9449*	0.8929	0.8437"	0.7972	
E. Present Value (A x D)	18,898	26,787	33,748	39,860	1,19,293



$$\begin{aligned} \text{*P.V Factor of 6 months} &= 1 / \sqrt{1.12} \\ &= 1/1.0583 = 0.9449 \end{aligned}$$

$$\text{**P.V Factor of 18 months} = 1 / (1.12)^{3/2}$$

$$\begin{aligned} &= 1 / \sqrt{(1.12)^3} = 1/\sqrt{1.4049} \\ &= 1/1.1853 = 0.8437 \end{aligned}$$

**Q.4**

Determine the present value of an annuity of Rs. 1,00,000 receivable for 5 years at an effective rate of interest of 12%p.a.

**SOLUTION:**

Present Value of an annuity of Rs. 1 for five years

$$\begin{aligned} &= \frac{A}{r} \left[ 1 - \frac{1}{(1+r)^n} \right] = \frac{1}{0.12} \left[ 1 - \frac{1}{(1+0.12)^5} \right] \\ &= 8.3333 [1 - 0.5674] = 8.3333 \times 0.4326 = 3.605 \\ \text{Hence, PV of an annuity of Rs. 1,00,000} \\ &= \text{Rs. 1,00,000} \times \text{PV of an annuity of Rs. 1} \\ &= 1,00,000 \times 3.605 = \text{Rs. 3,60,500.} \end{aligned}$$

**Q.5**

.Determine the present value of an annuity of Rs. 1,00,000 receivable for 5 years at an effective rate of interest of 12 % p.a. if annuity is receivable at the beginning of the year.

**SOLUTION:**

In this case relevant number of years shall be 4 years since 5th annuity shall be payable at the beginning of 5th year which is equivalent to end of 4th year.

$$\begin{aligned} \text{Present Value of an annuity of ₹ 1} &= \frac{A}{r} \left[ 1 - \frac{1}{(1+r)^n} \right] = \frac{1}{0.12} \left[ 1 - \frac{1}{(1+0.12)^4} \right] \\ &= 8.3333 [1 - 0.6355] = 8.3333 \times 0.3645 = 3.0375 \end{aligned}$$

This is the present value of an annuity of Rs. 1 receivable at the end of 1st year, 2nd year, 3rd year and 4th year respectively. However, in this figure Rs. 1 receivable at present is not included. Hence in this figure Rs. 1 is added to arrive at present value of an annuity of Rs. 1 for five year receivable at the beginning of the year.

Therefore, present value of an annuity of Rs. 1 for five year receivable at the beginning of the year =  $3.0375 + 1 = 4.0375$

$$\begin{aligned} \text{Hence, PV of an annuity of Rs. 1,00,000} \\ &= \text{Rs. 1,00,000} \times \text{PV of an Annuity of Rs. 1} \\ &= 1,00,000 \times 4.0375 = \text{Rs. 4,03,750.} \end{aligned}$$

**Q.6.**

Determine the present value of an annuity of Rs. 1,00,000 receivable for 5 years semi - annually at a rate of interest of 12 % p.a. compounded semi - annually.

**SOLUTION:**

In this case  $r$  would be  $0.12 / 2 = 0.06$

$n$  would be  $2 \times 5$  years = 10 years

Present Value of an annuity of Rs. 1 for 10 years

$$= \frac{A}{r} \left[ 1 - \frac{1}{(1+r)^n} \right] = \frac{1}{0.06} \left[ 1 - \frac{1}{(1+0.06)^{10}} \right]$$

$$= 16.6666 [ 1 - 0.5584 ] = 16.6666 \times 0.4416 = 7.36$$

Hence,

PV of an annuity of Rs. 1,00,000 = Rs. 1,00,000 x PV of an annuity of Rs. 1

$$= 1,00,000 \times 7.36 = \text{Rs. } 7,36,000.$$

**Q.7.**

Determine the present value of an annuity of Rs. 1,00,000 receivable for 5 years semi - annually at a rate of interest of 12 % p.a. compounded semi - annually if annuity is payable at the beginning of semi - year.

**SOLUTION:**

In this case relevant number of years shall be 4.5 years since 10th annuity shall be payable at the middle of 5th year which is equivalent to end of 4.5 year.

In this case  $r$  would be  $0.12 / 2 = 0.06$

$n$  would be  $2 \times 4.5$  years = 9 years

$$\text{Present Value of an annuity of ₹ 1} = \frac{A}{r} \left[ 1 - \frac{1}{(1+r)^n} \right] = \frac{1}{0.06} \left[ 1 - \frac{1}{(1+0.06)^9} \right]$$

$$= 16.6666 [ 1 - 0.5919 ] = 16.6666 \times 0.4081 = 6.8016$$

This is the present value of an annuity of Rs. 1 receivable till the end of 4.5th year. However, in this figure Rs. 1 receivable at present is not included. Hence in this figure Rs. 1 is added to arrive at present value of an annuity of Rs. 1 for 5 year receivable at the beginning of the semi - year.

Therefore, present value of an annuity of Rs. 1 for 5 years receivable at the beginning of the semi -year =  $6.8016 + 1 = 7.8016$

Hence, PV of an annuity of Rs. 1,00,000

= Rs. 1,00,000 x PV of an annuity of Rs. 1

$$= 1,00,000 \times 7.8016 = \text{Rs. } 7,80,160.$$

**Q.8.**

Determine the present value of perpetuity Rs. 1,20,000 per year for infinite period at an effective rate of interest of 12% p.a.?

**SOLUTION:**

$$\text{P.V of perpetuity} = (A / r) = \text{Rs. } 1,20,000 / 0.12 = \text{Rs. } 10,00,000$$

**Q.9.**

Determine the present value of perpetuity Rs. 1,20,000 per year (starting from the beginning) for infinite period at an effective rate of interest of 12% p.a.?

**SOLUTION:**

$$\text{P.V of normal perpetuity} = (A/r) = \text{Rs. } 1,20,000 / 0.12 = \text{Rs. } 10,00,000$$

However, in this case perpetuity received in the beginning is not included therefore P.V of perpetuity starting from the beginning = P.V of normal perpetuity + Perpetuity received in the beginning = Rs. 10,00,000 + Rs. 1,20,000 = Rs. 11,20,000

**Q.10.**

Determine the present value of perpetuity of Rs. 1,00,000 per 6 months for an infinite period at an effective rate of interest of 12% p.a.

**SOLUTION:**

In this case r would be as follows:

$$r = \left[ \sqrt{(1 + \text{Effective Rate of Interest})} \right] - 1$$

$$r = \left( \sqrt{1.12} \right) - 1 = 1.0583 - 1 = 0.0583$$

$$\text{P.V of Perpetuity} = (A / r) = \text{Rs. } 1,00,000 / 0.0583 = \text{Rs. } 17,15,266$$

**Q.11.**

Determine the present value of perpetuity of Rs. 1,00,000 per 3 months for an infinite period at an effective rate of interest of 12% p.a.

**SOLUTION:**

In this case r would be as follows:

$$r = \left[ \sqrt[4]{(1 + \text{Effective Rate of Interest})} \right] - 1$$

$$r = \left( \sqrt[4]{1.12} \right) - 1 = 1.0287 - 1 = 0.0287$$

$$\text{P.V of Perpetuity} = (A / r) = \text{Rs. } 1,00,000 / 0.0287 = \text{Rs. } 34,84,321$$

**Q.12.**

Determine the perpetuity in each of the following cases if effective rate of interest is 12% p.a. and initial amount invested is Rs. 10,00,000.

**Case (a) :** If perpetuity is payable after every year.

**Case (b) :** If perpetuity is payable after every 6 months.

**Case (c) :** If perpetuity is payable after every quarter.

**SOLUTION;**

**Case (a):** In this case  $r = 0.12$ , P.V. of Perpetuity =  $A / r$

$$A = (P.V) r = \text{Rs. } 10,00,000 \times 0.12 = \text{Rs. } 1,20,000$$

Hence in this case perpetuity would be Rs. 1,20,000.

**Case (b):** In this case  $r = (\sqrt[4]{1.12}) - 1 = 0.0583$ , P.V. of Perpetuity =  $A / r$

$$A = (P.V) r = \text{Rs. } 10,00,000 \times 0.0583 = \text{Rs. } 58,300$$

Hence in this case perpetuity would be Rs. 58,300.

**Case (c):** In this case  $r = (\sqrt[4]{1.12}) - 1 = 0.0287$ , P.V. Perpetuity =  $A / r$

$$A = (P.V) r = \text{Rs. } 10,00,000 \times 0.0287 = \text{Rs. } 28,700$$

Hence in this case perpetuity would be Rs. 28,700.

**Q.13.**

How much amount is required to be invested every year so as to accumulate Rs. 10,00,000 at the end of 5 years if the effective rate of interest is 12% p.a.

**SOLUTION:**

Future value of an annuity of Rs. 1 after 5 years

$$= \left( \frac{A}{R} \right) [(1+r)^n - 1] = \frac{1}{0.12} [1 + 0.12)^5 - 1]$$

$$= 8.3333 (1.7623 - 1) = 8.3333 (0.7623) = 6.3525$$

Let the amount of an annuity be 'x'

$$\text{Therefore, } 6.3525 x = 10,00,000$$

$$x = 10,00,000 / 6.3525 = 1,57,418.$$

Hence, amount required to be invested every year is Rs. 1,57,418.

**Q.14.**

How much amount is required to be invested in the beginning of every year so as to accumulate Rs. 10,00,000 at the end of 5 years if the effective rate of interest is 12% p.a.

**SOLUTION:**

In this case relevant number of years shall be 6 years since in this case 1st annuity is payable in the beginning of 1st year.

Future value of an annuity of Rs. 1 after 6 years

$$= \left( \frac{A}{R} \right) [(1+r)^n - 1] = \frac{1}{0.12} [(1 + 0.12)^6 - 1]$$

$$= 8.3333 (1.9738 - 1) = 8.3333 (0.9738) = 8.115$$



This is the Future value of an annuity of Rs. 1 after 6 years. However, in this figure Rs. 1 receivable at the end of 6 year is included. Hence in this figure Rs. 1 is deducted to arrive at Future value of an annuity of Rs. 1 for 5 year receivable at the beginning of the year.

Therefore, Future value of an annuity of Rs. 1 for 5 year invested at the beginning of the year =  $8.115 - 1 = 7.115$

Let the amount of an annuity be 'x'

Therefore,  $7.115 x = 10,00,000$

$x = 10,00,000 / 7.115 = 1,40,548$

Hence, amount required to be invested at the beginning of every year is Rs. 1,40,548.

### Q.15.

Calculate Effective Rate of Interest if Rate of Interest is 12 % in each of the following cases:

**Case (a) :** When interest is compounded half yearly

**Case (b) :** When interest is compounded quarterly

**Case (c) :** When interest is compounded monthly

**Case (d) :** When interest is compounded twice a month

**Case (e) :** When interest is compounded daily.

**SOLUTION:**

### STATEMENT SHOWING THE EFFECTIVE RATE OF INTEREST

Particulars	Case (a)	Case (b)	Case (c)	Case (d)	Case (e)
A. Interest Rate	0.12	0.12	0.12	0.12	0.12
B. No. of compounding per year (t)	2	4	12	24	365
C. Applicable Interest Rate (r) (A / B)	0.0600	0.0300	0.0100	0.0050	0.0003
D. Future Value (FV) = $(1 + r)^t$	1.1236	1.1255	1.1268	1.1272	1.1275
E. Effective Rate of Interest = $(FV - 1)$	0.1236	0.1255	0.1268	0.1272	0.1275

### Q.16.

Calculate simple interest and future value of an amount of Rs. 1,00,000 borrowed at a simple interest rate of 12 % per annum for (i) 6 months, (ii) 1 year, (iii) 2 year, (iv) 1095 days, (v) 90 days

**SOLUTION:**

**STATEMENT SHOWING THE COMPUTATION OF SIMPLE INTEREST**

Particulars	for 6 months	For 1 year	for 2 year	for 1095 Days	for 90 Days
A. Amount borrowed (P)	1,00,000	1,00,000	1,00,000	1,00,000	1,00,000
B. Interest Rate per annum (r)	0.12	0.12	0.12	0.12	0.12
C. Time Period (in years) (t)	0.5 (i.e. 6/12)	1	2	3(i.e. 1095/365)	90/365
D. $SI = P \times r \times t$	6,000	12,000	24,000	36,000	2,959

**STATEMENT SHOWING THE COMPUTATION OF THE FUTURE VALUE (FV)**

Particulars	for 6 months	For 1 year	for 2 years	for 1095 Days	for 90 Days
A. Amount borrowed (P)	1,00,000	1,00,000	1,00,000	1,00,000	1,00,000
B. SI (as calculated above)	6,000	12,000	24,000	36,000	2,959
C. $FV = P + SI$	1,06,000	1,12,000	1,24,000	1,36,000	1,02,959

**Q.17.**

A fixed deposit receipt has a maturity value of Rs. 1,30,000. What is the amount at which fixed deposit receipt has been initially purchased if simple interest rate is 10 % per year and the maturity period is 3 years.

**SOLUTION:**

$$FV = P(1 + rt)$$

$$P = FV / (1 + rt)$$

$$P = 1,30,000 / (1 + 0.1(3))$$

$$P = 1,30,000 / 1.30$$

$$P = 1,00,000$$

Hence, Fixed deposit receipt has been initially purchased for Rs. 1,00,000.

**Q.18.**

A fixed deposit receipt has a maturity value of Rs. 1,30,000. It is initially purchased for Rs. 1,00,000 for 3 years. Calculate simple interest rate per year.

**SOLUTION:**

$$FV = P(1 + rt)$$

$$1,30,000 = 1,00,000 [1 + r(3)]$$

$$1.3 = 1 + 3r$$

$$0.3 = 3r$$

$$r = 0.10$$

Hence, simple interest rate per year is 10 %

**Q.19.**

X Ltd. borrows Rs. 43,60,000 from Y Ltd. at a simple interest rate of 12 % per year. It is agreed that the loan shall be payable in two equal instalments which shall be payable at the end of six months and 1 year respectively. Calculate the amount of instalment.

**SOLUTION:**

Let the amount of instalment be 'x'

Future Value of Rs. 1 after six month

$$= 1 + 0.12(0.5) = 1.06$$

Future Value of Rs. 1 after year =  $1 + 0.12 = 1.12$

$$\text{Hence } [(x/1.06) + (x/1.12)] = 43,60,000$$

$$= [x \{(1/1.06) + (1/1.12)\}] = 43,60,000$$

$$= [x(1.12 + 1.06)/(1.12)(1.06)] = 43,60,000$$

$$= [2.18 x / 1.1872] = 43,60,000$$

$$x = 43,60,000 (1.1872/2.18) = 23,74,400$$

Hence the amount of instalment is Rs. 23,74,400

**Q.20.**

Calculate Future Value and Compound Interest on an amount of Rs. 1,00,000 borrowed at a compound interest rate of 12 % per annum for (i) 6 months (ii) 1 year, (iii) 2 years, (iv) 1095 days.

**SOLUTION:**

**STATEMENT SHOWING THE COMPUTATION OF COMPOUND INTEREST**

Particulars	for 6 months	for 1 year	for 2 years	for 1095 Days
A. Amount borrowed (P)	1,00,000	1,00,000	1,00,000	1,00,000
A. Amount borrowed (P)	1,00,000	1,00,000	1,00,000	1,00,000
B. Interest Rate (r)	0.12	0.12	0.12	0.12
C. Time Period (t)	1/2	1	2	(i.e. - .095/365)
D. Future Value (FV) = $P(1+r)^t$	1,05,830	1,12,000	1,25,440	1,40,492.80
E. Compound Interest (CI) = FV - P	5,830	12,000	25,440	40,492.80



**Q.21.**

A fixed deposit receipt has a maturity value of Rs. 1,33,100. What is the amount at which fixed deposit receipt has been initially purchased if compound interest rate is 10 % per annum and the maturity period is 3 years.

**SOLUTION:**

$$P = \frac{FV}{(1+r)^t} = \frac{1,33,100}{(1+0.10)^3} = \frac{1,33,100}{1.331} = ₹ 1,00,000$$

Hence, Fixed deposit receipt has been purchased for Rs. 1,00,000.

**Q.22.**

A fixed deposit receipt has a maturity value of Rs. 1,46,410. It is initially purchased for Rs. 1,00,000 for 4 years. Calculate the compound interest rate per annum.

**SOLUTION:**

$$FV = P(1+r)^t$$

$$1,46,410 = 1,00,000 [1+r]^4$$

$$1.46410 = (1+r)^4$$

$$(1+r) = \sqrt[4]{1.46410}$$

$$(1+r) = 1.10$$

$$r = 0.10$$

Hence, compound interest rate per annum is 10 %.

**Q.23.**

X Ltd. borrows Rs. 1,18,72,000 from Y Ltd. at a compound interest rate of 12 % per annum. It is agreed that the loan shall be payable in two equal instalments which shall be payable at the end of 1st year and 2nd year respectively. Calculate the amount of instalment.

**SOLUTION:**

Let the amount of instalment be 'x'

$$\text{Future Value of Rs. 1 after 1st year} = (1+r)^1 = (1+0.12)^1 = 1.12$$

$$\text{Future Value of Rs. 1 after 2nd year} = (1+r)^2 = (1+0.12)^2 = 1.2544$$

$$\text{Hence } [(x/1.12) + (x/1.2544)] = 1,18,72,000$$

$$= [x(1.12 + 1.2544)/(1.12)(1.2544)] = 1,18,72,000$$

$$= [2.3744 x / 1.404928] = 1,18,72,000$$

$$x = 1,18,72,000 (1.404928/2.3744) = 70,24,640$$

Hence the amount of instalment is Rs. 70,24,640.

**MCQ QUESTION WITH ANSWERS**

1. Discounting technique is used to find out:
  - (a) Terminal Value
  - (b) Compounded Value
  - (c) Present Value
  - (d) Future Value.
2. The adjustment for time value of money is made through:
  - (a) Interest Rate
  - (b) Inflation Rate
  - (c) Growth Rate
  - (d) None of the above.
3. Equal annual Cash Flows occurring at the end of each year for certain period are known as:
  - (a) Annuity
  - (b) Perpetuity
  - (c) Annuity Due
  - (d) Deferred Payments.
4. Equal Annual amounts occurring in the beginning of certain years are known as :
  - (a) Annuity
  - (b) Perpetuity
  - (c) Annuity Due
  - (d) Deferred Payments.
5. Present Value of a future cash flow would decrease if:
  - (a) Discount Rate is reduced
  - (b) Discount Rate is increased
  - (c) Time Period is decreased
  - (d) All of the above.
6. Future cash flows are converted to present values, so that these can be :
  - (a) Aggregated
  - (b) Compared
  - (c) Used in Decision-making
  - (d) All of the above.
7. 'Rule of 72' is a short-cut method to estimate the:
  - (a) Present Values
  - (b) Compounding Effect
  - (c) Both (a) & (b)
  - (d) None of the above
8. Effective Interest Rate is a factor of:
  - (a) Compounding Frequency
  - (b) Basic Rate of Interest
  - (c) Both (a) and (b)
  - (d) None of the above.
9. A series of Constant Cash flows occurring at regular intervals forever is known as:
  - (a) Growing Annuity
  - (b) Perpetuity
  - (c) Growing Perpetuity
  - (d) Annuity

10. Future Value and Present Value, both are based on:  
 (a) Number of Time periods  
 (b) Interest Rate:  
 (c) Both (a) and (b)  
 (d) None of the above.
11. If the Interest Rate is greater than zero, which of the following series you would prefer to receive:  

	Year 1	Year 2	Year 3	Year 4
(a)	Rs. 500	Rs.400	Rs.300	Rs.200
(b)	Rs.200	Rs.300	Rs.400	Rs.500
(c)	Rs. 350	Rs. 350	Rs.350	Rs.350
(d)	Any of the above as all are equal in total amount.			
12. Time Value of Money is an important concept in finance because it takes into account:  
 (a) Risk  
 (b) Time  
 (c) Compound Interest  
 (d) All of the above.
13. Which of the following is called an annuity:  
 (a) Lump Sum after few years  
 (b) A Series of Equal and Regular Amounts  
 (c) A Series of Unequal Amounts  
 (d) A Series of Equal and Irregular Amounts.
14. An investor wants to increase the Present Value. The rate of discount applied for should be :  
 (a) Increased  
 (b) Decreased  
 (c) Any of (a) and (b)  
 (d) None of the above
15. If  $n = 1$  and Rate of interest  $> \text{zero}$ , which of the following interest factor is equal to one :  
 (a) Present Value Factor  
 (b) Compound Value Factor  
 (c) Present Value Annuity Factor  
 (d) None of the above.
16. If Time is 'n' Rate of Interest is 'k' then  $(1 + k)^n$  may be called:  
 (a) Present Value Factor  
 (b) Compound Value Factor  
 (c) Compound Value Annuity Factor  
 (d) None of the above.
17. In a Loan Repayment Schedule, the interest amount paid each period:  
 (a) Remained Constant  
 (b) Increases  
 (c) Decreases  
 (d) None of the above.
18. Future Value of an annuity is :  
 (a) Equal to Annuity Amount  
 (b) Less than Annuity Amount  
 (c) More than total of Annuity Amount  
 (d) None of the above.



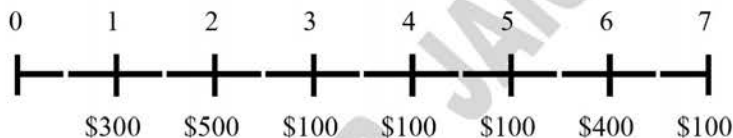
19. Concept of Future Value and Present Value are :
- (a) Proportionately related
  - (b) Inversely related
  - (c) Directly related
  - (d) Not related
20. If a student is awarded scholarship receivable over next 12 months, what calculation-he should use to find out the worth of scholarship today?
- (a) Present Value of an Amount
  - (b) Future Value of an Amount
  - (c) Present Value of an Annuity
  - (d) Future Value of an Annuity

21:- Find the future value at the end of 11 years of \$400 invested at an interest rate of 11%

- (a) \$1260.7
- (b) \$1269.75
- (c) \$ 1279
- (d) \$ 1286.34

22:-

Find the present value of the following cash flow stream if the interest rate is 4 per cent.



- (a) \$ 1390.02
- (b) \$ 1399.43
- (c) \$1405.60
- (d) \$1410.49

23:- Find the future value at the end of 9 years of \$800 invested today at an interest rate of 8 per cent.

- (a) \$ 1590.47
- (b) \$1599.2
- (c) \$1604.97
- (d) \$1611.15

24:- Find the present value of \$800 to be received 15 years from today if the interest rate is 11 per cent.

- (a) \$ 151.58
- (b) \$ 165.29
- (c) \$ 167.20
- (d) \$173.06

25:- Find the present value of an annuity of \$700 per year for 13 years if the interest rate is 3 per cent.

- (a) \$ 7444.47
- (b) \$ 7447.01
- (c) \$ 7459.36
- (d) \$ 7472.01

26:- Find the future value at the end of 15 years of \$500 invested today at an interest rate of 6 per cent.

- (a) \$ 1192
- (b) \$ 1198.28
- (c) \$ 1202.62
- (d) \$ 1217.13

27:- Find the future value at the end of 2 years of \$700 invested today at an interest rate of 16 per cent.

- A. \$ 927.77
- B. \$ 935.46
- C. \$ 941.92
- D. \$ 951.8

28. S.I on ₹ 3,500 for 3 years at 12% per annum is -

- (a) ₹ 1,200 (b) ₹ 1,260
- (c) ₹ 2,260 (d) none of these

29.  $P = 5,000$ ,  $R = 15$ ,  $T = 4\frac{1}{2}$  using  $I = \frac{PRT}{100}$ , I will be

- (a) ₹ 3,375 (b) ₹ 3,300
- (c) ₹ 3,735 (d) none of these

30. If  $P = 5,000$ ,  $T = 1$ ,  $I = ₹ 300$ , R will be

- (a) 5% (b) 4%
- (c) 6% (d) none of these

31. If  $P = ₹ 4,500$ ,  $A = ₹ 7,200$ , than Simple interest i.e. I will be

- (a) ₹ 2,000 (b) ₹ 3,000
- (c) ₹ 2,500 (d) ₹ 2,700

32.  $P = ₹ 12,000$ ,  $A = ₹ 16,500$ ,  $T = 2\frac{1}{2}$  years. Rate percent per annum simple interest will be

- (a) 15% (b) 12%
- (c) 10% (d) none of these

33.  $P = ₹ 10,000$ ,  $I = ₹ 2,500$ ,  $R = 12\frac{1}{2}\%$  SI. The number of years T will be

- (a)  $1\frac{1}{2}$  years (b) 2 years
- (c) 3 years (d) none of these

34.  $P = ₹ 8,500$ ,  $A = ₹ 10,200$ ,  $R = 12\frac{1}{2}\%$  SI, t will be.

- (a) 1 yr. 7 mth. (b) 2 yrs.
- (c)  $1\frac{1}{2}$  yr. (d) none of these

35. The sum required to earn a monthly interest of ₹ 1,200 at 18% per annum SI is  
(a) ₹ 50,000 (b) ₹ 60,000  
(c) ₹ 80,000 (d) none of these
36. A sum of money amount to ₹ 6,200 in 2 years and ₹ 7,400 in 3 years. The principal and rate of interest are  
(a) ₹ 3,800, 31.57% (b) ₹ 3,000, 20%  
(c) ₹ 3,500, 15% (d) none of these
37. A sum of money doubles itself in 10 years. The number of years it would triple itself is  
(a) 25 years. (b) 15 years.  
(c) 20 years (d) none of these
38. If  $P = ₹ 1,000$ ,  $R = 5\%$  p.a,  $n = 4$ ; What is Amount and C.I. is  
(a) ₹ 1,215.50, ₹ 215.50 (b) ₹ 1,125, ₹ 125  
(c) ₹ 2,115, ₹ 115 (d) none of these
39. ₹ 100 will become after 20 years at 5% p.a compound interest amount of  
(a) ₹ 250 (b) ₹ 205  
(c) ₹ 265.50 (d) none of these
40. The effective rate of interest corresponding to a nominal rate 3% p.a payable half yearly is  
(a) 3.2% p.a (b) 3.25% p.a  
(c) 3.0225% p.a (d) none of these
41. A machine is depreciated at the rate of 20% on reducing balance. The original cost of the machine was ₹ 1,00,000 and its ultimate scrap value was ₹ 30,000. The effective life of the machine is  
(a) 4.5 years (appx.) (b) 5.4 years (appx.)  
(c) 5 years (appx.) (d) none of these
42. If  $A = ₹ 1,000$ ,  $n = 2$  years,  $R = 6\%$  p.a compound interest payable half-yearly, then principal (P) is  
(a) ₹ 888.80 (b) ₹ 885  
(c) 800 (d) none of these
43. The population of a town increases every year by 2% of the population at the beginning of that year. The number of years by which the total increase of population be 40% is  
(a) 7 years (b) 10 years  
(c) 17 years (app) (d) none of these
44. The difference between C.I and S.I on a certain sum of money invested for 3 years at 6% p.a is ₹ 110.16. The sum is  
(a) ₹ 3,000 (b) ₹ 3,700  
(c) ₹ 12,000 (d) ₹ 10,000
45. The useful life of a machine is estimated to be 10 years and cost ₹ 10,000. Rate of depreciation is 10% p.a. The scrap value at the end of its life is  
(a) ₹ 3,486.78 (b) ₹ 4,383  
(c) ₹ 3,400 (d) none of these



46. The effective rate of interest corresponding a nominal rate of 7% p.a convertible quarterly is
- (a) 7% (b) 7.5%  
(c) 5% (d) 7.18%
47. The C.I on ₹ 16000 for 1 ½ years at 10% p.a. payable half-yearly is
- (a) ₹ 2,222 (b) ₹ 2,522  
(c) ₹ 2,500 (d) none of these
48. The C.I on ₹ 40000 at 10% p.a for 1 year when the interest is payable quarterly is
- (a) ₹ 4,000 (b) ₹ 4,100  
(c) ₹ 4,152.51 (d) none of these
49. The difference between the S.I and the C.I on ₹ 2,400 for 2 years at 5% p.a is
- (a) ₹ 5 (b) ₹ 10  
(c) ₹ 16 (d) ₹ 6
50. The annual birth and death rates per 1,000 are 39.4 and 19.4 respectively. The number of years in which the population will be doubled assuming there is no immigration or emigration is
- (a) 35 years. (b) 30 years.  
(c) 25 years (d) none of these
51. The C.I on ₹ 4,000 for 6 months at 12% p.a. payable quarterly is
- (a) ₹ 243.60 (b) ₹ 240  
(c) ₹ 243 (d) none of these
52. The present value of an annuity of ₹ 3000 for 15 years at 4.5% p.a. CI is
- (a) ₹ 23,809.41 (b) ₹ 32,218.63  
(c) ₹ 32,908.41 (d) none of these
53. The amount of an annuity certain of ₹ 150 for 12 years at 3.5% p.a. C.I is
- (a) ₹ 2,190.28 (b) ₹ 1,290.28  
(c) ₹ 2,180.28 (d) none of these
54. A loan of ₹ 10,000 is to be paid back in 30 equal installments. The amount of each installment to cover the principal and at 4% p.a. CI is
- (a) ₹ 587.87 (b) ₹ 587  
(c) ₹ 578.87 (d) none of these
55.  $A = ₹ 1,200$   $n = 12$  years  $i = 0.08$ ,  $V = ?$
- Using the formula  $V = \frac{A}{i} \left[ 1 - \frac{1}{(1+i)^n} \right]$  value of  $v$  will be
- (a) ₹ 3,039 (b) ₹ 3,990  
(c) ₹ 9930 (d) none of these
56.  $a = ₹ 100$   $n = 10$ ,  $i = 5\%$  find the FV of annuity  
Using the formula  $FV = a / \{1 + i\}^n - 1\}$  FV is equal to
- (a) ₹ 1,258 (b) ₹ 2,581  
(c) ₹ 1,528 (d) none of these
57. If the amount of an annuity after 25 years at 5% p.a C.I is ₹ 50,000 the annuity will be
- (a) ₹ 1,406.90 (b) ₹ 1,046.90  
(c) ₹ 1,146.90 (d) none of these

58. Given annuity of ₹ 100 amounts to ₹ 3137.12 at 4.5% p.a C. I. The number of years will be  
(a) 25 years (appx.) (b) 20 years (appx.)  
(c) 22 years (d) none of these
59. A company borrows ₹ 10,000 on condition to repay it with compound interest at 5% p.a by annual installments of ₹ 1000 each. The number of years by which the debt will be clear is  
(a) 14.2 years (b) 10 years  
(c) 12 years (d) none of these
60. Mr. X borrowed ₹ 5,120 at 12 ½ % p.a C.I. At the end of 3 yrs, the money was repaid along with the interest accrued. The amount of interest paid by him is  
(a) ₹ 2,100 (b) ₹ 2,170  
(c) ₹ 2,000 (d) none of these
61. Mr. Paul borrows ₹ 20,000 on condition to repay it with C.I. at 5% p.a in annual installments of ₹ 2000 each. The number of years for the debt to be paid off is  
(a) 10 years (b) 12 years  
(c) 11 years (d) none of these
62. A person invests ₹ 500 at the end of each year with a bank which pays interest at 10% p. a C.I. annually. The amount standing to his credit one year after he has made his yearly investment for the 12th time is.  
(a) ₹ 11,764.50 (b) ₹ 10,000  
(c) ₹ 12,000 (d) none of these
63. The present value of annuity of ₹ 5,000 per annum for 12 years at 4% p.a C.I. annually is  
(a) ₹ 46,000 (b) ₹ 46,850  
(c) ₹ 15,000 (d) none of these
64. A person desires to create a fund to be invested at 10% CI per annum to provide for a prize of ₹ 300 every year. Using  $V = a/I$  find V and V will be  
(a) ₹ 2,000 (b) ₹ 2,500  
(c) ₹ 3,000 (d) none of these
65.  $A = ₹ 5,200$ ,  $R = 5\%$  p.a.,  $T = 6$  years, P will be  
(a) ₹ 2,000 (b) ₹ 3,880  
(c) ₹ 3,000 (d) none of these
66. If  $P = 1,000$ ,  $n = 4$  years.,  $R = 5\%$  p.a then C. I will be  
(a) ₹ 215.50 (b) ₹ 210  
(c) ₹ 220 (d) none of these
67. The time in which a sum of money will be double at 5% p.a C.I is  
(a) ₹ 10 years (b) 12 years  
(c) 14.2 years (d) none of these
68. If  $A = ₹ 10,000$ ,  $n = 18$  yrs.,  $R = 4\%$  p.a C.I, P will be  
(a) ₹ 4,000 (b) ₹ 4,900  
(c) ₹ 4,500 (d) none of these

69. The time by which a sum of money would treble it self at 8% p. a C. I is  
 (a) 14.28 years (b) 14 years  
 (c) 12 years (d) none of these
70. The present value of an annuity of ₹ 80 a years for 20 years at 5% p.a is  
 (a) ₹ 997 (appx.) (b) ₹ 900  
 (c) ₹ 1,000 (d) none of these
71. A person bought a house paying ₹ 20,000 cash down and ₹ 4,000 at the end of each year for 25 yrs. at 5% p.a. C.I. The cash down price is  
 (a) ₹ 75,000 (b) ₹ 76,000  
 (c) ₹ 76,392 (d) none of these.
72. A man purchased a house valued at ₹ 3,00,000. He paid ₹ 2,00,000 at the time of purchase and agreed to pay the balance with interest at 12% per annum compounded half yearly in 20 equal half yearly instalments. If the first instalment is paid after six months from the date of purchase then the amount of each instalment is  
 [Given  $\log 10.6 = 1.0253$  and  $\log 31.19 = 1.494$ ]  
 (a) ₹ 8,719.66 (b) ₹ 8,769.21  
 (c) ₹ 7,893.13 (d) none of these.

### ANSWERS

[Answers: 1. (c), 2. (a), 3. (a), 4. (c), 5. (b), 6. (d), 7. (b), 8. (c), 9. (b), 10. (c), 11. (a), 12. (d), 13. (b), 14. (b), 15. (d), 16. (b), 17. (c), 18. (c), 19. (b), 20. (c), 21. (a), 22. (b), 23. (b), 24. (c), 25. (a), 26. (b), 27. (c), 28. (b), 29. (a), 30. (c), 31. (d), 32. (a), 33. (b), 34. (a), 35. (c) 36. (a), 37. (c), 38. (a), 39. (c), 40. (c), 41. (b), 42. (a), 43. (c), 44. (d), 45. (a), 46. (d), 47. (b), 48. (c) 49. (d) 50. (a), 51. (a), 52. (b), 53. (a), 54. (c), 55. (d), 56. (a) 57. (b), 58. (b), 59. (a), 60. (b), 61. (d), 62. (a), 63. (d), 64. (c), 65. (b), 66. (a) 67. (c) 68. (d) 69. (a) 70. (a) 71. (c) 72. (a)]



### 3. Cost of Capital

#### LEARNING OBJECTIVES

After studying this chapter, you should be able to understand:

- Meaning of Cost of Capital
- Cost of Debt
- Cost of Preference Share
- Terms Useful to Study Different Approaches as to Cost of Equity Capital
- Cost of Equity Share
- Cost of Retained Earnings or Reserves
- Cost of New Equity Share
- Cost of Depreciation Funds
- Why the Cost of Capital is most appropriately measured on an “after tax” basis ?
- Weighted Average Cost of Capital
- Marginal Cost of Capital
- How to determine New Weighted Average Cost of Capital (or Revised Weighted Average Cost of Capital)
- Effect of Financing Decision on Earning Per Share
- EPS Volatility

#### COST OF CAPITAL

A company may raise long term funds from various sources such as Debt, Equity Share Capital, Preference share Capital, retained earnings each source has its own risk return expectation. Capital is a scarce source, hence has a cost. However, cost of each source difference.

##### Cost of Debt

##### 1. Cost of Debt ( $K_d$ )

A company may raise debt funds which carry an interest cost. The rules for computation of  $K_d$  have the similar principles however debts can be categorized into two types.

##### 2. Irredeemable/ perpetual debt:

There is no fixed period at the end of which the principle amount will be refund. However interest thereon is payable annually.

##### 3. Redeemable Debt:

This debt has a predetermined finite life at the end of which the principle amount will be repaid.

##### Impact of taxation on computation of $K_d$ :

Interest is a tax deductible expense. Since interest save tax, hence the effective cost of debt is post tax interest cost or interest (Net of tax) in relation to the funds to be used (Net proceeds).

##### Optimal choice of debt:

If a company can raise debt funds from more than one source, then it shall choose the debt which has a lesser effective or lower  $K_d$ .

**Q. 1.** A company has 10 per cent non – redeemable debentures of rupee 5,00,000. Tax rate 40 %. Determine cost of capital if debt has been issued: (i) at par, (ii) at 10 per cent discount, and (iii) at 20 per cent premium.

**Ans.** 6.67%, 5%

**Q. 2.** A company issued rupee 80,000. 12 per cent debentures of rupee 100 each. Tax 40 per cent, redeemable after 10 years. Floating cost 10 per cent of issue price. Find cost of capital if issued at (i) par, (ii) 10 per cent discount and (iii) 10 per cent premium

### Cost of preference

Cost of Preference Share Capital

Cost of preference shares ( $K_p$ ):

The rules for computation of  $K_p$  are similar to the rules for computation of  $K_d$ , with an exception that preference dividends are not tax deductible expense.

Irredeemable Preference shares:  $K_p = \frac{D}{NP}$

Where,

$D$  = amount of preference dividend

$P$  = Net proceeds

Redeemable Preference shares:

$$K_p = \frac{D + \frac{RV - NP}{2}}{\frac{RV + NP}{2}} \quad RV = \text{Redeemable value,} \quad MV = \text{matured value}$$

**Q. 3.** XYZ Ltd. has issued 15% preference shares of the face value of rupee 100 each to be redeemed after 10 years flotation cost is expected to be 4 percent.

- determine the cost of preference share
- determine cost of preference share if it is irredeemable
- If it is redeemable of a premium of 10%.

**Ans.** (a) 15.7% (b) 15.26% (c) 15.92%

### Cost of Equity:-

Unlike debt and preference share capital, equity shares do not carry a fixed cost however, the risk of equity shareholders is the maximum, hence, the  $K_e$  is the cost source. However, as the expectation of equity shareholders is not fixed, hence there is no single model used for computing  $K_e$ . There are 6 models used for computing  $K_e$ , there are:

- Dividends price model
- Earnings price model
- Dividends growth model
- Earnings growth model
- Capital assets pricing model
- Capital assets pricing model
- Realized yield model

**1. Dividend price model/ dividends yield model.**

Assumptions

That the dividend per share (DPS) & market price per share (MPS) remain constant forever

$$K_e = \frac{DPS}{NP/MPS}$$

**2. Earning price/ Earnings yield model:**

This model assume that the equity except a return of entire earnings and not just dividends in relation to the market value of equity share.

$$K_e = \frac{EPS}{NP/MPS}$$

**3. Dividends growth model/ Gordon Model:**

Myron Gordon developed a model to determine the desired return of equity shareholders. The models states that the equity shareholders expect to received dividends each year. Further if a company retains a part of the earnings, there will be growth in assets of the company & earnings of the company, thereby resulting in shareholders expectation to receive higher dividends every year & capital growth or growth in market value.

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

**Assumptions:**

1. That the firm has infinite life
2. That there are no extend sources of finance available for making new investment in future only. Internally generated funds or retained earnings can finance the fresh investments.
3. That the business risk complexion of the firm remains constant. In other words, rate of return on equity ® & cost of equity (equity capitalization rate =  $K_e$ ) remain constant.
4. That the shareholder expect to received dividends each year or cost of equity is more than the growth rate ( $K_e/g$ ).
5. That the growth rate is product retention ratio & rate of return on equity ( $r$ ) {ie.  $g = b \times r$ }

**4. Earnings- Growth Model (CAPM)**

CAPM was developed by William Sharpe, Jan Mossin & John Lintner individually, however the main credit of developing this theory goes to William Sharpe.

William Sharpe even received a Nobel Price award in 1990 which be shared with Merton Miller & Harry Markowitz.

Accounting to CAPM, the required rate of return of an investor in capital assets (an equity) shares or business) depends upon the level of risk exposure. Higher the risk, higher the expectation of return of investors. CAPM categorized risk into two types:

1. Systematic risk/ Market relate risk
2. Unsystematic Risk/ Company specific risk.

**1. Systematic Risk/ Market Related Risk**

The whole of the risk market is expected to this risk Every Capital Assets & business is affected by the change in the economic condition of the market change in interest rates, change in inflation rates, but at the different degree. The systematic or deviation of an assets return in relation to deviation in the market return rate is measured through a statistical measure called beta ( $\beta$ ).



## 2. Unsystematic Risk/ Company specific risk.

It is the firm specific risk. The whole of the stock is not exposed to this risk, but only the firm under consideration is expected to this risk. The unsystematic risk can be avoided through diversification. CAPM advocates that unsystematic risk should be ignored while determining the required rate of return. E.g. Fire in factory of the firm. Ill health of key personnel, strike & lockouts.

The required rate of return can be determined for an asset as follows:

$$K_e = R_f + \beta[ER(m) - R_f]$$

$R_f$  = Risk free Rate of return

$ER(m)$  = Expected Return of market

$\beta$  = Beta coefficient // Market Sensitivity/ Market related risk of an asset

$ER(m)$  = Expected return of market

$ER(m) - R_f$  = Market risk premium

**Q.4.** Dividend per share is expected to be rupee 1.20 at the end of year and is expected to grow at 6 per cent per year perpetually. Determine cost of equity capital if market price is rupee 24 per share.

**Ans.** 11%

**Q.5.** Mr. X has purchased equity shares of a company, which paid a dividend of rupee 5.00 per share last year. The dividend is expected to grow at 6 per cent for ever. Find cost of equity capital of the company if Mr. X purchased shares at the rate of rupee 83.3 per share.

**Ans.**  $0.123625 = 12.36\%$

**Q.6.** A company is contemplating an issue of new equity shares. The current market price is rupee 125 per share. The dividend per share for last five years, has been as follows:

1981	rupee 10.70
1982	rupee 11.30
1983	rupee 12.50
1984	rupee 13.20
1985	rupee 14.03

The floating costs are expected to be 5 per cent of issue price which is rupee 125.

Determine (a) growth rate in dividends, (b) cost of equity capital assuming growth rate calculated by you, (c) cost of equity capital (new shares).

**Q.7.** The Beta Coefficient of Target Ltd. is 1.4. The company has been maintaining 8% rate of growth in dividend and earnings. The last dividend paid was Rs. 4 per share. Return on Government securities is 10%. Return on Government securities is 10%. Return on market portfolio is 15%. The current market price of one share of Target Ltd. is Rs. 36.

(i) What will be the equilibrium price per share of Target Ltd.

(ii) Would you advise purchasing the share?

**Q.8.** Modern Ltd's share beta factor is 1.40, the risk free rate of interest on a government security is 9%. The expected rate of return on market is 16%. Calculate cost of equity capital based on capital asset pricing model.

## Weighted average cost of capital (WACC)/ overall cost of capital ( $K_0$ )

Once funds have been raised from various sources, then the investment will be made out of the pool of funds, hence there is a need of computing overall or WACC.

An overall cost of capital is the sum product of specific cost of capital of each source with its weight/proportion to total funds.

#### Steps to computing WACC

1. Compute objective cost of capital of each sources (ie. Compute  $K_d$ ,  $K_p$ ,  $K_e$ , &  $K_{re}$ ).
2. Determine weights in accordance with the amount of capital raised from each source.

#### Cost of retained earnings ( $K_{re}$ ):-

An equity shareholders expects to earn the same rate of return on retained earnings as on equity shares. However, equity shares usually cost the co. more as the co. receives lesser net proceeds the MPS. The computation of  $K_{re}$  is also done with help of same models as  $K_e$  with an exception that net proceeds are ignored.

#### Choice of weights in computing $K_0$ of an existing company:-

Two types of weights are used in computing  $K_0$  of an existing company, namely.

1. Book value weights,
  2. Market value weights
1. **Book value weights:** The balance sheet values are the values. Incase of an unlisted public co. or a Pvt. Ltd. co. market values are not available, hence only book value weights can be used.
  2. **Market value weights:** The market values are the prevailing market price, in case of listed companies it market value or all shares are available, then it is preferred to use market value weights for computing values are either unavailable for all sources or unreliable.

#### Practical problems & their solution: Use of Market value weights:-

1. Term loans from banks/ financial institution etc. do not have any market value as these loans one are not trade in the market.  
Sop<sup>n</sup> :- Take the book value of term of term loan as market value are
2. If  $K_e$  &  $K_{re}$  is differ than separate market value are required to be computed for eight shares and retained earnings however, retained earnings are not traded separately in the market a person who purchase the equity shares of a company by paying market value becomes the owner of paid-up equity share capital & reserves.  
Sop<sup>n</sup>: the market value of equity shares & reserves (i.e. No. of equity shares  $\times$  MPS) should be apertained in the proportion of book value of Ede & retained earnings.

**Q.9.** The capital structure of Lotus & Co. comprising of 12% debentures, 9% preference shares and equity shares of rupee100 each is in the proportion of 3:2:5. The company is contemplating to introduce further capital to meet the expansion needs by seeking 14% term loan from financial institution. As a result, of this proposal, the proportion of debentures, preference shares and equity would get reduced by 1/10, 1/15 and 1/6 respectively. In the light of above proposal calculate the impact of weighted average cost of capital. Assuming 50% tax rate, expected dividend of rupee9 per share at the end of the year and growth rate of dividends 5%. No change in the dividend growth rate and market price of share is expected after available the proposed term loan.

**Q.10.** The capital structure of Fardeen Khan Ltd. is of the following order as on 31<sup>st</sup> Dec, 1999.

	rupee
Equity Shares (6,50,000 of rupee10)	65,00,000
10% Preference Shares (15000 of rupee100)	15,00,000
13% Non – convertible debentures (20,000 of rupee10 each)	20,00,000
	<u>1,00,00,000</u>

The equity shares of the company are presently selling at rupee18 per share. The company is expected to pay a dividend of rupee3 per share in 1999 and this is likely to grow at 8% per year for infinity. The corporation tax may be assumed to be 45%. You are required to

- (a) Calculate the weighted average cost of capital on the basis of the existing capitalization scheme.
- (b) Calculate the revised overall cost of capital, if the management decides to raise an additional amount of rupee25,00,000 from the IDBI at 15%.

The new investment is expected to raise the dividend to rupee4 per share without affecting the growth rate.

But the increased financial leverage is likely to reduce the market price of share to rupee16.

- (i) Calculate the overall cost of capital;
- (ii) above, if the growth rate in the dividend increased to 10% as a result of additional investment.



**MCQ QUESTIONS WITH ANSWER**

1:- During planning period, a marginal cost for raising a new debt is classified as

- (a) debt cost
- (b) relevant cost
- (c) borrowing cost
- (d) embedded cost

**COST OF PERPETUAL/IRREDEEMABLE DEBT**

ABC Ltd. issued Rs. 100 Lakhs 12% Debentures of Rs. 100 each. Calculate the cost of debt in each of the following cases. (Assume corporate tax rate being 40%).

2:- If Debentures are issued at par with no flotation cost.

- (a) 7%
- (b) 7.20%
- (c) 7.1%
- (d) 6%

3:- If Debentures are issued at par with 5 % flotation cost on issue price.

- (a) 7.58%
- (b) 7.50%
- (c) 7%
- (d) 7.48%

4:- If Debentures are issued at 10% premium with 5 % flotation cost on Issue price.

- (a) 6.80%
- (b) 6.67%
- (c) 6%
- (d) 6.89%

5:- If Debentures are issued at 10% discount with 5 % flotation cost on issue price.

- (a) 8.40%
- (b) 8.49%
- (c) 8.42%
- (d) 8.43%

**COST OF DEBT REDEEMABLE (AT PAR) IN LUMP SUM PAYMENT**

ABC Ltd. issued Rs. 100 Lakhs 12 % Debentures of Rs. 100 each redeemable at par after 5 years. Calculate the cost of debt according to Approximation Method in each of the following alternative cases. (Assume corporate tax rate being 40 %)

6:- If Debentures are issued at par with no flotation cost.

- (a) 7%
- (b) 7.20%
- (c) 7.1%
- (d) 6%

7:- If Debentures are issued at par with 5 % flotation cost on issue price.

- (a) 8.40%
- (b) 8.41%
- (c) 8.42%
- (d) 8.43%

8:- If Debentures are issued at 10% premium with 5 % flotation cost on issue price.

- (a) 6.67%
- (b) 6%
- (c) 6.79%
- (d) 6.16%

9:- If Debentures are issued at 10% discount with 5 % flotation cost on issue price.

- (a) 10.87%
- (b) 10.80%
- (c) 10.89%
- (d) 10%

#### CALCULATION OF COST OF IRREDEEMABLE PREFERENCE SHARES

**ABC Ltd. issued Rs. 100 Lakhs 12 % Preference shares of Rs. 100 each redeemable at par after 5 years. Calculate the Cost of Preference Share in each of the following cases: (Assume dividend tax rate being 20%)**

10:- If Preference shares are issued at par with no flotation cost.

- (a) 14.4%
- (b) 14.3%
- (c) 14.5%
- (d) 14.2%

11:- If Preference shares are issued at par with 5 % flotation cost.

- (a) 15%
- (b) 15.16%
- (c) 15.78%
- (d) 15.1%

12:- If Preference shares are issued at 10% premium with 5 % flotation cost.

- (a) 13.76%
- (b) 13.7%
- (c) 13.78%
- (d) 13.79%

13:- If Preference shares are issued at 10% discount with 5 % flotation cost.

- (a) 16.84%
- (b) 16%
- (c) 16.83%
- (d) 16.8%

**COST OF PREFERENCE SHARES REDEEMABLE (AT PAR) IN LUMP SUM PAYMENT**

ABC Ltd. issued 1100 Lakhs 12 % Preference Shares of Rs. 100 each redeemable at par after 5 years. Calculate the Cost of Preference Share According to Approximation Method in each of the following cases: (Assume dividend tax rate being 20%)

14:- If Preference shares are issued at par with no flotation cost.

- (a) 14.40%
- (b) 14.3%
- (c) 14.5%
- (d) 14.2%

15:- If Preference shares are issued at par with 5% flotation cost on issue price.

- (a) 15%
- (b) 15.79%
- (c) 15.78%
- (d) 15.1%

16:- If Preference shares are issued at 10% premium with 5% flotation cost on issue price.

- (a) 13.23%
- (b) 13.7%
- (c) 13.20%
- (d) 13.29%

17:- If Preference shares are issued at 10% discount with 5% flotation cost on issue price.

- (a) 18.65%
- (b) 18.69%
- (c) 18.6%
- (d) 18.63%

**ILLUSTRATION COST OF PREFERENCE SHARES REDEEMABLE (AT PREMIUM) IN LUMP SUM PAYMENT**

ABC Ltd. issued Rs. 100 Lakhs 12 % Preference Shares of Rs. 100 each redeemable at a premium 5% after 5 years. Calculate the Cost of Preference Shares according to Approximation Method each of the following cases. (Assume dividend tax rate 20%).

18:- If Preference shares are issued at par with no flotation cost.

- (a) 15%
- (b) 15.79%
- (c) 15.78%
- (d) 15.02%

19:- If Preference shares are issued at par with 5 % flotation cost on issue price.

- (a) 16.84%
- (b) 16%
- (c) 16.83%
- (d) 16.4%



20:- If Preference shares are issued at 10% premium with 5 % flotation cost on issue price.

- (a) 13.23%
- (b) 13.84%
- (c) 13.20%
- (d) 13.29%

21:- If Preference shares are issued at 10% discount with 5 % flotation cost on issue price.

- (a) 19.21%
- (b) 19%
- (c) 19.78%
- (d) 19.2%

**Calculation of cost of equity ( $k_e$ ) according to various approaches**

From the following information, calculate the Cost of Equity ( $k_e$ ) according to (a) Dividend price Approach (b) Dividend Price plus Growth Approach (c) Earning Price Ratio approach (d) Earning Price plus Growth Approach, (e) Capital Assets Pricing Model Approach :

1. Current Market Price of an Equity Share: Rs. 100
2. Expected Earnings per Share at the end of year: Rs. 10
3. Dividend Payout Ratio: 80%.
4. Growth Rate: 6%
5. Rate of Return on Risk Free Investment: 8%
6. Rate of Return on Market Portfolio: 18%
7. Volatility of securities return relative to the return of a broad based market port folio: 1.275

22:- Dividend Price Approach:

- (a) 8.00%
- (b) 8.41%
- (c) 8.42%
- (d) 8.43%

23:- Dividend price plus:

- (a) 14.4%
- (b) 14.3%
- (c) 14.0%
- (d) 14.2%

24:- earning price ratio approach

- (a) 10.87%
- (b) 10.80%
- (c) 10.89%
- (d) 10%

25:- earning price plus growth approach:

- (a) 16.84%
- (b) 16%
- (c) 16.83%
- (d) 16.4%

26:- capital assets model pricing approach

- (a) 19.21%
- (b) 20.75%
- (c) 19.78%
- (d) 19.2%

**Calculate the Cost of Equity ( $k_e$ ) in each of the following alternative cases:**

27:- An equity share of the company is currently selling for Rs. 50. The company expects to pay Rs. 6 per share at the end of current year. Dividend per share is expected to grow at the rate 8% p.a.

- (a) 20%
- (b) 2.0%
- (c) 19.8%
- (d) 21%

28:- An equity share of the company is currently selling for Rs. 50. The company expects to earn Rs. 6 per share at the end of current year. Dividend Payout Ratio is 60%. Dividend per share is expected to grow at the rate of 8% p.a.

- (a) 15.5%
- (b) 15.2%
- (c) 15.6%
- (d) 15.4%

29:- An equity share of the company is currently selling for Rs. 50. The company had paid dividend of Rs. 6 per share at the end of last year. Dividend per share is expected to grow at the rate of 8% p.a.

- (a) 20.96%
- (b) 20.97%
- (c) 20.67%
- (d) 19.96%

30:- An equity share of the company is currently selling for Rs. 50. The company had earned Rs. 6 per share at the end of last year. Dividend Payout Ratio is 60%. Dividend per share is expected to grow at the rate of 8% p.a.

- (a) 15.5%
- (b) 15.2%
- (c) 15.78%
- (d) 15.4%

31:- An equity share of company is currently selling for Rs. 50. The company expects to earn Rs. 6 per share at the end of current year. Dividend Payout Ratio is 60%. The company reinvests the retained earnings at a rate of 20%.

- (a) 15.5%
- (b) 15.2%
- (c) 15.78%
- (d) 15.4%

- 32:- An equity share of company is currently selling for Rs. 50. The company had earned to earn Rs. 6 per share at the end of last year. Dividend Payout ratio is 60%. The company reinvests the retained earnings at a rate of 20%.
- (a) 15.5%
  - (b) 15.2%
  - (c) 15.78%
  - (d) 15.4%
- 33:- The price earning ratio is 5 times. The company has an earning per share of Rs. 10 per share. Dividend Payout Ratio is 60%. Dividend per share is expected to grow at the rate of 8% p.a.
- (a) 20.96%
  - (b) 20.97%
  - (c) 20.67%
  - (d) 19.96%
- 34:- The price earning ratio is 5 times. The company has an earning per share of Rs. 10 per share. Dividend Payout ratio is 60%.
- (a) 20.96%
  - (b) 20.97%
  - (c) 20.67%
  - (d) 19.96%
- 35:- The price earning ratio is 5 times. The company expects to earn Rs. 10.80 per share at the end of current year. Dividend Payout ratio is 60%. Dividend per share is expected to grow at the rate of 8%.
- (a) 20.96%
  - (b) 20.97%
  - (c) 20.67%
  - (d) 19.96%
- 36:- The price earning ratio is 5 times. The company expects to earn Rs. 10.80 per share at the end of current year. Dividend Payout ratio is 60%.
- (a) 20.96%
  - (b) 20.97%
  - (c) 20.67%
  - (d) 19.96%
- 37:- The price earning ratio is 5. The company has paid a dividend of Rs. 6 per share. Dividend payout ratio is 60%.
- A. 20.96%
  - B. 20.97%
  - C. 20.67%
  - D. 19.96%



38:- The company has a policy of paying dividends at the rate of 15% of the market price of the share in the beginning. Dividend per share is expected to grow at the rate of 5%.

- A. 19.99%
- B. 19.98%
- C. 19%
- D. 20%

#### CALCULATION OF MARKET PRICE

Mr. Investor is planning to purchase the shares of X Ltd. which has paid a dividend of Rs. 2 per share at last year. His required rate of return is 20%. What price would Mr. Investor be willing to pay for X Ltd.'s shares if he expects dividend to grow at a constant rate of (a) 10% (b) 0% (c) - 10% (d) 20% (e) 22% ?

39:- 10%

- (a) 24
- (b) 20
- (c) 22
- (d) 12

40:- 0%

- (a) 10
- (b) 9
- (c) 8
- (d) 11

41:- -10%

- (a) 6
- (b) 7
- (c) 5
- (d) 3

42:- 20%

- (a) 8
- (b) 99
- (c) 4
- (d) undefined

43:- 22%

- (a) 122
- (b) 123
- (c) 56
- (d) 12

**CALCULATION OF DPS PAID LAST YEAR IF DIVIDENDS ARE GROWING**

44:- Mr. Dalai is planning to purchase the shares of X Ltd. His required rate of return is 20%. Dividends are growing at a rate of 10%. What dividend had X Ltd. paid last year If he is willing to pay Rs. 27.50 for XLtd.'s shares ?

- (a) Rs 2.50
- (b) Rs 2.6
- (c) Rs 25
- (d) Rs 2.1

**CALCULATION OF REQUIRED RATE OF RETURN SF DIVIDENDS ARE GROWING**

45:- Mr. Factor purchases an equity share of X Ltd. X Ltd. has paid dividend of Rs. 2 per share last year. Dividends are growing at a rate of 10%. What is the required rate of return of Mr. X on his equity investment if he purchases an equity share for Rs. 22 ?

- (a) 21%
- (b) 20%
- (c) 23%
- (d) 19%

**CALCULATION OF AFTER TAX COST OF EQUITY**

46:- An Equity share of the company is currently selling for Rs. 60. The earning per share Rs. 7.50. The company reinvests the retained earning at a rate of 10%. Calculate the cost of equity share if the company's dividend payout ratio is 60%.

- (a) 11.9%
- (b) 11%
- (c) 11.8%
- (d) 10.9%

**CALCULATION OF GROWTH RATE**

The Equity dividend per share (DPS) over the last 5 years are given below :

Year	1	2	3	4	5
DPS(Rs.)	2	2.4	2.88	3.46	4.15

47:- Calculate the Growth Rate:

- (a) 19%
- (b) 20%
- (c) 18%
- (d) 21%

## CALCULATION OF GROWTH RATE

Mr. Investor is planning to purchase the shares of X Ltd. which had paid the dividend of Rs. 2 per share last year. His required rate of return is 20%.

Required:- What growth rate is he anticipating If he is willing to pay price (a) Rs. 22 (b) 7 10 (c) Rs. 6.

48:- Rs 22

- (a) 9%
- (b) 8%
- (c) 10%
- (d) 11%

49:- Rs 7 10

- (a) 1%
- (b) 0.10%
- (c) 0.00%
- (d) 2%

50:- Rs 6

- (a) 9%
- (b) 8%
- (c) 10%
- (d) 11%

## CALCULATION OF GROWTH RATE

51:- The Cost of Equity is 20%. The company has a policy of paying dividend at the rate of 15% on the market price of the share in the beginning of the year. Find the Growth Rate.

- (a) 5%
- (b) 45
- (c) 3%
- (d) 4.9%

52:- Cost of Capital refers to:

- |                              |                        |
|------------------------------|------------------------|
| (a) Flotation Cost,          | (b) Dividend,          |
| (c) Required Rate of Return, | (d) None of the above. |

53:- Which of the following sources of funds has an Implicit Cost of Capital?

- (a) Equity Share Capital,
- (b) Preference Share Capital,
- (c) Debentures,
- (d) Retained earnings.

54:- Which of the following has the highest cost of capital?

- (a) Equity shares,
- (b) Loans,
- (c) Bonds,
- (d) Preference shares.



- 55:- Cost of Capital for Government securities is also known as:
- (a) Risk-free Rate of Interest,
  - (b) Maximum Rate of Return,
  - (c) Rate of Interest on Fixed Deposits,
  - (d) None of the above.
- 56:- Cost of Capital for Bonds and Debentures is calculated on:
- (a) Before Tax basis,
  - (b) After Tax basis,
  - (c) Risk-free Rate of Interest basis,
  - (d) None of the above.
57. Weighted Average Cost of Capital is generally denoted by:
- (a)  $K_A$
  - (b)  $k_w$ ,
  - (c)  $k_o$ ,
  - (d)  $k_c$ ,
58. Which of the following cost of capital require tax adjustment?
- (a) Cost of Equity Shares,
  - (b) Cost of Preference Shares,
  - (c) Cost of Debentures,
  - (d) Cost of Retained Earnings.
59. Which is the most expensive source of funds?
- (a) New Equity Shares,
  - (b) New Preference Shares,
  - (c) New Debts,
  - (d) Retained Earnings.
60. Marginal cost of capital is the cost of:
- (a) Additional Sales,
  - (b) Additional Funds,
  - (c) Additional Interests,
  - (d) None of the above.
61. In case the firm is all-equity financed, WACC would be equal to :
- (a) Cost of Debt,
  - (b) Cost of Equity,
  - (c) Neither (a) nor (b),
  - (d) Both (a) and (b).
62. In case of partially debt-financed firm,  $k_o$  is less than :
- (a)  $k_d$ ,
  - (b)  $k_c$ ,
  - (c) Both (a) and (b),
  - (d) None of the above.

63. In order to calculate Weighted Average Cost of Capital, weights may be based on :
- (a) Market Values,
  - (b) Target Values,
  - (c) Book Values,
  - (d) All of the above.
64. Firm's Cost of Capital is the average cost of:
- (a) All sources,
  - (b) All borrowings,
  - (c) All share capital,
  - (d) All Bonds & Debentures.
65. An implicit cost of increasing proportion of debt is:
- (a) Tax shield would not be available on new debt,
  - (b) P.E. Ratio would increase,
  - (c) Equity shareholders would demand higher return,
  - (d) Rate of Return of the company would decrease.
66. Cost of Redeemable Preference Share Capital is:
- (a) Rate of Dividend,
  - (b) After Tax Rate of Dividend,
  - (c) Discount Rate that equates PV of inflows and outflows relating to capital,
  - (d) None of the above.
67. Which of the following is true?
- (a) Retained earnings are cost free,
  - (b) External Equity is cheaper than Internal Equity,
  - (c) Retained Earnings are cheaper than External Equity,
  - (d) Retained Earnings are costlier than External Equity.
68. Cost of capital may be defined as:
- (a) Weighted Average cost of all debts,
  - (b) Rate of Return expected by Equity Shareholders,
  - (c) Average IRR of the Projects of the firm,
  - (d) Minimum Rate of Return that the firm should earn.
69. Minimum Rate of Return that a firm must earn in order to satisfy its investors, is also known as:
- (a) Average Return on Investment,
  - (b) Weighted Average Cost of Capital,
  - (c) Net Profit Ratio,
  - (d) Average Cost of borrowing.
70. Cost of Capital for Equity Share Capital does not imply that:
- (a) Market Price is equal to Book Value of share,
  - (b) Shareholders are ready to subscribe to right issue,
  - (c) Market Price is more than Issue Price,
  - (d) All of the three above.

71. In order to calculate the proportion of equity financing used by the company, the following should be used:
- (a) Authorised Share Capital,
  - (b) Equity Share Capital plus Reserves and Surplus,
  - (c) Equity Share Capital plus Preference Share Capital,
  - (d) Equity Share Capital plus Long-term Debt.
72. The term capital structure denotes :
- (a) Total of Liability side of Balance Sheet,
  - (b) Equity Funds, Preference Capital and Long term Debt,
  - (c) Total Shareholders Equity,
  - (d) Types of Capital Issued by a Company.
73. Debt Financing is a cheaper source of finance because of:
- (a) Time Value of Money,
  - (b) Rate of Interest
  - (c) Tax-deductibility of Interest,
  - (d) Dividends not payable to lenders.
74. In order to find out cost of equity capital under CAPM, which of the following is not required:
- (a) Beta Factor,
  - (b) Market Rate of Return,
  - (c) Market Price of Equity Share,
  - (d) Risk-free Rate of Interest.
75. Tax-rate is relevant and important for calculation of specific cost of capital of:
- (a) Equity Share Capital,
  - (b) Preference Share Capital,
  - (c) Debentures,
  - (d) (a) and (b) above.
76. Advantage of Debt financing is :
- (a) Interest is tax-deductible,
  - (b) It reduces WACC,
  - (c) Does not dilute owners control,
  - (d) All of the above.
77. Cost of issuing new shares to the public is known as:
- (a) Cost of Equity,
  - (b) Cost of Capital,
  - (c) Flotation Cost,
  - (d) Marginal Cost of Capital..
78. Cost of Equity Share Capital is more than cost of debt because:
- (a) Face value of debentures is more than face value of shares,
  - (b) Equity shares have higher risk than debt,
  - (c) Equity shares are easily saleable,
  - (d) All of the three above.



79. Which of the following is not a generally accepted approach for Calculation of Cost of Equity?
- (a) CAPM,
  - (b) Dividend Discount Model,
  - (c) Rate of Pref. Dividend Plus Risk,
  - (d) Price-Earnings Ratio.
80. Cost of Capital refers to:
- (a) Flotation Cost,
  - (b) Dividend,
  - (c) Required Rate of Return,
  - (d) None of the above.
81. Which of the following sources of funds has an Implicit Cost of Capital?
- (a) Equity Share Capital
  - (b) Preference Share Capital
  - (c) Debentures
  - (d) Retained earnings
82. Which of the following has the highest cost of capital?
- (a) Equity shares
  - (b) Loans
  - (c) Bonds
  - (d) Preference shares
83. Cost of Capital for Government securities is also known as:
- (a) Risk-free Rate of Interest
  - (b) Maximum Rate of Return
  - (c) Rate of Interest on Fixed Deposits
  - (d) None of the above.
84. Cost of Capital for Bonds and Debentures is calculated on:
- (a) Before Tax basis
  - (b) After Tax basis
  - (c) Risk-free Rate of Interest basis
  - (d) None of the above.
85. Weighted Average Cost of Capital is generally denoted by:
- (a)  $k_A$
  - (b)  $k_w$
  - (c)  $k_0$
  - (d)  $k_c$
86. Which of the following cost of capital require tax adjustment?
- (a) Cost of Equity Shares
  - (b) Cost of Preference Shares
  - (c) Cost of Debentures
  - (d) Cost of Retained Earnings.

87. Which is the most expensive source of funds?
- (a) New Equity Shares
  - (b) New Preference Shares
  - (c) New Debts
  - (d) Retained Earnings.
88. Marginal cost of capital is the cost of:
- (a) Additional Sales
  - (b) Additional Funds
  - (c) Additional Interests
  - (d) None of the above.
89. In case the firm is all-equity financed, WACC would be equal to:
- (a) Cost of Debt
  - (b) Cost of Equity
  - (c) Neither (a) nor (b)
  - (d) Both (a) and (b)
90. In case of partially debt-financed firm,  $k_0$  is less
- (a)  $K_d$
  - (b)  $K_e$
  - (c) Both (a) and (b)
  - (d) None of the above.
91. In order to calculate Weighted Average Cost of weights may be based on:
- (a) Market Values
  - (b) Target Values
  - (c) Book Values
  - (d) All of the above
92. Firm's Cost of Capital is the average cost of:
- (a) All sources
  - (b) All borrowings
  - (c) Share capital
  - (d) Share Bonds & Debentures.
93. An implicit cost of increasing proportion of debt is:
- (a) Tax would not be available on new debt
  - (b) P.E. Ratio would increase
  - (c) Equity shareholders would demand higher return
  - (d) Rate of Return of the company would decrease.
94. Cost of Redeemable Preference Share Capital is:
- (a) Rate of Dividend
  - (b) After Tax Rate of Dividend
  - (c) Discount Rate that equates PV of inflows and out-flows relating to capital
  - (d) None of the above.

95. Which of the following is true?

- (a) Retained earnings are cost free
- (b) External Equity is cheaper than Internal Equity
- (c) Retained Earnings are cheaper than External Equity
- (d) Retained Earnings are costlier than External Equity.

96. Cost of capital may be defined as:

- (a) Weighted Average cost of all debts
- (b) Rate of Return expected by Equity Shareholders
- (c) Average IRR of the Projects of the firm
- (d) Minimum Rate of Return that the firm should earn.

97. Minimum Rate of Return that a firm must earn in order to satisfy its investors, is also known as:

- (a) Average Return on Investment
- (b) Weighted Average Cost of Capital
- (c) Net Profit Ratio
- (d) Average Cost of borrowing

98. Cost Capital for Equity Share Capital does not imply that:

- (a) Market Price is equal to Book Value of share
- (b) Shareholders are ready to subscribe to right issue
- (c) Market Price is more than Issue Price
- (d) AC of the three above.

99. In order to calculate the proportion of equity financing used by the company, the following should be used:

- (a) Authorised Share Capital
- (b) Equity Share Capital plus Reserves and Surplus
- (c) Equity Share Capital plus Preference Share Capital
- (d) Equity Share Capital plus Long-term Debt.

100. The term capital structure denotes:

- (a) Total of Liability side of Balance Sheet
- (b) Equity Funds, Preference Capital and Long term Debt
- (c) Total Shareholders Equity
- (d) Types of Capital Issued by a Company.

101. Debt Financing is a cheaper source of finance because of:

- (a) Time Value of Money
- (b) Rate of Interest
- (c) Tax-deductibility of Interest
- (d) Dividends not Payable to lenders.

102. In order to find out cost of equity capital under CAPM, which of the following is not required:

- (a) Beta Factor
- (b) Market Rate of Return
- (c) Market Price of Equity Share
- (d) Risk-free Rate of Interest.



103. Tax-rate is relevant and important for calculation of specific cost of capital of:

- (a) Equity Share Capital
- (b) Preference Share Capital
- (c) Debentures
- (d) (a) and (b) above.

104. Advantage of Debt financing is:

- (a) Interest is tax-deductible
- (b) It reduces WACC
- (c) Does not dilute owners control
- (d) All of the above.

105. Cost of issuing new shares to the public is known as:

- (a) Cost of Equity
- (b) Cost of Capital
- (c) Flotation Cost
- (d) Marginal Cost of Capital.

106. Cost of Equity Share Capital is more than cost of debt because:

- (a) Face value of debentures is more than face value of shares
- (b) Equity shares have higher risk than debt,
- (c) Equity shares are easily saleable
- (d) All of the three above.

107. Which of the following is not a generally accepted approach for Calculation of Cost of Equity?

- (a) CAPM
- (b) Dividend Discount Model
- (c) Rate of Pref. Dividend Plus Risk,
- (d) Price-Earnings Ratio.

108 The following data is available for a company:

Cost of debt: 9%

Cost of equity: 12%

Debt-to-equity ratio (D/E): 100%

Tax rate: 30%

The weighted average cost of capital (WACC) is closest to:

- (a) 6.30%.
- (b) 9.00%.
- (c) 9.15%.

109 The following information is available for a firm: Debt-to-equity ratio: 50%

Tax rate: 30% Cost of debt: 12% Cost of equity: 19%

The firm's weighted average cost of capital (WACC) is closest to:

- (a) 14.45%.
- (b) 15.47%.
- (c) 16.33%.

110 The following information is available for a firm:

Cost of debt: 11%

Cost of equity: 15%

Debt-to-equity ratio (D/E): 50%

Tax rate: 35%

The weighted average cost of capital (WACC) is closest to:

- (a) 10.82%.
- (b) 11.08%.
- (c) 12.39%.

111 A firm's estimated costs of debt, preferred stock, and common stock are 13%, 17%, and 22%, respectively. Assuming equal funding from each source and a 30% tax rate, the weighted average cost of capital is closest to:

- (a) 15.45%.
- (b) 16.03%.
- (c) 17.33%.

112 An analyst gathers the following information about the capital structure and before-tax component costs for a company. The company's marginal tax rate is 35 percent.

The company's weighted average cost is closest to:

Capital component	Book Value (OOO)	Market Value (OOO)	Component cost
Debt	€ 120	€ 100	6%
Preferred stock	€ 60	€ 60	9%
Common stock	€ 300	€ 240	13%.

- (a) 10.13%.
- (b) 9.55%.
- (c) 10.56%.

113 A.F. Company has a debt to equity ratio of 60% and is subject to taxation at a rate of 40%. Its cost of equity is 17% while its cost of debt is 12.5%. A.F. Company's weighted average cost of capital is closest to.

- (a) 11.3%.
- (b) 13.4%.
- (c) 14.3%.

114 Golden Giants has the following capital structure which is funded from common stock, preferred stock and debt.

Source	Amount	Cost
Common Stock	100,000,000	16.0%
Preferred Stock	2,000,000	14.5%
Debt	18,000,000	12.0%
Total	120,000,000	

If the tax rate is 35%, the company's weighted average cost of capital closest to:

- (a) 14.2%.
- (b) 14.7%.
- (c) 15.4%

115 Pamela Peterson computes the weighted-average cost of capital (WACC) for the company Atom International. The information used for computation is as follows:

- ✚ Common equity has beta 1.2 while the risk free rate and market premium are 5% and 7% respectively. The preferred stock has value of \$48 with a dividend worth \$6. The corporate tax rate is 20%.
- ✚ Bonds are issued at par and have a coupon rate of 11%.
- ✚ Capital structure is 20% preferred stock, 35% debt and 45% common stock.

Atom International's WACC is closest to:

- (a) 9.1%.
- (b) 11.6%.
- (c) 12.4%.

116 An analyst gathers the following data about a company to compute its weighted average cost of capital (WACC).

Before-tax cost of new debt	10 percent
Tax rate	35 percent
D/E	0.6660
Stock price	\$30
Next year's dividend	\$2.50
Estimated growth rate	6.5 percent

Using the dividend discount model, the company's WACC is closest to:

- (a) 11.50 percent.
- (b) 12.25 percent.
- (c) 13.00 percent.

117 Digital Design Corporation has an after-tax cost of debt capital of 7 percent, a cost of preferred stock of 9 percent, a cost of equity capital of 11 percent, and a weighted average cost of capital of 8.5 percent. In raising additional capital, the company intends to maintain its current capital structure. In order to make a capital - budgeting decision for an average risk project, the relevant cost of capital is:

- (a) 7 percent.
- (b) 8.5 percent.
- (c) 11 percent.



- 118 A firm with a marginal tax rate of 40% has a weighted average cost of capital of 7.11%. The before-tax cost of debt is 6%, and the before-tax cost of equity is 9%. The weight of equity in the firm's capital structure is closest to:
- 27%.
  - 65%.
  - 89%.
- 119 Which of the following statements is most likely true?
- The investment opportunity schedule, for a given company, is upward sloping because as a company invests more in capital projects, the returns from investing keep on increasing.
  - In order to determine the after-tax cost of debt, the appropriate tax rate to use is the average rate.
  - The after-tax debt cost, for a given company, is generally less than both the cost of preferred equity and the cost of common equity.
- 120 Which of the following components of WACC is affected by taxes?
- Cost of equity.
  - Cost of debt.
  - Cost of preferred shares.
- 121 Gaven Warren at California Investment Advisors wants to estimate the cost of capital for Semiactive Conductors as well as projected cash flows for two of their projects to determine the effect of these new projects on the value of Semiactive Conductors. Warren has gathered following information on Semiactive Conductors:

	Current (\$)	Target (\$)
Book Value of Debt	62	62
Market Value of Debt	59	63
Book Value of Shareholder's Equity	78	88
Market Value of Shareholder's Equity	230	240

Weights that should be applied to estimating the cost of debt and equity capital for Semiactive Conductors respectively are:

- $w_d = 0.262$ ;  $w_e = 0.738$ .
  - $w_d = 0.208$ ;  $w_e = 0.792$ .
  - $w_d = 0.413$ ;  $w_e = 0.587$ .
- 122 In collecting information to conduct financial analysis on Budweiser's new product line of sparkling water, Simon Hayes found that Budweiser currently has a debt-to-equity ratio of 0.55 and the new product line would be financed with \$45 million of debt and \$65 million of equity. Hayes has estimated the equity beta and asset beta of comparable companies to determine the valuation impact of the new product line on Budweiser's value. Which of the following statements for calculating the equity beta for this new line of product is most accurate?
- Using the new debt-to-equity ratio of Budweiser that would result from the additional \$45 million debt and \$65 million equity is appropriate.
  - Using the current debt-to-equity ratio of 0.55 is appropriate.
  - Using the current debt-to-equity ratio of 0.55 is not appropriate, but the debt-to-equity ratio of the new product line i.e. 0.69 is appropriate.

- 123 An optimal capital budget occurs when the marginal cost of capital:
- is below the investment opportunity schedule.
  - is above the project's rate of return.
  - intersects the investment opportunity schedule.
- 124 Analyst 1: A company's optimal capital budget occurs at the intersection of the net present value and the internal rate of return profiles. Analyst 2: A company's optimal capital budget occurs at the intersection of the marginal cost of capital and the investment opportunity schedule.

Which analyst's statements is most likely correct?

- Analyst 1.
  - Analyst 2.
  - Neither.
- 125 Information about a company is provided below. It is expected that the company will fund its capital budget without issuing any additional shares of common stock:

Source of capital	Capital structure proportion	Marginal after-tax cost
Long-term debt	30%	12%
Preferred stock	5%	15%
Common equity	65%	20%

Net present values of three independent projects:

Storage project: \$348 Upgrade project: \$0

Production line improvement project: -\$231

If no significant size or timing differences exist among the projects and the projects all have the same risk as the company, which project has an internal rate of return that exceeds 17.35 percent?

- All three projects.
  - Storage project only.
  - Storage project and upgrade project.
- 126 If we use the company's marginal cost of capital in the calculation of the NPV of a project, we are least likely assuming that:
- the project has the same risk as the average-risk project of the company.
  - no new projects will be undertaken until the current project is completed,
  - the project will have a constant target capital structure throughout its useful life.
- 127 Which of the following is the least appropriate method for an external analyst to estimate a company's cost of debt?
- Yield-to-maturity approach.
  - Bond yield plus risk premium approach,
  - Debt rating approach.

- 128 If the debt rating approach is used to determine the cost of debt, then:
- (a) yield is based on the interest coverage ratio.
  - (b) company is rated and the rating can be used to assess the credit default spread of the company's debt.
  - (c) coupon rate is the yield.
- 129 A company is considering issuing a 5-year option-free, 8 percent coupon bond, paid semi-annually. The bond is expected to sell at 98 percent of par value (USD1,000). If the company's marginal tax rate is 35 percent, then the after-tax cost of debt is closest to:
- (a) 8.50%.
  - (b) 5.53%.
  - (c) 6.35%.
- 130 A company issued \$20 million in long-term bonds at par value three years ago with a coupon rate of 10 percent. The company has decided to issue an additional \$20 million in bonds and expects the new issue to be priced at par value with a coupon rate of 8 percent. There is no other outstanding debt. The applicable tax rate is 35 percent. The appropriate after-tax cost of debt in order to compute the weighted average cost of capital is closest to:
- (a) 5.2 percent.
  - (b) 5.8 percent.
  - (c) 6.1 percent.
- 131 ACME Minerals has determined that it could issue at \$750 a seven-year maturity bond that pays 9.5% coupon semi-annually with a face value of \$1000. If the marginal tax rate applicable in the company is 30%, its after tax cost of debt will most likely be:
- (a) 5.4 percent.
  - (b) 10.8 percent.
  - (c) 12.7 percent.
- 132 Which of the following statements describe matrix pricing most accurately? Matrix pricing:
- (a) is used to calculate the coupon rate of a bond.
  - (b) helps to determine the equity risk premium in the market.
  - (c) is used in pricing bonds through the debt-rating approach.
- 133 A company's \$100 par value preferred stock with a dividend rate of 15.0% per year is currently priced at \$105.85 per share. The company's earnings are expected to grow at an annual rate of 3% for the foreseeable future. The cost of the company's -preferred stock is closest to;
- (a) 12.9%.
  - (b) 13.5%.
  - (c) 14.2%



- 134 RBS Insurance Limited issued to retail investors a fixed-rate perpetual preferred stock four years ago at par value of \$10 per share with a \$2.85, dividend. If the company had issued the preferred stock today, the yield would be 8.5 percent. The current value of the stock is:
- (a) \$10.00
  - (b) \$33.53
  - (c) \$43.85
- 135 MTI issued a noncallable, nonconvertible, fixed rate perpetual preferred stock five years ago. The stock was issued at \$15 per share with a \$1.25 dividend. If the company were to issue preferred stock today, the yield would be 8.75 percent. The stock's current value is closest to:
- (a) \$13.26.
  - (b) \$15.00.
  - (c) \$14.29.
- 136 The cost of equity capital is equal to the:
- (a) rate of return required by stockholders.
  - (b) cost of retained earnings minus dividend yield.
  - (c) expected market return.
- 137 Using the dividend discount model, the cost of equity capital for a company which will pay a dividend of \$2.00 next year, has a payout ratio of 35 percent, a return on equity (ROE) of 15 percent, and current stock price of \$40, is:
- (a) 10.51 percent.
  - (b) 12.25 percent.
  - (c) 14.75 percent.

[Answers: 1. (b), 2. (b), 3. (a), 4. (d), 5. (c), 6. (b), 7. (d), 8. (b), 9. (c), 10. (a), 11. (b), 12. (c), 13. (a), 14. (a), 15. (b), 16. (c), 17. (a), 18. (d), 19. (d), 20. (b), 21. (a), 22. (a), 23. (c), 24. (d), 25. (b), 26. (b), 27. (a), 28. (b), 29. (a), 30. (c), 31. (b), 32. (c), 33. (a), 34. (a), 35. (a), 36. (a), 37. (a), 38. (d), 39. (c), 40. (a), 41. (a), 42. (d), 43. (a), 44. (a), 45. (b), 46. (c), 47. (b), 48. (c), 49. (c), 50. (c), 51. (a), 52. (c), 53. (d), 54. (a), 55. (a), 56. (b), 57. (c), 58. (c), 59. (a), 60. (b), 61. (b), 62. (b), 63. (d), 64. (a), 65. (c), 66. (c), 67. (c), 68. (d), 69. (b), 70. (d), 71. (b), 72. (b), 73. (c), 74. (c), 75. (c), 76. (d), 77. (c), 78. (b), 79. (c), 80. (c), 81. (d), 82. (a), 83. (a), 84. (b), 85. (c), 86. (c), 87. (a), 88. (b), 89. (b), 90. (b), 91. (d), 92. (a), 93. (c), 94. (c), 95. (c), 96. (c), 97. (c), 98. (d), 99. (b), 100. (d), 101. (b), 102. (b), 103. (c), 104. (c), 105. (d), 106. (b), 107. (c), 108. (c), 109. (b), 110. (c), 111. (b), 112. (a), 113. (b), 114. (b), 115. (b), 116. (a), 117. (b), 118. (b), 119. (c), 120. (b), 121. (b), 122. (c), 123. (c), 124. (c), 125. (b), 126. (b), 127. (b), 128. (b), 129. (b), 130. (b), 131. (a), 132. (b), 133. (c), 134. (b), 135. (c), 136. (a), 137. (c)]

## 4. LEVERAGE ANALYSIS

### LEARNING OBJECTIVES

After studying this chapter, you should be able to understand:

- Leverage Analysis
- Meaning of Leverage
- Operating Leverage
- Financial Leverage
- What is Trading on Equity ?
- Combined Leverage
- Meaning of Business Risk
- Meaning of Financial Risk
- Impact of Leverage on Capital Turnover Ratio and Working Turnover Ratio
- How to measure Operating Risk ?
- How to measure Financial Risk ?

### FINANCIAL DECISION

#### LEVERAGE ANALYSIS

- (a) The leverage in general, refers to advantage gained for any purpose.
- (b) In financial analysis, Leverage is used by business firms to quantify the risk – return relationship of different alternative capital structures.
- (c) Study of leverage is essential to define the risk undertaken by the shareholders. Earnings available to shareholders fluctuate on account of two risks.
  - **Variability of EBIT** – Operating Risk: arises due to variability of sales and variability of expenses.
  - **Variability of EPS or ROE** – Financial Risk: arises due to the impact of interest charges.
- (d) There are three commonly used measures of leverage in financial analysis. These are:
  - Operating Leverage
  - Financial Leverage
  - Combined Leverage

#### Operating Leverage

- (a) **Definition:** - Operating leverage is defined as the “firm’s ability to use fixed operating costs to magnify effects of changes in sales on its earnings before interest and taxes.”
- (b) **Explanation:** - A change in sales will lead to a change in Profit i.e. Earnings before Interest and Taxes (EBIT). The effect of change in sales on EBIT is measured by operating leverage. Since fixed costs remain the same irrespective of level of output, percentage increase in EBIT will be higher than increase in sales.
- (c) **Measurement:** - The degree of Operating leverage (DOL) is measured as under: (expressed in times)
$$\frac{\% \text{ Change in EBIT}}{\% \text{ Change in Sales}} \quad \text{or} \quad \frac{\text{Contribution}}{\text{EBIT}}$$
- (d) **Significance:**
  - **Effect on EBIT:** DOL measures the impact of change in sales on operating income. Suppose DOL of a firm is 1.67 times, it implies that 1% change in sales will lead to 1.67% change in



EBIT. Hence, if sales increases by 20%, EBIT increases by  $20\% \times 1.67\% = 33\%$ . Also, if sales decreases by say 40%, EBIT falls by 67%.

- **Impact of Fixed Costs:** DOL depends on fixed costs. If fixed costs are higher, DOL is higher and vice – versa.
- **Effect of high DOL:** If DOL is high, it implies that fixed costs are high. Hence the Break even point (no point – no loss situation) would be reached at a higher level of sales. Due to the high Break Even Point, the Margin of Safety and profits would be low. This means that the operating risks are higher. Hence, a low DOL is preferred –
- A high DOL means that profits (EBIT) may be wiped off, even for a marginal reduction in sales. Hence, it is preferred to operate sufficiently above break – even point to avoid the danger of fluctuation in sales and profits.

### Financial Leverage

- (a) **Meaning:** Financial leverage is defined as the ability of a firm to use fixed financial charges (interest) to magnify the effects of changes in E.B.I.T. / Operating Profits, on the firm's Earning Per Share (EPS).
- (b) **Explanation:** Financial leverage occurs when a Company has debt content in its capital structure and fixed financial charges e.g. interest on debentures. These fixed financial charges do not vary with the EBIT. They are fixed and are to be paid irrespective of level of EBIT. Hence an increase in EBIT will lead to a higher percentage increase in Earnings Per Share (EPS). This is measured by the Financial Leverage.
- (c) **Measurement:** The degree of Financial Leverage (DFL) is measured as under: (expressed in times)
- $$\frac{\% \text{ Change in EPS}}{\% \text{ Change in EBIT}} \quad \text{or} \quad \frac{\text{EBIT}}{\text{EBT}}$$
- (d) **Significance:** Effect on EPS: DFL measures the impact of change in EBIT (Operating Income) on EPS (earnings per share). Suppose DFL of a firm is 4 times, it implies that 1% change in EBIT will lead to 4% change in EPS. Hence, if EBIT increases by 10%, EPS increases by  $10\% \times 4 = 40\%$ . Also, if EBIT decreases by say 5%, EPS falls by 20%.
- **Impact of Fixed Financial Charges:** DFL depends on the magnitude of interest and fixed financial charges. If these costs are higher, DFL is higher and vice – versa.
  - **Effect of High DFL:** If DFL is high, it implies that fixed interest charges are high. This means that the financial risks are higher. The DFL is considered to be favourable or advantageous to the firm, when it earns more on its total investments than what it pays towards debt capital. In other words, DFL is advantageous only if Return on Capital Employed (ROCE) is greater than Rate of Interest on Debt.

**Q. 1.** When is a firm said to be financially favourably leveraged or should Degree of Financial Leverage be high or low?

**Ans.** For determining whether the DFL, is favourable or not, the Return on Capital Employed (ROCE) should be compared with Rate of Interest on Debt.

- (A) **When ROCE is greater than Interest Rate:** DLF is considered to be favourable or advantageous to the firm, when it earns more on its total investment than what it pays



towards debt capital. In other words, DFL is advantageous only if Return on Capital Employed (ROCE) is greater than Rate of Interest of Debt.

This is because shareholders gain in a situation where the company earns a high rate of return and pays a lower rate of return to the supplier of long-term debt funds. Financial leverage in such cases is therefore also called "Trading on Equity".

The difference between the return (EBIT) and the cost of debt funds would enhance the earnings of shareholders. Further, in case of debt funds the interest cost is also tax deductible. Hence, gain from DFL arises due to:

- (a) Excess of return on investment over effective cost (cost after considering taxation effect) of debt funds.
- (b) Reduction in the number of shares issued due to the use of debt funds.

- (B) **When ROCE is less than Interest Rate:** Where the rate of return on investment falls below the rate of interest, the shareholders suffer, because their earnings fall more sharply than the fall in the return on investment. This is because fixed interest costs have to be met, irrespective of the level of EBIT.

In such cases, a high DFL is disadvantageous. Further, the use of debt funds involving fixed commitment of interest payment and principal repayment, is not justified.

- (C) **Conclusion:** DFL should be high when Return on Capital Employed (ROCE) is greater than Interest Rate on Debt. If ROCE is less than Interest Rate on Debt, DFL should be maintained low.

**Q. 2.** Outline the significance of combined leverage.

**Ans.** (a) **Meaning:** Combined Leverage is used to measure the total

Risk of a firm = Operating Risk + Financial Risk.

- (b) **Explanation:** Effect of Fixed Operating Costs (i.e. Operating Risks) is measured by Operating Leverage (DOL). Effect of Fixed interest Charges (i.e. Financial Risks) is measured by Financial Leverage (DFL). The combined effect of these is measured by Combined Leverage (DCL).

- (c) **Measurement:** The degree of Combined Leverage (DCL) is measured as  $DOL \times DFL$ . Therefore,  $DCL = Contribution / EBT$ .

- (d) **Significance:** DOL measures impact of change in Sales on EBIT. DFL measures the impact of change in EBIT on EPS. DCL measures the combined impact, i.e. effect of change in Sales on EPS. If DCL is 2 times, it implies that a 10% increase in Sales will lead to 20% increase in EPS.

**Q. 3.** What is the ideal combination for Combined Leverage?

**Ans.** Combined Leverage is analysed by reference to the combination of DOL and DFL, as under.

DOL	DFL	Effect	Reason and Significance
High	High	RISKY	High DOL → High Operating Risk → High Fixed Costs & BEP High DFL → Small fall in EBIT to greater fall in EBT
High	Low	CAREFUL	High DOL's impact is sought to be set off with Low Financial Risk. Hence Equity Shareholders' interest is safeguarded.
Low	Low	CAUTIOUS & CONSERVATIVE	Low DOL → Low Operating Risks → Low Fixed Costs & BEP but Equity Shareholders' gains are not maximized since DFL is low.
Low	High	PREFERABLE	Low DOL → Low Operating Risks → Low Fixed Costs & BEP due to high DFL, small rise in EBIT leads to greater rise in EBT and EPS. Hence Equity Shareholders' gains are maximized.

**Q. 4.** Should increase in activity levels (Sales) be supported by increase in capital Employed?

**Ans.** (1) Increase in Sales leads to increase in EBIT, EBT and ROI Hence, a firm may be tempted to try to raise its Capital Turnover Ratio (Sales divided by Capital Employed) without restraint.  
 (2) However, as Capital Turnover Ratio increases, Working Capital Ratio deteriorates.  
 (3) As sales increases; both Current Assets and Current Liabilities also increase but not in proportion to the current ratio, with the same amount of funds employed. Hence Current Ratio registers a fall and affects the liquidity position of the firm adversely.  
 (4) Hence, arise in capital turnover must be supported by an adequate capital base and increase in the amount of funds employed, more particularly in Working Capital.

#### Disadvantages of Operating Leverage

- ❖ The reliability of operating ratio rests to a large extent on the correctness of the fixed costs identified with a product. Faulty apportionment would distort the usefulness of the ratio.
  - ❖ The published accounts does not give details of the fixed cost incurred and the contribution from each product and for an outsider it is difficult to calculate the firm's operating leverage.
- Firm's cost structure and nature of the firm's business affect operating leverage. It is interesting to note that a degree of change in sales volume results in a more than proportionate changes in operating profit (or loss) can be observed by the use of operating leverage.

**Q. 5.** Distinguish between Business Risk V/s Financial Risk.

**Ans.** **Business Risk:** which is sometimes called operating risk, is the risk associated with the normal day to day operations of the firm. An entity carrying on a business may in order to carry its day to day operations burden itself with some operating fixed costs which will be incurred irrespective of the fact whether the entity makes any sales or not. Examples of such operating fixed costs are: Rentals, Salaries, Electricity and Telephone Expenses etc.

**Financial Risk:** is created by the use of fixed – cost securities (that is, debt and preference shares). An entity may in order to finance its business burden itself with some financial fixed costs which will be incurred irrespective of the fact whether the entity makes any profits or not. Examples of such financial fixed costs are: interest on debt, preference dividends. Looking at the two categories in a sources and uses context, business risk represents the chance of loss and variability of return created by a firm's uses of funds. Financial risk is the chance of loss and variability of the owners return created by a firm's sources of funds.

**Q. 6.** Write a short note on Trading on Equity.

**Ans.** Financial Leverage can be defined as “the use of fixed charge securities in the capitalization of a company. The use of fixed charges securities such as debt along with the owner's equity in the capitalization of a company is described as Financial Leverage or Trading on Equity. Financial Leverage and Trading on Equity are synonymously used by financial experts. However, Hunt has distinguished between the two and stated that Financial Leverage explains the impact on Earnings per share (EPS) whereas Trading on Equity (TOE) explains the impact on Return on Equity (ROE). As the debt funds are less risk bearing and have prior claims on income and assets of a firm over the equity shareholders, their rates of return should be less than that of total assets. So, they trade off and the debt funds are raised on the strength of Net Worth. This phenomenon along with the tax deductibility of interest payable leads to the magnification of rate of return on equity capital. This is termed as “Trading on Equity”.

As already stated, if a firm obtains the fixed charges securities at a cost higher than the rate of return on the Company's investments, EPS or ROE will fall and vice – versa.



For example, if rate of return on capital employed is 18% and interest payable on debt is 12%, the return to equity shareholder will be higher than the return on capital employed. In the reverse situation, i.e. if interest payable is 18% and return on capital employed is 10%, trading on equity is not recommended. Therefore, "trading on equity" is recommended, when return on capital employed exceeds the interest of debts.

### Previous year Scanner question

**Q. 7. [CS Dec 2009]** Write a short note on 'Optimal Capital Structure'

- Ans.**
- 1) One of the basic objectives of financial management is to maximize the value or wealth of the firm.
  - 2) Capital Structure is optimum when the firm has a combination of equity and debt so that the wealth of the firm is maximum.
  - 3) At this level, cost of capital is minimum and market price per share is maximum.
  - 4) In theory, one can speak of an optimum capital structure; but in practice, appropriate capital structure is a more realistic term than the former.
  - 5) The following are the major features of an appropriate capital structure:-
    - Profitability  
It should minimize the cost of financing and maximize earning per equity share.
    - Flexibility  
The capital structure should be such that company can raise funds whenever needed.
    - Conservation  
The debt content should not exceed the maximum which the company can bear.
    - Solvency  
The capital structure should be such that the firm does not run the risk of becoming insolvent.
    - Control  
There should be minimum risk of loss or dilution of control of the company.

**Q. 8. [CS Dec 2008]** Describe various kinds of capital structure.

**Ans.** Capital structure can be of various kinds as described below:-

- 1) Horizontal Capital Structure
  - In a Horizontal capital structure, the firm has zero debt components in the structure mix.
  - The structure is quite stable.
  - Expansion of the firm takes in a lateral manner, i.e. through equity or retained earning only.
  - The absence of debt results in the lack of finance leverage.
  - Probability of disturbance is remote.
- 2) Vertical Capital Structure
  - In a vertical structure, the base of the structure is formed by a small amount of equity share capital.
  - This base serves as the foundation on which the super structure of preference share capital and debt is built.
  - The incremental addition in the capital structure is almost entirely in the form of debt.
  - Quantum of retained earnings is low and the dividend pay-out ratio is quite high.
  - In such a structure, the cost of equity capital is usually higher than the cost of debt.
  - The high component of debt in the capital structure increases the financial risk of the firm and renders the structure unstable.
  - The firm, because of the relatively lesser component of equity capital, is vulnerable to hostile takeovers.
- 3) Pyramid shaped Capital structure
  - A pyramid shaped capital structure has a large proportion consisting of equity capital and retained earnings which have been ploughed back into the firm over a considerably large period of time.



- The cost of share capital and the retained earnings of the firm are usually lower than the cost of debt.
- This structure is indicative of risk averse conservative firms.
- 4) Inverted Pyramid shaped Capital Structure
  - Such a capital structure has a small component of equity capital, reasonable level of retained earnings but an ever increasing component of debt.
  - All the increases in the capital structure in the recent past have been made through debt only.
  - Chances are that the retained earnings of the firm are shrinking due to accumulating losses.
  - Such a capital structure is highly vulnerable to collapse.

**Q. 9.** [CS June 2010] While deciding upon the capital structure, the firm has to consider the different life cycle stages.

**Ans.** While deciding upon the capital structure the firm has to consider the different life cycle stages which are:-

- The pioneering stage
- The expansion stage
- The stagnation/stabilization stage

**The pioneering stage** is one of rapid increase in demand for the products/services at the starting stage of the life cycle of the company and the efficient companies are the one to survive.

The financial cost of borrowing is very high at this stage, due to risk perception about the company.

**The expansion stage** is the next stage, during which the strong companies survive the competition struggle and aim to expand their market share and volumes.

During this stage, huge investments are made to expand production/service capacity.

**Stabilization/Stagnation stage** is the last and final stage.

A dynamic management will always be on the lookout for expansion/diversification into new projects.

Usually a recession in economy opens up a vast number of such opportunities which cash rich companies can take advantage of.

**Q.10.** [CS Dec 2006/2007, June 2009] Distinguish between 'Financial structure' and 'capital structure'.

**Ans.**

- Capital structure relates to deployment of funds for creation of long term asset whereas financial structure involves creation of both long term and short term assets.
- Capital structure is the main source of financial structure. Capital structure refers to the funds for the long term. Where the firm has no current liabilities, then the capital structure of the firm is equal to the financial structure.
- Capital structure can be considered as one of the major component of financial structure. So capital structure is narrower in sense as compared to financial structure which is broader and includes current liabilities also.
- The financial structure of a firm is considered to be a balanced one in case the amount of current liabilities is less than the capital structure net of outside debt.
- Capital structure & its component can be deployed in acquisition of fixed assets as well as current assets but the current liabilities should not be used to finance acquisition of fixed asset. This would result in an asset liability mismatch.

**Q.11. [CS June 2004]** “A high EPS may not always maximize the stock price.” Do you agree? Discuss.

**Ans.** The statement is true due to following reasons:-

- EPS may be high due to profit maximization, which itself is not a sure shot for a high stock price.
- High EPS may be due to financial leverage effect, which increases a firm's risk prospects of growth rate.
- If the business prospectus of a company is not good the stock price may not go up in spite of high EPS.
- The nature of business and the industry in which the company operates also affects the stock price and not the EPS alone.

**Q.12. [CS Dec 2006]** “The choice of an appropriate debt policy involves a trade-off between tax benefits and the cost of financial distress.” Comment.

**Ans.**

- While deciding about the capital structure, the debt proportion needs to be appropriate.
- Since interest is a charge, it results in tax benefit.
- However, higher amount of debt may result in higher operating risk.
- High debt may even cause financial distress and bankruptcy
- Thus, management has to strikeout a proper balance between owned funds and debt.

**Q.13.** What is the significance of capital structure?

**Ans.**

1. Reflects the firm's strategy
  - The capital structure reflects the overall strategy of the firm.
  - In case the firm wants to grow at a faster pace, it would be required to incorporate debt in its capital structure to a greater extent.
2. Indicator of the risk profile of the firm
  - If the debt component in the capital structure is predominant, the fixed interest cost of the firm increased thereby increasing its risk.
3. Acts as a tax management tool
  - The interest on borrowings is tax deductible; a firm having healthy growth in operating profits would find it worthwhile to incorporate debt in the capital structure in a greater measure.
4. Helps to brighten the image of the firm
  - A firm can build on the retained earnings.
  - Such an act has two benefits. On the one hand, it helps the firm to improve its image in the eyes of the investors. At the same time, it reduces chances of hostile take-over of the firm.

**Q.14.** What are factors influencing capital structure.

**Ans.** In deciding the capital structure of a firm, following points need to be considered.

- 1) Corporate Strategy
  - The most appropriate capital structure will be the one, which most closely supports the strategic direction of the business with the least cost and at a reasonable acceptable risk level.
- 2) Nature of the Industry
  - The nature of the industry plays an important role in capital structure decisions.
  - If the firm is capital intensive, it would rely more on debt than equity.
- 3) Current and past capital structure
  - Current capital structure of a firm is determined largely by past decisions.
  - Investment decision of the past, acquisition, takeovers financing policy, dividends etc. go into forming the current capital structure which is difficult to change overnight.



**Q.15.** What are the attributes of a well planned Capital Structure./  
Write a short note on 'Designing a Capital Structure'/  
Describe the process of planning and designing of capital structure.

**Ans.** Attributes of a well planned Capital Structure

- 1) Long Tenure
  - The plan should be for a fairly long tenure and should cover the working of at least five to seven years of the project.
  - Expansion of the capacity, addition of product lines etc. should be accounted for in the plan.
- 2) Consistency
  - The planned capital structure should be consistent with the overall financing philosophy of the firm.
  - If the firm has a risk averse philosophy, then the plan should have minimum component of debt.
- 3) Feasibility
  - The planned capital structure should have feasibility, i.e. it should not be impractical.
  - Feasibility also means that it should be workable within the amount of share capital, debt and retained earnings expected to be available to the firm.

Designing a Capital Structure

After planning the capital structure, we are faced with the issue of its design.

While designing a capital structure, following points need to be kept in view.

- 1) Design should be functional
  - The design should create synergy with the long term strategy of the firm and should not be dysfunctional.
  - It should facilitate the day to day working of the firm rather than create systematic bottlenecks.
- 2) Design should be flexible
  - The capital structure should be designed to incorporate a reasonable amount of flexibility in order to allow for temporary expansion or contraction of the share of each component.
- 3) Design should be conforming statutory guidelines
  - The design should conform to the statutory guidelines, if any, regarding the proportion and amount of each component.
  - The limits imposed by lenders regarding the minimum level of owners' equity required in the firm should be complied with.

**Q.16.** Write a short note on 'Determinants of capital structure.

**Ans.**

- 1) Minimization of risk
  - The capital structure should aim at minimization of risk of the firm.
- 2) Maximization of profit
  - The capital structure is formulated with a view to achieve the goal of maximization of firm's profits.
- 3) Nature of the project
  - Formulation of the structure is also determined by the nature of the investment project.
  - If the project is a capital intensive, long gestation project then it should be financed by debt of matching maturity.
- 4) Control of the firm
  - This aspect of the firm also plays apart in the determination of the capital structure.
  - Since the key to control of the firm is ownership of the equity capital, the promoters would like to part with only that proportion of equity capital as is necessary for execution of the project.



**Q.17. [2010 – Dec.]**Distinguish between ‘Return on capital employed’ and ‘return on net worth’.

**Ans.**

Basis	Return on capital employed (ROCE)	Return on net worth
Meaning	It expresses the relationship between EBIT and capital employed	It reflects the relation between profit available for equity shareholders and equity shareholder's funds.
Objective	It helps us to analyse the overall profitability of the firm	It is a tool which examines the profitability from the point of view of share holders
Formula	$\text{ROCE} = \frac{\text{EBIT}}{\text{Capital employed}} \times 100$	$= \frac{\text{Profits available for equity shares}}{\text{Equityshareholders fund}} \times 10\%$

**Q.18. [2011–Dec.]**Distinguish between ‘Net income approach to capital structure’ and ‘net operating income approach to capital structure’.

**Ans.**

Net operating Income (NOI) Approach	Net Income (NI) Approach
As per this approach the capital structure decision is not relevant and in change in debt will not affect the total value of the firm.	Net income Approach states that change in capital structure directly affects the value of the firm as increase in debt reduces cost of capital and increases value of firm.
Thus, in this NOI approach, cost of capital is independent of degree of leverage	In NI approach the cost of capital & consequently capital structure is dependent on degree of leverage.

**Q.19. [2003–Dec.]** “Retained earnings have no cost”. “Do you agree? Give reasons for your answer.

**Ans.** It is wrong to consider that retained earning have no cost.

Retained earning has also its own cost.

- Retained earnings are the funds accumulated by the company over the year.
- Retained earning are the funds which belong to the equity shareholders of the company because if these funds would not have retained they would have been distributed to the shareholders in the form of dividend.
- The company has deprived the equity holders of this portion of earnings by retaining the portion of profit with it.
- Therefore, the cost of retained earning may be considered as equivalent to the earning forgone by the shareholders.
- Thus the cost of retained earning is simply the opportunity cost which is equal to the income that they would otherwise earned by placing these funds in alternate investment.
- The cost of retained earning is always less than the cost of equity as there is no flotation cost involved in case of retained earning.

**Q.20. [2004–June]** If the use of financial leverage magnifies the earnings per share under the favourable economic conditions, why do companies not employ very large amount of debt in their capital structure?

**Ans.**

- Though debt funds provide the gearing effect and enable the company to magnify its EPS yet they accompany with them the threat of financial distress & commercial insolvency.
- Thus under favourable economic conditions a company may employ high debt i.e. take advantage of financial leverage to increase EPS & consequently the market price & wealth of the shareholders.

- However, in the case the earnings of the company is negative or inadequate that the cost of debt funds i.e. interest is not covered it can create an adverse impact & may even lead of financial distress & insolvency.
- Therefore, companies generally do not prefer high debt proportion in the capital structure.

**Q.21. [2005 June]** “To keep the risk within manageable limits, a firm which has high degree of operating leverage should have low financial leverage and vice-versa.” Comment.

**Ans.**

- Operating risk is risk associated with fixed operating expenses whereas financial leverage is the one related to financial expenses.
- The operating leverage is measured by the percentage change in EBIT due to percentage change in sales whereas financial leverage is measured by the percentage change in EPS due to percentage change in EBIT.
- The two leverages combined to form combined leverages.
- If a firm is experiencing high level of operating leverage, it should bring down its financial leverage by financing with equity to keep the risk at optimum level.
- So to balance the risk there should be balance between operating & financial leverage.

**Q.22. [2006 Dec.]** “The choice of an appropriate debt policy involves a trade - off between tax benefits and the cost of financial distress.” Comment.

**Ans.**

- While deciding about the capital structure, the debt proportion needs to be appropriate.
- Since interest is a charge, it results in tax benefit.
- However, higher amount of debt may result in higher operating risk.
- High debt may even cause financial distress and bankruptcy
- Thus, management has to strikeout a proper balance between owned funds and debt.

**Q.23. [2008 June]** “Financial leverage is a fair weather friend.” Discuss.

**Ans.**

- Financial leverage expresses the relationship between EBIT (Earning Before Interest and Tax) and EBT (Earning Before Tax)
- It measures the ability of the organization to meet the financial risk.
- It helps in ascertaining the ability to honour its fixed financial charges like interest and preference share dividend.
- High financial leverage may result in high EPS.
- High financial leverage also denotes the ability to cover fixed charges.

**Q.24. [2008 Dec.]** Comment on the total risk is the risk associated with combined leverage.

**Ans.**

- Operating leverage measures the ability of the company to meet its commitment to high level of fixed costs other than interest payments i.e. operating cost.
- Financial leverage is concerned with the ability to bear financial risk. It ascertains the organization's ability to cover fixed financial costs relating to interest.
- Combined leverage can be obtained by finding the product of operating leverage and that of financial leverage.
- Thus, combined leverage takes into account both operating risk as well as financial risk faced by the company.
- To conclude, we can say that combined leverage measures the total risk associated with the company. In other words, total risk is the risk associated with combined leverage.



**Practical question****OPERATING LEVERAGE**

- Q. 1.** From the following selected operating data, determine the degree of operating leverage. Which company has the greater amount the business risk? Why?

	<b>A Ltd.</b>	<b>B Ltd.</b>
Sales	₹25,00,000	₹30,00,000
Fixed Costs	7,50,000	15,00,000

Variable expenses as a percentage of sales are 50 per cent for firm A and 25 per cent for firm B.

**Ans.** A=2.5, B=3, B,

- Q. 2.** Royal Industries Ltd., a well-established firm in plastics, is considering the purchase of one of the following information about the two companies. Both companies have total assets of ₹15,00,000.

	<b>X Ltd.</b>	<b>Y Ltd.</b>
Sales Revenue	₹30,00,000	₹30,00,000
Less: Cost of goods sold	22,50,000	22,50,000
Selling expenses	2,40,000	2,40,000
Administrative expenses	90,000	1,50,000
Depreciation	1,20,000	90,000
EBIT	3,00,000	2,70,000
Cost break – ups		
Variable costs:		
Cost of goods sold	9,00,000	18,00,000
Selling expenses	1,50,000	1,50,000
Total	10,50,000	19,50,000

- (i) Prepare operating statements for both the companies, assuming that sales increase by 20 per cent. The total fixed costs are likely to remain unchanged and the variable costs are a linear function of sales.
- (ii) Calculate the degree of operating leverage.
- (iii) If Royal Industries Ltd. wishes to buy a company which has a lower degree of business risk, which company would be purchased by it?

**Ans.** (i) X=6.5, Y=3.88, (iii) Royal

**FINANCIAL LEVERAGE**

- Q. 3.** (i) Find out operating leverage from the following data:

Sales:	₹ 50,000
Variable costs:	60 per cent
Fixed costs:	₹ 12,000

**Ans.** 2.5

- (ii) Compute the financial leverage from the following data:

Net worth	= ₹ 25,00,000
Debt / equity	= 3:1
Interest rate	= 12 per cent
Operating Profit=	₹ 20,00,000

**Ans.** Dol = 2.5      Dof = 1.82

**COMBINED LEVERAGE**

- Q. 4.** XYZ Ltd. has an average selling price of ₹ 10 per unit. Its variable unit costs are ₹ 7, and fixed costs amount to ₹ 1,70,000. It finances all its assets by equity funds. It pays 35 per cent tax on its income.

ABC Ltd. is identical to XYZ Ltd, except in the pattern of financing. The latter finances its assets 50 per cent by equity and 50 per cent by debt, the interest on which amounts to ₹ 20,000.



Determine the degree of operating, financial and combined leverage at ₹ 7,00,000 sales for both the firms, and interpret the results.

- Q. 5.** From the following financial data of companies, X Ltd. and Y Ltd., prepare their income statements.

	X Ltd.	Y Ltd.
Variable cost as percentage of sales	50	60
Interest expense	₹ 20,000	6,000
DOL	3 – 1	5 – 1
DFL	2 – 1	3 – 1
Income tax rate	0.35	0.35

**MCQ QUESTION WITH ANSWER**

1. Operating leverage helps in analysis of:
  - (a) Business Risk
  - (b) Financing Risk
  - (c) Production Risk
  - (d) Credit Risk
2. Which of the following is studied with the help of financial leverage?
  - (a) Marketing Risk
  - (b) Interest Rate Risk
  - (c) Foreign Exchange Risk
  - (d) Financing risk
3. Combined Leverage is obtained from OL and FL by their:
  - (a) Addition
  - (b) Subtraction
  - (c) Multiplication
  - (d) Any of these
4. High degree of financial leverage means:
  - (a) High debt proportion
  - (b) Lower debt proportion
  - (c) Equal debt and equity
  - (d) No debt
5. Operating leverage arises because of:
  - (a) Fixed Cost of Production
  - (b) Fixed Interest Cost
  - (c) Variable Cost
  - (d) None of the above
6. Financial Leverage arises because of:
  - (a) Fixed cost of production
  - (b) Variable Cost
  - (c) Interest Cost
  - (d) None of the above
7. Operating Leverage is calculated as:
  - (a)  $\text{Contribution} \div \text{EBIT}$
  - (b)  $\text{EBIT} \div \text{PBT}$
  - (c)  $\text{EBIT} \div \text{Interest}$
  - (d)  $\text{EBIT} \div \text{Tax}$
8. Financial Leverage is calculated as:
  - (a)  $\text{EBIT} \div \text{Contribution}$
  - (b)  $\text{EBIT} \div \text{PBT}$
  - (c)  $\text{EBIT} \div \text{Sales}$
  - (d)  $\text{EBIT} \div \text{Variable Cost}$
9. Which combination is generally good for a firm?
  - (a) High OL, High FL
  - (b) Low OL, Low FL
  - (c) High OL, Low FL
  - (d) None of these

10. Combined leverage can be used to measure the relationship between:
- (a) EBIT and EPS
  - (b) PAT and EPS
  - (c) Sales and EPS
  - (d) Sales and EBIT
11. FL is zero if:
- (a) EBIT = Interest
  - (b) EBIT = Zero
  - (c) EBIT = Fixed Cost
  - (d) EBIT = Pref. Dividend
12. Business risk can be measured by:
- (a) Financial Leverage
  - (b) Operating Leverage
  - (c) Combined Leverage
  - (d) None of the above
13. Financial Leverage measures relationship between:
- (a) EBIT and PBT
  - (b) EBIT and EPS
  - (c) Sales and PBT
  - (d) Sales and EPS
14. Use of Preference Share Capital in Capital structure:
- (a) Increases OL
  - (b) Increases FL
  - (c) Decreases OL
  - (d) Decreases FL
15. Relationship between change in sales and change in EPS is measured by:
- (a) Financial Leverage
  - (b) Combined Leverage
  - (c) Operating Leverage
  - (d) None of the above
16. Operating leverage works when:
- (a) Sales Increases
  - (b) Sales Decreases
  - (c) Both (a) and (b)
  - (d) None of (a) and (b)
17. Which of the following is correct?
- (a)  $CL = OL + FL$
  - (b)  $CL = OL - FL$
  - (c)  $CL = OL \times FL$
  - (d)  $CL = OL \div FL$
18. If the fixed cost of production is zero, which one of the following is correct?
- (a) OL is zero
  - (b) FL is zero
  - (c) CL is zero
  - (d) None of the above



19. If a firm has no debt, which one is correct?
- (a) OL is one
  - (b) FL is one
  - (c) OL is zero
  - (d) FL is zero
20. If a company issues new share capital to redeem debentures, then:
- (a) OL will increase
  - (b) FL will increase
  - (c) OL will decrease
  - (d) FL will decrease
21. If a firm has a DOL of 2.8, it means :
- (a) If sales increase by 2.8%, the EBIT will increase by 1%
  - (b) If EBIT increase by 2.8%, the EPS will increase by 1%
  - (c) If sales rise by 1 %, EBIT will rise by 2.8%
  - (d) None of the above
22. Higher OL is related to the use of higher :
- (a) Debt
  - (b) Equity
  - (c) Fixed Cost
  - (d) Variable Cost
23. Higher FL is related the use of:
- (a) Higher Equity
  - (b) Higher Debt
  - (c) Lower Debt
  - (d) None of the above

### CALCULATION OF OPERATING LEVERAGE

Calculate the Degree of Operating Leverage in each of the following alternative cases:

24:- Contribution Rs. 10,000, EBIT Rs. 2,000

- (a) 5
- (b) 4
- (c) 2
- (d) 6

25:- Contribution Rs. 20,000, Fixed Costs Rs. 15,000.

- (a) 5
- (b) 4
- (c) 2
- (d) 6

26:- Sales Rs. 1,00,000, Variable Costs Rs. 40,000, Fixed Costs 130,000.

- (a) 5
- (b) 4
- (c) 2
- (d) 6

27:- Sales Units 10,000, Selling Price per unit Rs. 10, Variable Cost 60%, Total Operating Cost 90%.

- (a) 5
- (b) 4
- (c) 2
- (d) 6

28:- Installed Capacity 20,000 units, Actual Production and Sales 75% of installed capacity, Selling Price per unit Rs. 10, Fixed Cost Rs. 30,000, Total Operating Cost 80%.

- (a) 5
- (b) 4
- (c) 2
- (d) 6

29:- Sales Rs. 1,00,000, Cost of Goods is Rs. 20,000 plus 55% of Selling Price, Selling Expenses 5% of Sales, Administration Expenses Rs. 10,000.

- (a) 5
- (b) 4
- (c) 2
- (d) 6

30:- Increase in EBIT 200%, Increase in Sales 50%.

- (a) 5
- (b) 4
- (c) 2
- (d) 6

31:- Decrease in Operating Income  $66\frac{2}{3}\%$ , Decrease in Revenue  $33\frac{1}{3}\%$

- (a) 5
- (b) 4
- (c) 2
- (d) 6

32:-	Sales Units	1000	1500
	Selling Price per unit	Rs.10	Rs.10
	EBIT	Rs. 1,500	Rs. 4,500

- (a) 5
- (b) 4
- (c) 2
- (d) 6

33:-	Sales Units	2000	3000
	Selling Price per unit	Rs.10	Rs. 10
	Total Operating Cost	Rs. 17,600	Rs. 21,600

- (a) 5
- (b) 4
- (c) 2
- (d) 6

34:- Percentage drop in sales to make the EBIT zero : 20%.

- (a) 5
- (b) 4
- (c) 2
- (d) 6

35:- Percentage increase in Sales to double the EBIT: 20%.

- (a) 5
- (b) 4
- (c) 2
- (d) 6

#### CALCULATION OF THE DEGREE OF FINANCIAL LEVERAGE

Calculate the Degree of Financial Leverage in each of the following alternative cases:

36:- EBIT Rs. 2,000, EBT Rs. 500

- (a) 2
- (b) 4
- (c) 1.5
- (d) 10

37:- Contribution Rs. 20,000, Fixed Costs Rs. 15,000, 10% Debt Rs. 37,500

- (a) 2
- (b) 4
- (c) 1.5
- (d) 10

38:- Contribution Rs. 20,000, Fixed Costs Rs. 15,000, 10% Debt Rs. 37,500, 15% Preference Share Capital Rs. 3,000, Tax Rate 40%.

- (a) 2
- (b) 4
- (c) 1.5
- (d) 10

39:- Increase in EPS 300%, Increase in EBIT 200%. Decrease in EPS 75%, Decrease in Operating Income 6623

- (a) 4
- (b) 2
- (c) 1.5
- (d) 10

40:- Sales Units

	2000	2800
EBIT	Rs. 2,400	Rs. 7,200
EPS	Rs. 9.60	Rs. 38.40
(A)	4	
(B)	2	
(C)	1.125	
(D)	10	



41:- Installed capacity 20000 units, Actual Production and Sales 75% of installed capacity, Selling Price per unit Rs. 10, Variable Costs 60%, Degree of Operating Leverage 2, 10% Debt Rs. 1,00,000, 15% Preference Share Capital Rs. 20,000, Tax Rate 40%.

- (a) 2
- (b) 4
- (c) 1.5
- (d) 10

42:- Percentage drop in EBIT to make EPS zero: 25%

- (a) 2
- (b) 4
- (c) 1.5
- (d) 10

43:- Percentage increase in EBIT to double the EPS : 25%.

- (a) 2
- (b) 4
- (c) 1.5
- (d) 10

**Tulsian Ltd. provides you the following information:**

- |   |                 |
|---|-----------------|
| 1. Variable cost as percentage of sales | = 60%           |
| 2. 10% Debt                             | = Rs. 130 lakhs |
| 3. 15% Preference Share Capital         | = Rs. 21 lakhs  |
| 4. Degree of Operating Leverage         | = 2:1           |
| 5. Degree of Financial Leverage         | = 2.5 :1        |
| 6. Income Tax Rate                      | = 40%           |
| 7. Equity Share Capital of Rs. 10 each  | = Rs. 36 lakhs  |
| 8. Reserves and Surplus                 | = Rs. 55 lakhs  |
| 9. Miscellaneous Expenditure            | = Rs. 1 lakhs   |

**Required:**

44:- Calculate the percentage drop in Sales to make the EBIT zero.

- (a) 50%
- (b) 40%
- (c) 30%
- (d) 20%

45:- Calculate the percentage drop in EBIT to make the EPS zero.

- (a) 50%
- (b) 40%
- (c) 30%
- (d) 20%

46:- Calculate the percentage drop in Sales to make the EPS zero.

- (a) 50%
- (b) 40%
- (c) 30%
- (d) 20%

47:- At what Sales level, the EBIT will be zero?

- (a) 75 lakhs
- (b) 76 lakhs
- (c) 77 lakhs
- (d) 78 lakhs

48:- At what Sales level, the EBT will be zero?

- (a) 107.50 lakhs
- (b) 106.50 lakhs
- (c) 105.50 lakhs
- (d) 104.50 lakhs

49:- At what Sales level, the EPS will be zero?

- (a) 120 lakhs
- (b) 121 lakhs
- (c) 122 lakhs
- (d) 123 lakhs

50. Operating leverage helps in analysis of:

- (a) Business Risk,
- (b) Financing Risk,
- (c) Production Risk,
- (d) Credit Risk

51. Which of the following is studied with the help of financial leverage?

- (a) Marketing Risk
- (b) Interest Rate Risk
- (c) Foreign Exchange Risk
- (d) Financing risk

52. Combined Leverage is obtained from OL and FL by their:

- (a) Addition
- (b) Subtraction
- (c) Multiplication
- (d) Any of these

53. High degree of financial leverage means:

- (a) High debt proportion
- (b) Lower debt proportion
- (c) Equal debt and equity
- (d) No debt

54. Operating leverage arises because of:

- (a) Fixed Cost of Production
- (b) Fixed Interest Cost
- (c) Variable Cost
- (d) None of the above

55. Financial Leverage arises because of:

- (a) Fixed cost of production
- (b) Variable Cost
- (c) Interest Cost,
- (d) None of the above

56. Operating Leverage is calculated as:

- (a)  $\text{Contribution} \div \text{EBIT}$
- (b)  $\text{EBIT} \div \text{PBT}$
- (c)  $\text{EBIT} \div \text{Interest}$
- (d)  $\text{EBIT} \div \text{Tax}$

57. Financial Leverage is calculated as:

- (a)  $\text{EBIT} \div \text{Contribution}$
- (b)  $\text{EBIT} \div \text{PBT}$
- (c)  $\text{EBIT} \div \text{Sales}$
- (d)  $\text{EBIT} \div \text{Variable Cost}$

58. Which combination is generally good for firms

- (a) High OL, High FL
- (b) Low OL, Low FL
- (c) High OL, Low FL
- (d) None of these

59. Combined leverage can be used to measure the relationship between:

- (a) EBIT and EPS
- (b) PAT and EPS
- (c) Sales and EPS,
- (d) Sales and EBIT

60. FL is zero if:

- (a)  $\text{EBIT} = \text{Interest}$
- (b)  $\text{EBIT} = \text{Zero}$
- (c)  $\text{EBIT} = \text{Fixed Cost}$
- (d)  $\text{EBIT} = \text{Pref. Dividend}$

61. Business risk can be measured by:

- (a) Financial leverage
- (b) Operating leverage
- (c) Combined leverage
- (d) None of the above

62. Financial Leverage measures relationship between

- (a) EBIT and PBT
- (b) EBIT and EPS
- (c) Sales and PBT
- (d) Sales and EPS



63. Use of Preference Share Capital in Capital structure

- (a) Increases OL
- (b) Increases FL
- (c) Decreases OL
- (d) Decreases FL

64. Relationship between change in sales and change in is measured by:

- (a) Financial leverage
- (b) Combined leverage
- (c) Operating leverage
- (d) None of the above

65. Operating leverage works when:

- (a) Sales Increases,
- (b) Sales Decreases
- (c) Both (a) and (b)
- (d) None of (a) and (b)

66. Which of the following is correct?

- (a)  $CL = OL + FL$
- (b)  $CL = OL - FL$
- (c)  $OL = OL \times FL$
- (d)  $OL = OL \div FL$

67. If the fixed cost of production is zero, which one of the following is correct?

- (a) OL is zero
- (b) FL is zero
- (c) CL is zero
- (d) None of the above

68. If a firm has no debt, which one is correct?

- (a) OL is one
- (b) FL is one
- (c) OL is zero
- (d) FL is zero

69. If a company issues new share capital to redeem debentures, then:

- (a) OL will increase
- (b) FL will increase
- (c) OL will decrease
- (d) FL will decrease

70. If a firm has a DOL of 2.8, it means:

- (a) If sales increase by 2.8%, the EBIT will increase by 1%
- (b) If EBIT increase by 2.896, the EPS will increase by 1 %
- (c) If sales rise by 1%, EBIT will rise by 2.8%
- (d) None of the above

71. Higher OL is related to the use of higher:

- (a) Debt
- (b) Equity
- (c) Fixed Cost
- (d) Variable Cost

72. Higher FL is related the use of:

- (a) Higher Equity
- (b) Higher Debt
- (c) Lower Debt
- (d) None of the above

73. While analyzing the impact of the economy's growth on the revenues generated by Com Point, Mr. Shah recorded earnings of Rs.200 billion and expected them to grow by 10% due to the increasing demand. To evaluate the impact of this, he wants to calculate the operating leverage with the following data:

Sales in 2009	22.5 million computers
Average price per computer	Rs.90,000
Fixed costs for the period	Rs.33 billion
Variable costs per computer	Rs.70,000

What is the degree of operating leverage (DOL)

- (a) 1.03.
  - (b) 1.08.
  - (c) 1.33.
74. Degree of operating leverage is best described as a measure of the sensitivity of:
- (a) Net earnings to changes in sales.
  - (b) Fixed operating costs to changes in variable costs.
  - (c) Operating earnings to changes in the number of units sold.
75. Soma Autos employs debt financing, borrowing at a rate of 10%. The interest cost at this rate equals Rs.65 billion. For 8 million cars, what is the degree of financial leverage (DFL) for Soma given revenue per car is Rs.25,000, variable cost per car is Rs.14,000 and fixed costs equal Rs.15 billion?
- (a) 8.67.
  - (b) 9.13.
  - (c) 10.76.
76. For firms with a high proportion of fixed costs relative to total costs, a small change in sales will cause a:
- (a) large change in earnings.
  - (b) decrease in debt to equity ratio.
  - (c) small change in earnings

- 77 The following data is available for two companies.

	Siptea	Brewers
Number of units sold	200,000	200,000
Sales price per unit	\$150	\$150
Variable cost per unit	\$43	\$98
Fixed operating cost	500,000	150,000
Fixed financing cost	100,000	50,000

The DOL for Siptea and Brewers are closest to:

- (a) 1.54 and 1.32 respectively.  
 (b) 1.024 and 1.015 respectively,  
 (c) 1.067 and 1.021 respectively.
- 78 Asparagus Inc. and Supras Inc. have the same assets, revenue and operating income but Asparagus is more highly leveraged relative to Supras. Which of the following statements is least likely correct?
- (a) Asparagus will have a lower net income relative to Supras.  
 (b) Asparagus will have a lower ROE relative to Supras.  
 (c) Both companies will have the same operating leverage.
- 79 The following data is available for Ejaz Business:

Number of units sold	1 million
Sales price per unit	Rs. 100
Variable cost per unit	Rs. 20
Fixed operating cost	5 million
Fixed financing cost	1 million

The degree of total leverage for the company is closest to:

- (a) 1.02.  
 (b) 1.08.  
 (c) 1.12.
- 80 Which of the following is not affected by changes in tax rate?
- (a) Net Profit Margin.  
 (b) WACC.  
 (c) DFL.
- 81 Which of the following is the most appropriate reason for analysts to understand a company's use of operating and financial leverage?
- (a) To analyze the past performance of the company.  
 (b) To evaluate the operating margin of the company.  
 (c) To forecast future cash flows and select an appropriate discount rate.
- 82 Using the firm's income statement presented below, its degree of financial leverage is closest to:

Income Statement	\$ millions
Revenues	15.2
Variable Operating Costs	9.8
Fixed Operating Costs	3.5
Operating Income	1.9
Interest	1.0
Taxable Income	0.9



Tax	0.2
Net Income	0.7

- (a) 1.6.
- (b) 2.1.
- (c) 2.7.

83 Using the company's income statement presented, its degree of operating

Income Statement	\$ millions
Revenues	10.5
Variable Operating Costs	6.8
Fixed Operating Costs	2.5
Operating Income	1.2
Interest	0.4
Taxable Income	0.8
Tax	0.2
Net Income	0.6

- (a) 3.1.
- (b) 3.4.
- (c) 6.2.

84 A manufacturing company has the following income statement.

Income Statement	\$ millions
Revenues	1100
Variable costs	450
Fixed costs	225
EBIT	425
Interest	70
Taxable Income	355
Tax	142
Net Income	213

The degree of total leverage for the company is closest to:

- (a) 1.20.
- (b) 1.53.
- (c) 1.83.

85 Fred has the following information available.

Operating income	\$500,000
Net income	\$275,000

Given that the degree of total leverage is 3.63, the degree of operating leverage is closest to:

- (a) 1.30.
- (b) 1.81.
- (c) 2.00.

- 86 Alpha and Beta both operate in the automobile sector with the same degree of operating leverage. Alpha has a capital structure of 40% debt and 60% equity, while Beta is financed completely by equity. Which of the following statements is most accurate? Compared to Beta, Alpha has:
- the same sensitivity of operating income to changes in unit sales.
  - the same sensitivity of net income to changes in operating income.
  - a lower sensitivity of net income to changes in unit sales.
- 87 All else equal, company A has greater financial leverage compared to its counterpart company B. Which of the following statements is least accurate?
- Company A has a greater risk of default.
  - Company A has higher net income.
  - Company A has higher return on equity.
- 88 A company manufactures items with a selling price of \$125 at a variable cost of \$62.5 per unit. The operating fixed costs incurred by the company are \$250,000, while the fixed interest charges incurred are \$65,000. The company is liable to pay taxes at a rate of 35%. The quantity of items that the company should manufacture and sell to break-even is closest to:
- 5,040.
  - 4,676.
  - 4,000.
- 89 Soomros now sells 1 million units at Rs.3,972 per unit. Fixed operating costs are Rs. 1,960 million and variable operating costs are Rs. 1,250 per unit. If the company pays Rs.376 million in interest, the levels of sales at the operating, breakeven and the level of sales at the breakeven points are, respectively:
- Rs. 2,860,073,475 and Rs.3,408,740,632.
  - Rs. 2,875,073,470 and Rs.3,428,740,630.
  - Rs. 3,560,073,475 and Rs.4,105,740,632.
- 90 In order to assess the riskiness of two companies in the same industry, Mr. Habitt collected the following information from the latest financial statements and management discussions for Habitt and Machines que respectively:
- ✚ Number of units produced and sold: 2.7 million and 3.5 million
  - ✚ Sales price per unit: Rs.2000 each.
  - ✚ Variable cost per unit: Rs.1200 and Rs.1000
  - ✚ Fixed operating cost: Rs.40 million and Rs.75 million
  - ✚ Fixed financing expense: Rs.30 million each
- Based on this information, the breakeven points for Habitt and Machinesque are closest to:
- 0.0875 million and 0.105 million respectively.
  - 0.536 million and 1.1 million respectively.
  - 1.1 million and 0.075 million respectively.
- 91 The owner of a TV store is forecasting for the year 2014 and wants to find out the breakeven point of 2013 with the following data to ensure accuracy:

Revenue	Rs. 0.12 million per TV set
Variable cost	Rs. 0.053 million per TV set
Fixed cost (including interest cost)	Rs. 200 billion

The breakeven quantity is closest to:

- 2.0 million TV sets.
- 2.5 million TV sets.
- 3.0 million TV sets.

- 92 The unit contribution margin for a product is \$15. Assuming fixed costs of \$15,000, interest costs of \$4,000, and a tax rate of 40%, the operating breakeven point (in units) is closest to:  
 (a) 870.  
 (b) 1,000.  
 (c) 1,200.
- 93 The per unit contribution margin for a product is \$24. Assuming fixed costs of \$48,000, interest costs of \$5,000, and taxes of \$3,000, the operating breakeven point (in units) is closest to:  
 (a) 1,667.  
 (b) 2,000.  
 (c) 2,333.
- 94 The unit contribution margin for a product is \$20. Assuming fixed costs of \$200,000, interest costs of \$25,000, and a tax rate of 35%, the operating breakeven point (in units) is closest to:  
 (a) 11,250.  
 (b) 10,813.  
 (c) 10,000.
- 95 Refer to the following data of companies producing similar products.

	Company A	Company B
Number of units produced and sold	1.5 million	1.5 million
Sale price per unit	\$150	\$150
Variable cost per unit	\$90	\$75
Fixed operating costs	\$30 million	\$60 million
Fixed financing expenses	\$15 million	\$7.5 million
Degree of operating leverage (DOL)	?	2.14
Degree of financial leverage (DFL)	1.33	1.17

Compared with Company B, Company A has:

- (a) a higher degree of total leverage.  
 (b) the same sensitivity of operating income to changes in net income.  
 (c) a lower sensitivity of operating income to changes in unit sold.
- 96 Which of the following is most likely to happen to the degree of total leverage (DTL) if a company decides to switch to accelerated depreciation from straight line depreciation, holding all other factors constant?  
 (a) Increase.  
 (b) Decrease.  
 (c) Does not change.

[Answers : 1. (a), 2. (d), 3. (c), 4. (a), 5. (a), 6. (c), 7. (a), 8. (b), 9. (c), 10. (c), 11. (b), 12. (b), 13. (b), 14. (b), 15. (b), 16. (c), 17. (c), 18. (d), 19. (b), 20. (d), 21. (c), 22. (c), 23. (b), 24. (a), 25. (b), 26. (c), 27. (b), 28. (c), 29. (b), 30. (b), 31. (c), 32. (b), 33. (a), 34. (a), 35. (a), 36. (b), 37. (b), 38. (d), 39. (c), 40. (c), 41. (c), 42. (a), 43. (b), 44. (a), 45. (b), 46. (d), 47. (a), 48. (a), 49. (a), 50. (a), 51. (d), 52. (c), 53. (a), 54. (a), 55. (c), 56. (a), 57. (b), 58. (c), 59. (c), 60. (b), 61. (b), 62. (b), 63. (b), 64. (b), 65. (c), 66. (c), 67. (d), 68. (b), 69. (d), 70. (c), 71. (c), 72. (b), 73. (b), 74. (c), 75. (b), 76. (a), 77. (b), 78. (b), 79. (b), 80. (c), 81. (c), 82. (b), 83. (a), 84. (c), 85. (c), 86. (a), 87. (b), 88. (a), 89. (a), 90. (a), 91. (c), 92. (b), 93. (b), 94. (c), 95. (c), 96. (a)]



## 5. EBIT-EPS ANALYSIS

**After studying this chapter, you should be able to understand:**

- Indifference Point
- Uncommitted EPS Approach
- Which form of Financing should be employed ?
- Financial Break Even Point (FBEP)

Impact of Financial Leverage on Shareholders' Wealth by Using Return-on-Investment (ROI) and Return on Equity (ROE) Analytic Framework

### EPS – EBIT ANALYSIS

#### INTRODUCTION

**Q.1.** A company's capital structure consists of the following:

	₹ (in lakhs)
Equity shares of ₹ 100 each	20
Retained earnings	10
9% Preference shares	12
7% Debentures shares	8
Total	50

The company's earning before interest and tax (EBIT) is at the rate of 12% on its capital employed, which is likely to remain unchanged after expansion. The expansion involves additional finances of ₹ 25 lakhs for which following alternatives are available to it:

- (i) Issue of 20,000 equity shares at a premium of ₹ 25 per share.
- (ii) Issue of 10% preference shares.
- (iii) Issue of 8% debentures.

It is estimated that P/E ratio in the case of equity shares, preference shares and debentures financing would be 21.4, 17 and 15.7 respectively. Which of these alternatives of financing would you recommend and why ? The income tax rate is 50%.

**Ans.** EPS 7.85/3.2/10.7                      MPS 167.99/54.4/167.9899

**Q.2.** The following figures of Sunny Ltd. are presented to you:

	₹
Earnings before interest and tax	23,00,000
Less: Debenture interest @ 8%	80,000
Long term loan interest @ 11%	2,20,000
	3,00,000
	20,00,000
Less: Income tax	10,00,000
Earnings after tax	10,00,000
No. of equity shares of ₹ 10 each	5,00,000
EPS	₹ 2
Market price at share	₹ 20
P/E ratio	10

The company has undisturbed reserves and surplus of ₹ 20 lakhs. It is in need of ₹ 30 lakhs to pay off debentures and modernize its plants. It seeks your advise on the following alternative modes of raising finance:

Alternative            – Raising entire amount as term loan from banks @ 12%.

Alternative 2        – Raising part of the funds by issue of 1,00,000 shares of ₹ 20 each and the rest by term loan at 12%.

The company expects to improve its rate of return by 2% as a result of modernization, but P/E ratio is likely to go down to 8 if the entire amount is raised as term loan.

- (i) Advise the company on the financial plan to be selected.  
 (ii) If it is assumed that there will be no change in the P/E ratio if either of the two alternatives are adopted, would your advice still hold good?

Ans. 19.36/22.17

### Break Even EBIT/ Indifference level of EBIT

**Q.3. [June 2009]** Time Limited is considering three financing plans. The key information is as follows:

- (a) Total investment to be raised ₹ 2,00,000  
 (b) Plans of Financing Proportion

Plans	Equity	Debt	Preference Shares
A	100%	-----	-----
B	50%	50%	-----
C	50%	-----	50%

- (c) Cost of debt 8%  
 Cost of preference shares 8%  
 (d) Tax rate 50%  
 (e) Equity shares of the face value of ₹ 10, each will be issued at a premium of ₹ 10 per share.  
 (f) Expected PBIT is ₹ 80,000.

Determine for each plan:

- (i) Earnings per share (EPS) and  
 (ii) The financial break even point.  
 (iii) Indicate if any of the plans dominate and compute the PBIT range among the plans for indifference.

Ans. (i) 4/7.2/6.4, (ii) No, 8000, 16000 (iii) 16000/32000/No Indifference bet B & C

**Q.4.** Key information pertaining to the proposed new financing plans of Hypothetical Ltd. is given below:

#### Sources of funds

1

Equity 15,000 shares of 100 each  
 Preference shares 12%, 25,000 shares of ₹ 100  
 Debentures ₹ 5,00,000 at a coupon rate of 0.10  
 Assuming 35 per cent tax rate,

#### Financing plans

2

30,000 shares of ₹ 100 each  
 -----  
 15,00,000, coupon rate of 0.11

- (i) Determine the two EBIT – EPS coordinates for each financial plan.  
 (ii) Determine the (a) indifference point, and (b) financial break – even point for each financing plan.  
 (iii) Which plan has more financial risk and why?  
 (iv) Indicate over what EBIT range, if any, one plan is better than the other.  
 (v) If the firm is fairly certain that its EBIT will be ₹ 12,50,000, which plan would you recommend, and why?

Ans. (a) 858077 (b) 511538, 165000 (v) Plan I

**MCQ QUESTIONS WITH ANSWER**

1. In order to calculate EPS, Profit after Tax and Preference Dividend is divided by :
  - (a) MP of Equity Shares
  - (b) Number of Equity Shares
  - (c) Face Value of Equity Shares
  - (d) None of the above.
2. Trading on Equity is :
  - (a) Always beneficial
  - (b) May be beneficial
  - (c) Never beneficial
  - (d) None of the above.
3. Benefit of Trading on Equity' is available only if:
  - (a) Rate of Interest < Rate of Return
  - (b) Rate of Interest > Rate of Return
  - (c) Both (a) and (b)
  - (d) None of (a) and (b)
4. Indifference Level of EBIT is one at which:
  - (a) EPS is zero
  - (b) EPS is Minimum
  - (c) EPS is highest
  - (d) None of these.
5. Financial Break-even level of EBIT is one at which:
  - (a) EPS is one
  - (b) EPS is zero
  - (c) EPS is Infinite
  - (d) EPS is Negative.
6. Relationship between change in Sales and change in Operating Profit is known as :
  - (a) Financial Leverage
  - (b) Operating Leverage
  - (c) Net Profit Ratio
  - (d) Gross Profit Ratio.
7. If a firm has no Preference share capital, Financial Break-even level is defined as equal to:
  - (a) EBIT
  - (b) Interest Liability
  - (c) Equity Dividend
  - (d) Tax Liability.
8. At Indifference level of EBIT, different capital plans have:
  - (a) Same EBIT
  - (b) Same EPS
  - (c) Same PAT
  - (d) Same PBT.
9. Which of the following is not a relevant factor in EBIT-EPS Analysis of capital structure?
  - (a) Rate of Interest on Debt
  - (b) Tax Rate
  - (c) Amount of Preference Share Capital
  - (d) Dividend paid last year.



10. For a constant EBIT, if the debt level is further increased then
- (a) EPS will always increase
  - (b) EPS may increase
  - (c) EPS will never increase
  - (d) None of the above.
11. Between two capital plans, if expected EBIT is more than indifference level of EBIT, then
- (a) Both plans be rejected,
  - (b) Both plans are good,
  - (c) One is better than other,
  - (d) None of the above.
12. Financial break-even level of EBIT is :
- (a) Intercept at Y-axis
  - (b) Intercept at X-axis
  - (c) Slope of EBIT-EPS line
  - (d) None of the above

**Calculate Return on Equity Shareholders' Funds in each of the following alternative cases:**

13:- EBIT Rs. 6,00,000, 15% Debt Rs. 8,00,000, Tax Rate 50% Equity Share Capital Rs. 1,00,000, Reserves and Surplus Rs. 3,00,000, Miscellaneous Expenditure Rs. 1,00,000, 18% Preference Share Capital Rs. 1,00,000.

- (a) 74%
- (b) 60%
- (c) 73%
- (d) 59%

14:- Return on Investment (before tax), 50%, Debt-Shareholders' Funds Ratio 2 : 1, Rate of Interest on Debt 15%, Tax Rate 50%.

- (a) 74%
- (b) 60%
- (c) 73%
- (d) 59%

15:- Return on Investment (before tax) 50%, Debt-Shareholders' Funds Ratio 2 : 1, Rate of Interest on Debt 15%, Tax Rate 50%, 18% Preference Share Capital to Equity Shareholders' Funds 1 : 3.

- (a) 74%
- (b) 60%
- (c) 73%
- (d) 59%

16:- Operating Profit (before tax) Ratio 40%, Capital Turnover Ratio 1.25 times, Debt-Shareholders' Funds Ratio 2:1, Rate of Interest on Debt 15%, Tax Rate 50%.

- (a) 74%
- (b) 60%
- (c) 73%
- (d) 59%

17:- Operating Profit (before tax) Ratio 25% Capital Turnover Ratio 2 times, Debt-Shareholders' Funds Ratio 2:1, Capital Gearing Ratio 3 :1, Interest on 15% Debt Rs. 1,20,000, 18% Preference Share Capital ? Tax Rate 50%.

- (a) 74%
- (b) 60%
- (c) 73%
- (d) 59%

18. In order to calculate EPS, Profit after Tax and Preference Dividend is divided by:

- (a) MP of Equity Shares,
- (b) Number of Equity Shares,
- (c) Face Value of Equity Shares,
- (d) None of the above.

19. Trading on Equity is :

- (a) Always beneficial
- (b) May be beneficial
- (c) Never beneficial
- (d) None of the above.

20. Benefit of 'Trading on Equity' is available only if:

- (a) Rate of Interest < Rate of Return
- (b) Rate of Interest > Rate of Return
- (c) Both (a) and (b)
- (d) None of (a) and (b)

21. Indifference Level of EBIT is one at which:

- (a) EPS is zero
- (b) EPS is Minimum
- (c) EPS is highest
- (d) None of these.

22. Financial Break-even level of EBIT is one at which:

- (a) EPS is one
- (b) EPS is zero
- (c) EPS is Infinite
- (d) EPS is Negative.

23. Relationship between change in Sales and Operating Profit is known as:

- (a) Financial Leverage
- (b) Operating Leverage
- (c) Net Profit Ratio
- (d) Gross Profit Ratio.

24. If a firm has no Preference share capital, Financial Break even level is defined as equal to –

- (a) EBI
- (b) Interest liability
- (c) Equity Dividend
- (d) Tax Liability.

25. At Indifference level of EBIT, different capital have:

- (a) Same EBIT
- (b) Same EPS
- (c) Same PAT
- (d) Same PBT.

26. Which of the following is not a relevant factor in EPS Analysis of capital structure?

- (a) Rate of Interest on Debt
- (b) Tax Rate
- (c) Amount of Preference Share Capital,
- (d) Dividend paid last year

27. For a constant EBIT, if the debt level is further increased then

- (a) EPS will always increase
- (b) EPS may increase
- (c) EPS will never increase
- (d) None of the above

28. Between two capital plans, if expected EBIT is more than indifference level of EBIT, then

- (a) Both plans be rejected
- (b) Both plans are good
- (c) One is better than other
- (d) None of the above

29. Financial break-even level of EBIT is:

- (a) Intercept at Y-axis
- (b) Intercept at X-axis
- (c) Slope of EBIT-EPS line
- (d) None of the above.

Answers: 1. (b), 2. (b), 3. (a), 4. (d), 5. (b), 6. (b), 7. (b), 8. (b), 9. (d), 10. (b), 11. (c), 12. (b), 13. (a), 14. (b), 15. (a), 16. (b), 17. (a), 18. (b), 19. (b), 20. (a), 21. (d), 22. (b), 23. (b), 24. (b), 25. (b), 26. (d), 27. (b), 28. (c), 29. (b)]



## 6. CAPITAL STRUCTURE THEORY

The EBIT is divided among three main claimants

- (i) The debt holders who receive their share in the form of interest.
- (ii) The Govt. which receives its share in the form of taxes &
- (iii) The shareholders who receive the residual,

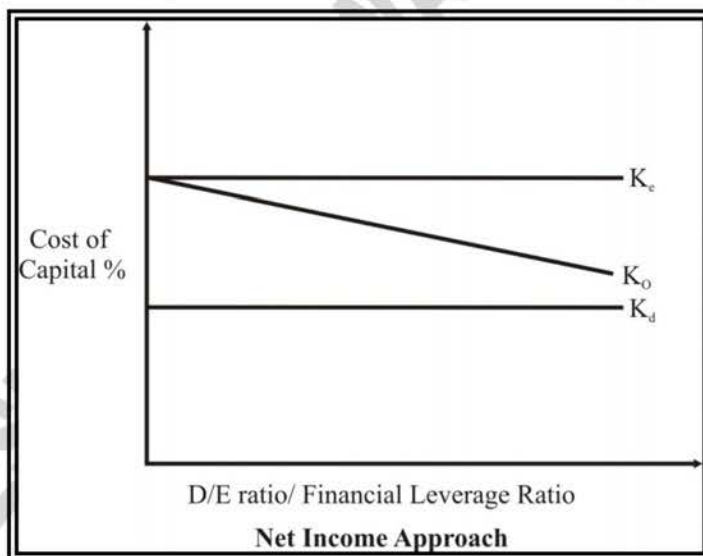
So, the EBIT is a pool which is to be divided among the three claimants.

1. One financing mix or capital structure is represented by on WACC which may change whenever there is change in financing mix. So a firm can change its WACC by changing the financing mix & can thus affect the value of the firm. It may be noted that the cost of capital & the value of the firm are inversely related. For a given level of earning & lower the cost of capital, the higher would be the value of the firm.

### NET INCOME APPROACH

As per Net Income Approach (NI) there is relationship between capital structure & value of the firm & therefore the firm can affect its value by increasing or decreasing the debt proportion in the overall financing mix. The NI approach makes the following additional assumptions:

1. The total capital requirement of the firm are given & remain constant.
2.  $K_d$  is less than  $K_e$ .
3. Both  $K_d$  &  $K_e$  remain constant & increase in financial leverage i.e. use of more & more debt financing in the capital structure doesn't effect the risk perception of the investors.



### Example

The expected EBIT of a firm is ₹ 2,00,000 it has issued equity share capital  $k_e$  @ 10% & 6%. Debt of ₹ 5,00,000 find out the value of the firm & the overall cost of capital (WACC)

EBIT	₹ 2,00,000
Interest 6% of ₹ 5,00,000	30,000
Net profit	1,70,000
$K_e$	10%
Value of equity $170000/0.10$	17,00,000
Value of debt	5,00,000
Total value of the firm	22,00,000

$$\text{EBIT} = \frac{\text{WACC}}{V} = \frac{2,00,000}{22,00,000} = 0.09 = 9\%$$

The WACC can also be calculated as follows

$$WACC = \frac{D}{D+E}k_d + \frac{E}{E+D}k_e$$

$$\frac{5}{5+17}0.06 + \frac{17}{17+5}0.1 = 0.09$$

Now if the firm has issued 6% Debt of ₹ 7,00,000 instead of ₹ 5,00,000 the position have been as follows:

EBIT	2,00,000
6% of 7,00,000	42,000
EBT	1,58,000
ke	10%

$$\text{Value of equity} = \frac{1,58,000}{0.1} = 15,80,000$$

$$\text{Value of debt} = \frac{7,00,000}{1} = 7,00,000$$

$$\text{Total value of the firm} = 22,80,000$$

$$WACC = \frac{2,00,000}{22,80,000} = 0.087 = 8.7\%$$

So, 6% debt is increased from 5,00,000 to ₹ 7,00,000 the value of the firm increases from ₹ 22,00,000 to ₹ 22,80,000 & WACC decreases from 9% to 8.7%. Now say the firm has issued 6% debt of ₹ 2,00,000 only instead of ₹ 5,00,000 the position would be as follows:

EBIT	₹ 2,00,000
Interest 6% of ₹ 2,00,000	12,000
Net profit	1,88,000
Ke	10%
Value of ke 1,88,000/0.10	18,80,000
Value of equity	18,80,000
Value of debt	2,00,000
Total value of the firm	20,80,000

$$WACC = \frac{D}{E+D}k_d + \frac{E}{E+D}k_e$$

$$WACC = \left[ \frac{2,00,000}{20,80,000} \right] 0.06 + \left[ \frac{18,80,000}{20,80,000} \right] 10\% = 9.6\%$$

So, when the proportion of 6% debt is reduced to ₹ 2,00,000 only, the value of the firm reduces to ₹ 20,80,000.

Thus, as per Net Income Approach a firm is also to increase its value & to decrease its WACC by increasing the debt proportion of the capital structure.

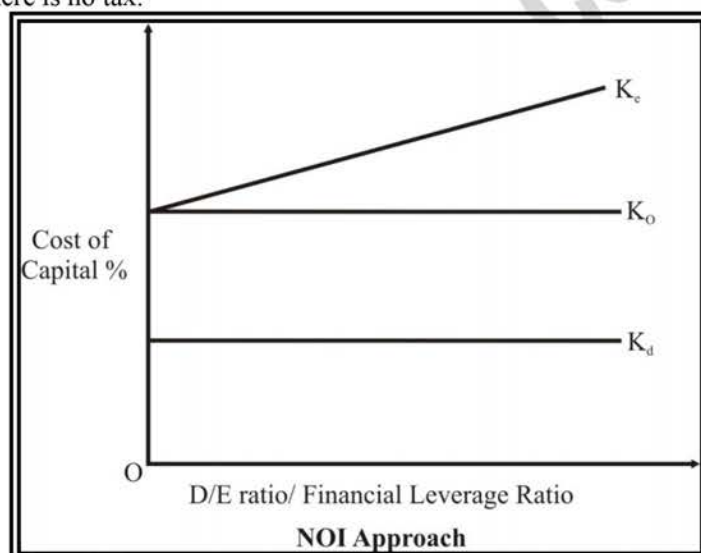
- Q.1.** ABC Ltd. is expecting EBIT of Rs. 2,00,000 in a year. The company in its capital structure has Rs. 8 lakhs in 10% debentures. The cost of equity is 12.5%. You are required to calculate the value of the firm according to NI-Approach. Also compute the overall cost of capital.
- Q.2.** Assume in previous question, the company decides to raise further Rs. 2 lakhs by way of issue of debentures and to use the proceeds thereof to redeem equity shares. You are required to calculate the value of the firm according to NI-Approach. Also calculate the overall cost of capital.
- Q.3.** Suppose in Q. No. 1, the company decides to raise Rs. 2 lakhs by way of issue of equity shares and to use the proceeds thereof to redeem debentures. Calculate the value of the firm under NI-Approach and the overall cost of capital.

- Q.4.** A company is expecting EBIT of Rs. 4,00,000 and having earning capacity of 10%. You are required to find out the value of the firm and cost of equity capital if it employs 8% debt to the extent of 20%, 35% or 50% of total financial requirement of Rs. .20,00,000.

#### Net Operating Income Approach

The Net Operating Income (NOI) Approach is opposite to the NI approach. According to NOI approach. According to NOI approach the market value of the firm depends upon the net operating profit or EBIT & overall cost of capital, WACC. The financing mix or the capital structure is irrelevant & does not affect the value of the firm. The NOI approach makes the following assumptions:

- (1) The investors see the firm as a whole & thus capitalizes the total earnings of the firm to find the value of the firm as a whole.
- (2) The overall cost of capital,  $k_o$ , of the firm is constant & depends upon the business risk, which also is assumed to be unchanged.
- (3) The cost of debt,  $k_d$ , is also taken as constant.
- (4) The use of more & more debt in the capital structure increases the risk of the shareholder & thus results in the increase in the cost of equity capital. i.e.  $k_e$ . The increase in  $k_e$  is such as to completely off set the benefits of employing cheaper debt, &
- (5) That there is no tax.



$$V = \frac{\text{EBIT}}{K_o} \quad E = V - D \quad \rightarrow \quad V = E + D$$

$$k_e = \frac{\text{EBIT} - \text{Interest}}{V - D}$$

**Example:** A firm has an EBIT of ₹ 2,00,000 & belongs to a risk class of 10%. What is the value of equity capital of if employees 6% debt to the extent of 30%, 40% or 50% of the capital fund of ₹ 10,00,000.

**Ans.** The effect of changing debt proportion on the cost of equity capital can be analyzed as follows:

	30% debt	40% debt	50% debt
EBIT	2,00,000	2,00,000	2,00,000
$k_o$	10%	10%	10%
Value of the firm V	20,00,000	20,00,000	20,00,000
Value of 6% Debt D	3,00,000	4,00,000	5,00,000
Value of Equity (E) = V-D	17,00,000	16,00,000	15,00,000



Interest to debt	18,000	24,000	30,000
Net profit for equity	1,82,000	1,76,000	1,70,000
ke=NP/E	10.7%	11%	11.33%

The ke of 10.7%, 11% & 11.33%, can be verified for different proportion of debt by calculating WACC as follows:

For 30% debt

$$k_o = \frac{D}{E+D} k_d + \frac{E}{E+D} k_e$$

$$k_o = \frac{3}{3+17} 0.06 + \frac{17}{3+17} 0.107 = 10\%$$

For 40% debt

$$k_o = \frac{4}{4+16} 0.06 + \frac{16}{4+16} 0.107 = 10\%$$

For 50% debt

$$k_o = \frac{5}{5+15} 0.06 + \frac{15}{5+15} 0.107 = 10\%$$

These calculations of WACC testify that the benefit of employment of more & more debt in the capital structure is off set by the increase in equity capitalization rate ke.

- Q.5.** EBIT of a firm is Rs. 2,10,000. The equity capitalization rate is 16%. The value of 12% Debt is Rs. 3,00,000. Find out the value of firm using NOI approach if the tax rate is 30%.
- Q.6.** From the following, determine the value of firm using (a) Net Income approach and (b) Net operating income approach :

	<i>Firm P</i>	<i>Firm Q</i>
EBIT	Rs. 2,25,000	Rs. 2,25,000
15% Loan	Rs. 75,000	---
K <sub>e</sub>	20%	20%
Corporate tax	50%	50%

- Q.7.** Company X and Company Y are in same risk class, and are identical in every manner except that company X uses debt while company Y does not.
- The levered firm has Rs. 9,00,000 debentures, carrying 10% rate of interest. Both the firms earn 20% before interest and tax on their total assets of Rs. 15,00,000. Assuming tax rate of 50% and equity capitalization rate of 15%, you are required to
- Compute the value of firms using NI approach.
  - Compute the value of firms using NOI approach.

#### Traditional Approach → A Practical View Point

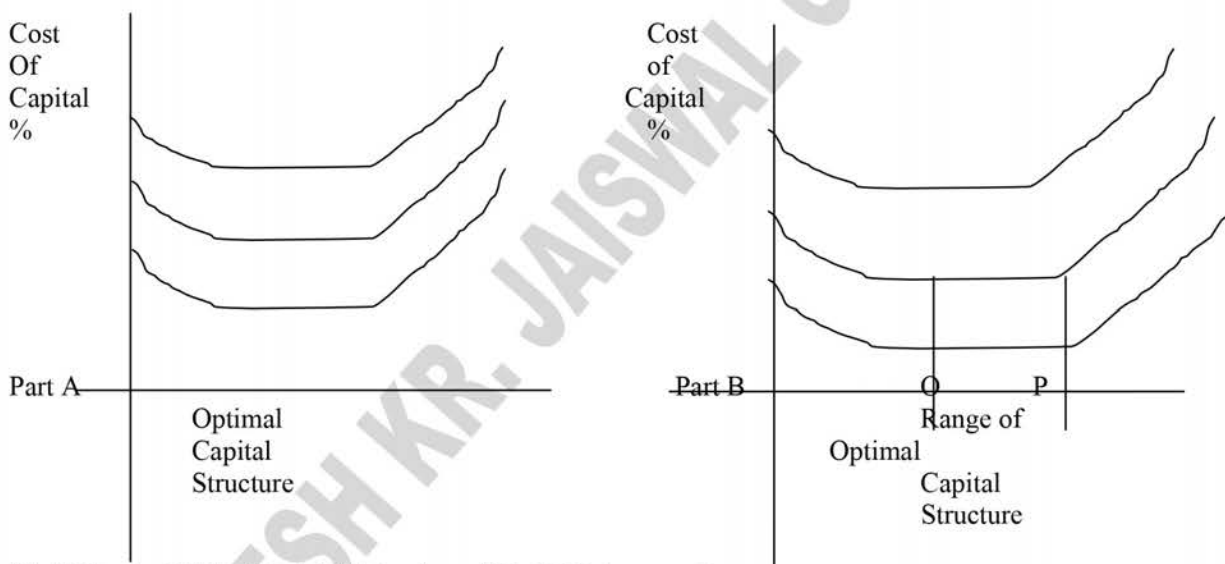
As per the traditional approach a firm should make a judicious use of both the debt & the equity to achieve a capital structure which may be called the optimal capital structure. At this capital structure, the overall cost of capital, WACC of the firm will be Minimum & the value of the firm Maximum. The traditional view point states that the value of the firm increases with increase in financial leverage but up to certain limit only. Beyond this limit, the increase in financial leverage will increase its WACC also & the value of the firm will decline.

**Example:** ABC Ltd. having an EBIT of ₹ 1,50,000 is contemplating to redeem a part of capital by introducing the debt financing.

Presently, it is a 100% equity firm with equity capitalization rate  $k_e$  of 16%. The firm is to redeem the capital by introducing debt financing upto ₹ 3,00,000 i.e. 30% of total funds or upto ₹ 5,00,000 i.e. 50% of total funds. It is expected that for the debt financing upto 30%, the rate of interest will be 10% & the  $k_e$  will increase to 17%. However, if the firm opts for 50% debt financing, then interest will be payable at the rate of 12% &  $k_e$  will be 20%, find out the value of the firm & its WACC under different level of debt financing.

	0% debt	30% debt	50% debt
Total debt-----	3,00,000	5,00,000	
Rate of interest	-----	10%	12%
EBIT (₹) 1,50,000	1,50,000	1,50,000	
Less interest	-----	30,000	60,000
Profit before tax	1,50,000	1,20,000	90,000
Equity capital rate $k_e$	0.16	0.17	0.20
Value of equity	9,37,500	7,05,882	4,50,000
Total value	9,37,500	10,05,882	9,50,000
WACC = EBIT/Total value	0.16	0.149	0.158

The traditional view point has been shown in figure



### Modigliani – Miller Model: Extension of the NOI Approach

The MM Model argues that if two firms are alike in all respects except that they differ in respect of their financing pattern to their market value, then the investors will develop a tendency to sell the shares of the over valued firm (creating a selling pressure) & to buy the shares of the under valued firm (creating a demand pressure). This buying & selling pressure & will continue till the firms have same market values.

Let's consider an example

10% debt of 30,00,000

	Lev & Co	U Lev & Co
EBIT	10,00,000	10,00,000
Less interest	3,00,000	-----
Net profit	7,00,000	10,00,000
Equity capitalization rate	0.20	0.20
Value of equity	35,00,000	50,00,000
Value of debt	30,00,000	-----
Total value (V)	65,00,000	50,00,000
WACC ( $k_o$ ) = EBIT/V	15.38%	20%
	↓ Operative	↓ Under value

**The Arbitrage Process: -**

Here selling 10% equity share of lev & co receiving 3,50,000 & buying 10% shares of Ulev & Co. in ₹ 5,00,000.

To purchase artificial debt is taken @ 10% amount equal to ₹ 3,00,000

Total funds requirement to funds = 5,00,000

Total available funds = 6,50,000

Extra funds which is used to earn extra 1,50,000

Earning of U leve & Co. 1,00,000

less interest paid 10% of 3,00,000 30,000

Balance Amount 70,000

Which is equal to 10% earning of levered firm but extra available funds 1,50,000 by which extra can earn.

MM Model argues that this opportunity to earn extra income through arbitrage process will attract. So many investors. The gradual increase in sales of the shares of the levered firm, IEV & Co, will push its prices down & the tendency to purchase the shares of the unlevered firm, Ule & Co., will drive its prices UP. These selling & purchasing pressure will continue until the market value of the two firms are equal. At this stage, the value of the levered & unlevered firm & so their cost of capital are same; & thus the overall cost of capital,  $k_o$  is independent of the financial leverage.

$$V_o = \frac{EBIT(1 - T)}{K_o}$$

$$V_L = V_o + \text{PV of Interest tax shield}$$

$$V_L = V_o + \text{Debt} \times t$$

$$V_L = \text{Value of the levered firm}$$

$$V_o = \text{Value of the unlevered firm}$$

$$\text{Debt} = \text{Total debt raised by levered firm}$$

$$t = \text{tax rate}$$

**Q.1.**

[2006 Dec] Two companies – P Ltd. and Q Ltd. belong to the equivalent risk group. The two companies are identical in every respect except that Q Ltd. is levered, while P Ltd. is

unlevered. The outstanding amount of debt of the levered company is ₹6,00,000 in 10% debentures. The other information for the two companies are as follows:

	P Ltd.	Q Ltd.
Net operating income (EBIT) (₹)	1,50,000	1,50,000
Interest (₹) 10% of 6,00,000	-----	60,000
Earnings to equity – holders (₹)	1,50,000	90,000
Equity capitalization rate, $k_e$	0.15	0.20
Market value of equity (₹)	10,00,000	4,50,000
Market value of debt (₹)	-----	6,00,000
Total value of firm (₹)	10,00,000	10,50,000
Overall capitalization rate, $k_o = EBIT/V$	15.0%	14.3%
Debt – equity ratio	0	1.33

An investor owns 5% equity shares of Q Ltd. Show the process and the amount by which he could reduce his outlay through use of the arbitrage process. Is there any limit to the ‘process’?

**Solution**

Company	P Ltd.	Q Ltd.
Debt capital @ 10%		6,00,000



EBIT	1,50,000	1,50,000
Less: interest		60,000
EBT	1,50,000	90,000
$K_e$ = cost of equity	15%	20%
Value of equity	$=1,50,000/0.15=10,00,000$	$90,000/0.20=4,50,000$
Total value of firm(D+E )	10,00,000	10,50,000

**Arbitrage process:**

Cash receive due to sale of 5% stock of co.Q = 5% of ₹ 4,50,000 = ₹22,500

Artificial debt raise, 5% of ₹6,00,000 30,000

Total cash available 52,500

Cash required to purchase 5% stock of co. P= 5% of 10,00,000 50,000

Surplus cash which can be used for investment in opportunity = 52,500 - 50,000 = 2500

**Calculation of earning of 5% stock holder of co.Q & co.P**

	Company P	company Q
Earning of 5% stock holder	7500	4500
Interest paid	3000	---
Net income	4500	4500

**Q.2. [2005 June]** Following is the data relating to Azad Ltd. and Bharat Ltd. belonging to the same risk class:

	Azad Ltd.	Bharat Ltd.
No. of equity shares	9,00,000	1,50,000
Market price per share (₹)	15	9
6% Debentures (₹)	8,00,000	-----
Profit before interest (₹)	2,00,000	2,00,000
Dividend payout ratio		100%

Explain how under the MM approach, an investor holding 10% shares in Azad Ltd. will be better off in switching his holding to Bharat Ltd.

**Q.3. [June 2012]** Ruta Max Ltd. and Buta Max Ltd. operate in the same risk class and are identical in all respect except that Ruta Max Ltd. uses debt financing while Buta Max Ltd. does not opt for debt financing.

Ruta Max Ltd. has 25,00,000 debentures carrying coupon rate of 10%. Both the companies earn 20% profit before interest and taxes on their total assets of ₹50 lakh. Assume perfect capital markets and rational investors and so on. The capitalisation rate for an all equity company is 15%. The corporate tax rate is 30%.

You are required to compute the value of both companies according to net income (NI) and net operating income (NOI) approach.

Ans.

**Valuation under Net Income approach**

	Ruta Max Ltd.	Buta Max Ltd.
$EBIT = \frac{20}{100} \times 50,00,000$	10,00,000	10,00,000
Less Interest = $\frac{10}{100} \times 25,00,000$	2,50,000	
EBT	7,50,000	10,00,000
Less Tax 30%	2,25,000	3,00,000
EAT = Earning per equity	5,25,000	7,00,000
Cost of equity = $K_e$	15%	15%
Market value of equity	$= \frac{5,25,000}{0.15} = 35,00,000$	$= \frac{7,00,000}{0.15} = 46,66,666.67$
Debt Capital	25,00,000	----
Total Market Value of firm	60,00,000	46,66,666.67

**Valuation under Net Operating Income Approach**

$$\text{Value of Buta Max Ltd.} = \frac{10,00,000(1-0.30)}{0.15} = ₹ 46,66,666.67$$

$$\text{Value of Ruta Max Ltd.} = 46,66,666.67 + 25,00,000 \times 0.3 = 46,66,666.67 + 7,50,000 = ₹ 54,16,666.67$$

- Q.4.** Companies U and L are equal in all respect except that U is unlevered and L is levered. Company L has debentures of Rs. 20,00,000 carrying interest @ 8%. Assume (a) tax rate is 50%, (b) EBIT = Rs. 6,00,000 and (c)  $k_e = 10\%$ , what would be the value of each firm according to MM approach.

Suppose the present market value of U and L is Rs. 25,00,000 and Rs. 45,00,000 respectively, how the equilibrium is to be achieved ?

- Q.5.** A company is expecting annual EBIT of Rs. 3,00,000. The company presently raised its entire fund requirements of Rs. 20 lakhs by issue of equity shares with equity capitalization rate of 16%. The company is now contemplating to redeem a part of capital by introducing debt-financing. The firm has two options – to raise debt to the extent of 30% or 50% of total funds. It is expected that for debt financing upto 30%, the rate of interest will be 10% and equity capitalization rate is expected to increase to 17%. However, if the company opts for 50% debt, the interest rate will be 12% and equity capitalization rate will be 20%.

You are required to compute the value of the company and its overall cost of capital under different situations.

- Q.6.** A company's current EBIT are Rs. 4,00,000. The firm currently has 10% debt of Rs. 15,00,000. The equity capitalization rate is 16%.
- Determine the value of the firm.
  - Determine the overall cost of capital and both types of leverage ratios, i.e. (a) Debt/Equity and (b) Debt/capital employed.
  - It is considered to reduce the leverage by Rs. 5,00,000 by issuing new equity shares. The cost of equity capital is to be reduced to 14%. Would you recommend the proposed action.

- Q.7.** The following is the data regarding two companies 'X' and 'Y' belonging to same risk equivalent risk class :

	Company X	Company Y
No. of ordinary shares	90,000	1,50,000
Market price per share	Rs. 1.20	Rs. 1
6% Debentures	Rs. 60,000	---
Profit before interest	Rs. 18,000	Rs. 18,000

All profits after debenture interest are distributed as dividends.

Explain how under Modigliani and Miller approach, an investor holding 10% of shares in company 'X' will be better off in switching his holding to company Y.



**MCQ QUESTIONS WITH ANSWER**

1. In order to design an optimal capital structure, a company should strive for:  
(a) Maximum Debt,  
(b) Minimum Debt,  
(c) Minimum WACC,  
(d) Minimum Cost of Equity.
2. Capital structure of a firm influences the:  
(a) Risk of the firm,  
(b) Return of the Equity Shareholder,  
(c) Risk but not return,  
(d) Both (a) and (b).
3. Which of the following is not considered while designing the capital structure?  
(a) Size of the company,  
(b) Tax rate,  
(c) Location of the plant,  
(d) Dilution of control.
4. Which of the following is not relevant for optimal capital structure?  
(a) Flexibility,  
(b) Solvency,  
(c) Liquidity,  
(d) Control.
5. Financial Structure refers to  
(a) All financial resources,  
(b) Short-term funds,  
(c) Long-term funds,  
(d) None of these.
6. An optimal capital structure is one when the MP of the equity share is :  
(a) Zero,  
(b) Maximum,  
(c) Minimum,  
(d) Moderate.
7. Agency cost arises due to:  
(a) Increase in Cost of Production,  
(b) Hiring more employees,  
(c) Increase in Debt,  
(d) Sales decline.
8. Which of the following is not affected by capital structure?  
(a) Total tax liability,  
(b) Return on Equity,  
(c) Operating Profit,  
(d) Earnings Per Share.
9. While increasing debt proportion in the capital structure, which one of the following should be considered?  
(a) Cash flow position,

- (b) Operating profits,  
(c) Financial risk,  
(d) All of the above.
10. Which of the following may be ignored while designing a capital structure?  
(a) Profitability,  
(b) Flexibility,  
(c) Control Philosophy,  
(d) Political Stability.
11. Maximum amount of Debt, a firm can comfortably service is known as :  
(a) Debt-service Coverage,  
(b) Debt capacity,  
(c) Interest charge,  
(d) Debt Value.
12. Cash flow required during a period to meet the interest and repayment commitments is known as:  
(a) Debt capacity,  
(b) Interest Coverage,  
(c) Debt-service Coverage,  
(d) Market Value of Debt.
13. In Pecking Order Theory, the first priority is given to:  
(a) Fresh Equity,  
(b) Fresh Loan,  
(c) Mix of Debt & Equity,  
(d) Retained Earnings.
14. Which of the following is true for Net Income Approach?  
(a) Higher Equity is better,  
(b) Higher Debt is better,  
(c) Debt Ratio is irrelevant,  
(d) None of the above.
15. In case of Net Income Approach, the Cost of equity is:  
(a) Constant  
(b) Increasing  
(c) Decreasing  
(d) None of the above.
16. In case of Net Income Approach, when the debt proportion is increased, the cost of debt:  
(a) Increases  
(b) Decreases,  
(c) Constant  
(d) None of the above.
17. Which of the following is true of Net Income Approach?  
(a)  $V_F = V_E + V_D$   
(b)  $V_E = V_F + V_D$   
(c)  $V_D = V_F + V_E$   
(d)  $V_F = V_E - V_E$

18. Net Operating Income Approach, which one of the following is constant?

- (a) Cost of Equity
- (b) Cost of Debt
- (c) WACC &  $k_d$
- (d)  $K_e$  and  $K_d$

19. NOI Approach advocates that the degree of debt financing is:

- (a) Relevant
- (b) May be relevant
- (c) Irrelevant
- (d) May be irrelevant.

20. 'Judicious use of leverage' is suggested by:

- (a) Net Income Approach
- (b) Net Operating Income Approach
- (c) Traditional Approach
- (d) All of the above.

21. Which one is true for Net Operating Income Approach?

- (a)  $V_D = V_F - V_E$
- (b)  $V_E = V_F + V_D$
- (c)  $V_E = V_F - V_D$
- (d)  $V_D = V_F + V_E$

22. In the Traditional Approach, which one of the following remains constant?

- (a) Cost of Equity
- (b) Cost of Debt
- (c) WACC
- (d) None of the above.

23. In MM-Model, irrelevance of capital structure is based on:

- (a) Cost of Debt and Equity
- (b) Arbitrage Process
- (c) Decreasing  $k_0$
- (d) All of the above.

24. 'That there is no corporate tax' is assumed by:

- (a) Net Income Approach
- (b) Net Operating Income Approach
- (c) Traditional Approach
- (d) All of these.

25. 'That personal leverage can replace corporate leverage' is assumed by:

- (a) Traditional Approach
- (b) MM Model
- (c) Net Income Approach



(d) Net Operating Income Approach.

26. Which of the following argues that the value of levered firm is higher than that of the unlevered firm?

- (a) Net Income Approach
- (b) Net Operating Income Approach
- (c) MM Model with taxes
- (d) Both (a) and (c).

27. In Traditional Approach, which one is correct?

- (a)  $k_e$  rises constantly
- (b)  $k_d$  decreases constantly
- (c)  $k_0$  decreases constantly
- (d) None of the above.

28. Which of the following assumes constant  $k_d$  and  $k_e$ ?

- (a) Net Income Approach
- (b) Net Operating Income Approach
- (c) Traditional Approach
- (d) MM Model.

29. Which of the following is true?

- (a) Under Traditional Approach, overall cost of capital remains same
- (b) Under NI Approach, overall cost of capital remains same
- (c) Under NOI Approach, overall cost of capital remains same
- (d) None of the above.

30. The Traditional Approach to Value of the firm m that:

- (a) There is no optimal capital structure
- (b) Value can be increased by judicious use of leverage
- (c) Cost of Capital and Capital structure are m dent
- (d) Risk of the firm is independent of capital structure

31. A firm has EBIT of Rs. 50,000. Market value of debt is Rs. 80,000 and overall capitalization rate is 20%. Market value of firm under NOI Approach is:

- (a) Rs. 2,50,000
- (b) Rs. 1,70,000
- (c) Rs. 30,000
- (d) Rs. 1,30,000.

32. Which of the following is incorrect for NOI?

- (a)  $k_0$  is constant
- (b)  $k_d$  is constant
- (c)  $k_e$  is constant
- (d)  $k_d$  &  $k_0$  are constant.

33. Which of the following is incorrect for value of the firm?

- (a) In the initial proposition, MM Model argues that value is independent of the financing mix.
- (b) Total value of levered and unlevered firms is otherwise arbitrage will take place.

(c) Total value incorporates borrowings by firm but excludes personal borrowing.

(d) Total value does not change because underlying does not change with financing mix.

34. Which of the following appearing in the balance! generates tax advantage and hence affects the c, structure decision ?

(a) Reserves and Surplus

(b) Long-term debt

(c) Preference Share Capital

(d) Equity Share Capital.

35. In MM Model with taxes, where 'r' is the interest rate, 'D' is the total debt and 't' is tax rate, then present valued shields would be:

(a)  $r \times D \times t$

(b)  $r \times D$

(c)  $D \times t$

(d)  $(D \times r) / (1 - t)$ .

[Answers : 1. (c), 2. (d), 3. (c), 4. (b), 5. (a), 6. (b), 7. (c), 8. (c), 9. (d), 10. (d), 11. (b), 12. (c), 13. (d), 14. (b), 15. (a), 16. (c), 17. (a), 18. (c), 19. (c), 20. (c), 21. (c), 22. (d) 23. (b), 24. (d), 25. (b), 26. (d), 27. (d), 28. (a), 29. (c), 30. (b), 31(b), 32. (c), 33. (d), 34. (b), 35. (c)]

## 7. DIVIDEND POLICY

There are three major decisions are taken by financial manger. (i) Investment Decision (ii) Financing Decision (iii) Dividend Decision. The central issue in the dividend decision is to take a call on how much of the profits are to be retained for future investments and how much are to be distributed. Also crucial is whether this would affect the value of the firm.

### Factors determining the dividend policy:

Dividend policy means how the decision relating to the dividend be taken whether there should be a stable pattern of dividends over the years or whether the dividend decision is taken every year irrespective of previous year's decision. The factors affecting the dividend policy of a company are as follows:

- (i) **Liquidity:** In order to pay dividends, a company will require access to cash. Even very profitable companies might sometimes have difficulty in paying dividends if resources are tied up in other forms of assets.
- (ii) **Opportunities for Reinvestment and Growth:** If a company has a high growth potential for itself and, requires a large amount of funds for financing growth should declare lower dividends to conserve resources and maintain its debt equity ratio at a proper level. High dividend may be declared if the company has no growth potential planning in hand.
- (iii) **Control:** The use of retained earnings to finance new projects preserves the company's ownership and control. This can be advantageous in firms where the present disposition of shareholding is of importance.
- (iv) **Legal considerations:** The legal provision lays down boundaries within which a company can declare dividends. They describe how the dividend be declared, what should be reserve transfer before the declaration, what should be maximum dividend in case of losses and time period in which the distribution of dividend takes place.
- (v) **Effect on Market prices:** The market price of the share is the function of many factors like mass psychology, economies and financial management, etc. And dividend is one of them. Walter has tried to put a relationship between the market price of the share and present dividend decision and the internal profitability of retained earnings. In theory, the market price is considered to be the present value of the dividend. So while deciding the dividend, the effect of the decision on the market price is also considered.
- (vi) **Effect of Inflation:** The dividend is declared after making the provision for the depreciation and depreciation is charged on the historical cost of assets. In the inflationary condition, the traditional rate of the depreciation does not provide sufficient fund for replacing the assets. So rate of the inflation is watched so that adequate provision for the depreciation may be made and dividend is declared after the provision.
- (vii) **Tax considerations:** So the tax status of the major shareholders also affects the dividend decision sometimes. Such shareholders may be interested in taking their return from the investment in the form of capital gains rather than in the form of dividends.
- (viii) **Others** such as dividend policies adopted by units similarly placed in the industry, management attitude on dilution of existing control over the shares, fear of being branded as incompetent or inefficient, conservative policy vs non – aggressive one.

**Q. 1. [CS June 2006]** What are the main considerations/determinants/factors of dividend policy in a corporate enterprise?

**Ans.** Considerations/determinants/factors affecting the dividend policy are as follows:-

- 1) Legal Considerations



- Section 205 of the Companies Act, 1956 deals with the provisions relating to dividend.
- Due consideration to dividend tax liability also needs to be kept in mind.
- 2) Opportunities available for utilization of funds
  - The decisions regarding dividend payout ratio and retention ratio depends upon the opportunities available at the disposal of company.
  - If it has some projects where such financial sources can be deployed which can consequently fetch high return it will declare low dividend.
  - However, if a company has no immediate requirement for funds, it may decide to declare high dividends.
- 3) Quantum of cash available
  - Before declaring dividend cash availability needs to be ensured.
  - Since declaration and payment of dividend leads to outflow of cash, liquidity position needs to be well analyzed.
- 4) Stability of earning
  - A company with stable income/earning can have high dividend payout ratio while an organization with instable earnings cannot do so.
  - Thus, stability of earnings is directly proportional to the dividend payout ratio and consequently with dividend also.
- 5) Impact on market price
  - Dividend decision has a direct impact on the market price on the shares market price as the latter is nothing else but the present value of future dividend.

**Q. 2. [CS June 2001]** For each of the companies described below, would you expect it to have a medium, high or low dividend payout ratio? Explain why./

1. A company with a large proportion of inside ownership, all of whom are high-income individuals; /
2. A growth company with an abundance of good investment opportunities; /
3. A company experiencing ordinary growth that has high liquidity and much unused borrowing capacity; and
4. A company with volatile earnings and high business risk.

**Ans.**

1. Low dividend payout ratio since big shareholders & institutional investors are interested in realizing c returns through capital gains.
2. Low dividend payout ratio since it can invest surplus funds in those projects where there are good opportunities.
3. High dividend payout ratio since there exist surplus funds.
4. Low dividend payout ratio since there is volatility & uncertainty in the business.

**Q. 3. [CS June 2002]** What is 'stable dividend policy'? Do you recommend a stable dividend policy? Explain the reasons for your answer.

**Ans.**

- Stable means something which lacks fluctuation.
- Fluctuations i.e. abruptly increase or decrease in price may cause adverse effect.
- Efforts should be made to have a stable dividend policy.
  - Stable payout ratio (say 60% payout)
  - Stable amount of dividend (say Rs. 2/- share or 20%)
  - Stable low dividend + an extra premium in case of high profits.
- A stable dividend policy is the one most recommended.
- It is liked by investors since it lack fluctuations.
- It is a reliable policy and generates trust in the company.
- It boosts the confidence of the investor as it does away with the element of uncertainty and unreliability.

- Abruptly low or high payment of dividend on the other hand ushers the confidence of the investors.

**Q. 4. [CS June 2007]** “Large shareholders are not interested in dividends.” Comment.

**Ans.**

- Shareholders can be classified as:-
  - Large scale or Institutional investors.
  - Small scale investors or retail investors.
- Small investors are the one who invest less amount of money and are interested in dividend.
- Large investors on the other hand are not much concerned or interested in dividends.
- The concern of large investors in capital appreciation.
- They show keen interest in growth the company.
- Growth in company leads to increase in wealth of such shareholder.
- Their interest is in capital appreciation and not dividend also because of the fact that cash dividend leads to increase in levy of taxes.

**Q. 5. [CS June 2007]** “In an uncertain world in which verbal statements can be ignored or misinterpreted, dividend action does provide a clear-cut means of ‘making a statement’ that speaks louder than thousand words.” Explain.

**Ans.**

- It is true to say that in an uncertain world in which verbal statements can be ignored or misinterpreted, dividend action does provide a clear out means of making a statement that speaks louder than thousand words.
- Section 205 of the Companies Act 1956 provides that dividend need to be paid within a period of 30 days from that of declaration.
- Thus, it becomes binding on the company to pay it within a period of 30 days, even though oral announcement has taken place.
- Also the above lines reveal the fact that performance of the company gets depicted through its dividend action.

**Q. 6.** “Dividend policy is strictly a financing decision and payment of cash dividend is a passive residual.” Comment.

**Ans.**

- As per the Residual theory of Dividend policy, dividend policy is strictly a financing decision and payment of cash dividend is a passive residual.
- Dividend decision constitutes one the important decisions which a finance manager has to take.
- Dividend payout ratio and retention ratio are determined keeping in mind the investment avenues available and expected profitability is such projects.
- If good investment opportunities exist; the dividend payout will be low, whereas if no such avenues exist, high dividend payout will be there.

**Q. 7.** “Stability in payment of dividends has a marked bearing on the market price of the shares of a “corporate firm.” Explain the statement.

**Ans.**

- The dividend policy determines the division of earnings between the dividend distribution and reinvestment in the firm.
- The distribution of earnings between the two depends upon the need of funds internally for reinvestment purposes and expectations of the shareholders.
- An increase in the dividend leads to a stock price increase while a decreased in dividend results into a stock price decline.
- An increase in dividend payout is considered by the investors as permanent or long term increase in firm’s expected earnings and considered as good news resulting in an increase in stock price.



- Fluctuating dividend policy will not create the desired impact over the stock price.
- Hence, it is said that stability in payment of dividends has a marked bearing on the market price of the shares of a corporate firm.

**Q. 8. [2008 Dec.]** Comment on the inspite of many advantages, the stable dividend policy suffers from certain limitations.

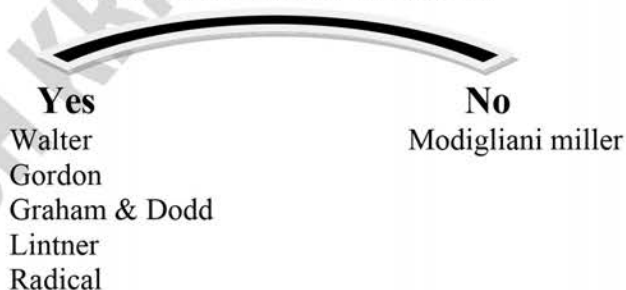
**Ans.**

- However, stable dividend policy may prove out a hindrance in case of loss or insufficient profit or stringent cash availability.
- Also, in case of high earning following the redundant but stable rate of dividend may prove further dangerous since in such a cash company may not cope with the expectation of the investors.

### Date of Dividend

- (i) The date when dividend is announced is called the declaration date.
- (ii) The date on which the register of members is closed to find out the names of the members who will be eligible to receive dividends is called the record date. The company fixes this date.
- (iii) The date upto which shares can be bought in the stock market and be eligible to receive dividend is called the last cum-dividend date. This date is fixed by the stock exchange.
- (iv) The date from which shares can be bought in the stock market without being eligible for dividend is called the ex-dividend date. On the ex-dividend date, the market price of the share will fall by the amount of dividend per share. The ex-dividend date is ahead of the record date fixed by the company in order to give the buyer the time to register his share with the company so as to be eligible for dividend.
- (v) The date on which dividend is actually paid out is called the payment date.

### Relevance of Dividend



#### 1. WALTER'S MODEL:

The Walter Model propounded in 1963 by James E Walter champions the cause of relevance and bases its arguments on the following assumptions.

#### Assumptions

- (a) The firm is an all equity firm
- (b) The firm will use only retained earnings to finance its investments
- (c) The rate of return on investment is constant and so for is the cost of equity. This means that with every additional investment, business risk remains unaltered.
- (d) All earnings are either distributed or retained internally
- (e) The firm ha an infinite life
- (f) Earnings and dividends don't change

#### Postulation

Walter argues that the market price of a share is the sum of the present value of the following two cash flow streams:



- Infinite stream of constant future dividends
- Infinite stream of capital gains (Retained earnings)

The logical build up to the formula runs thus:

- The present value of infinite stream of constant dividends is the present value of a perpetuity and is hence  $D/K_e$ .
- When a firm retains a perpetual sum of (EPS-DPS) and invests it at “r” rate of return, it earns  $r \times (E-D)$ . Its present value will be  $r/K_e \times (E-D)$ . If the retained earnings occur every year, we would have an infinite number of such retentions. The present value of an infinite number of such retentions will be equal to  $[r/K_e \times (E-D)]/K_e$ .

Thus the value of a share is the present value of all dividends plus the present value of all retentions (a k a capital gains).

$$P_0 = \frac{D}{K_e} + \frac{\frac{r}{K_e}(E-D)}{K_e}$$

Where

$P_0$  = Current market price

$E$  = Earnings per Share

$K_e$  = Cost of Equity

$D$  = Dividend per Share

$r$  = Rate of Return

Walter classified all the firms into **three categories:-**

- Growth Firm
- Declining Firm.
- Normal or Constant Firm

#### **Growth Firm**

If  $r > K_e$ , Higher the Retention Ratio [i.e. zero Dividend Pay-out Ratio] Higher the Market Price per Share.

#### **Declining Firm**

If  $r < K_e$ , Lower the Retention Ratio [i.e. 100% Dividend Pay-out Ratio] Higher the Market Price per Share.

#### **Constant Firm**

If  $r = K_e$ , any Retention Ratio or any dividend payout ratio will not affect market price of share. MPS will remain same Under any Dividend Payout or Retention Ratio.

#### **Criticism**

The Walter's model has been criticized on the following grounds:

- No external financing:** By assuming that the company shall not resort to borrowing, this model may result in a sub-optimal investment decision. Suppose funds can be borrowed at 10% and equity costs 15%. If the rate of return on investment opportunities is 12%, this model passes up a good investment just because the firm does not borrow money.

## **2. GORDON'S MODEL:**

The Gordon's model propounded in 1962 by Myron Gordon bases its arguments on the following assumptions.

#### **Assumptions:**

- The firm is an all equity firm.
- The firm uses only retained earnings to finance its investments.
- The rate of return on the firm's investment is constant.
- The cost of equity is constant.

- (e) The firm has an infinite life.
- (f) The retention ratio is constant.
- (g) The growth ratio is constant.
- (h)  $K_e$  is greater than growth rate where growth is the product of retention ratio and return on equity.
- (i) Taxes are absent.

### Postulation

Gordon argues that the market price of a share is the present value of future dividends. Since under Gordon's assumption, dividends are assumed to grow at a uniform rate forever, the Gordon's model suggests that the market price of a share is the present value of a growing perpetuity.

$$P_0 = \left[ \frac{D_1}{K_e - g} \right]$$

Where

$D_1$  = DPS next year

$g$  = Growth rate in dividends

$K_e$  = Cost of equity

$P_0$  = Current market price

### Criticism

The Gordon's model suffers from the same imperfections as the Walter's model. The assumptions relating to 100% equity funding does not lead to maximization of wealth. The assumptions about constant rate of return and constant opportunity cost are suspect.

3. **Modigliani and Miller (MM) Hypothesis:** Modigliani and Miller Hypothesis is in support of the irrelevance of dividends. Modigliani and Miller argue that firm's dividend policy has no effect on its value of assets and is, therefore of no consequence i.e. dividends are irrelevant to shareholders wealth. According to them, 'Under conditions of perfect capital markets, rational investors, absence of tax discrimination between dividend income and capital appreciation, given the firm's investment policy, its dividend policy may have no influence on the market price of shares'.

### Assumptions:

- The firm operates in perfect capital markets in which all investors are rational and information is freely available to all.
- There are no taxes. Alternatively, there are no differences in the tax rates applicable to capital gains and dividends.
- The firm has a fixed investment policy.
- There are no floatation or transaction costs.
- Risk of uncertainty does not exist. Investors are able to forecast future prices and dividends with certainty, and one discount rate is appropriate for all securities and all time periods. Thus,  $r = k = k_t$  for all  $t$ .

MM Hypothesis is primarily based on the arbitrage argument. Through the arbitrage process, the MM Hypothesis discusses how the value of the firm remains same whether the firm pays dividend or not. It argues that the value depends on the earnings of the firm and is unaffected by the pattern of income distribution. Suppose, a firm which pays dividends will have to raise funds externally to finance its investment plans, MM's argument, that dividend policy does not affect the wealth of the shareholders, implies that when the firm pays dividends, its advantage is offset by external financing. This means that the terminal value of the share declines when dividends are paid. Thus, the wealth of the shareholders - dividends plus terminal price - remains unchanged. As a result, the present value per share after dividends and external financing is equal to the present value per share before the payments of dividends. Thus, the shareholders are indifferent between payment of dividends and retention of earnings.



Market price of a share after dividend declared on the basis of MM model is shown below:

$$P_0 = \frac{P_1 + D_1}{1 + K_e}$$

Where,

$P_0$  = The prevailing market price of a share

$K_e$  = The cost of equity capital

$D_1$  = Dividend to be received at the end of period one

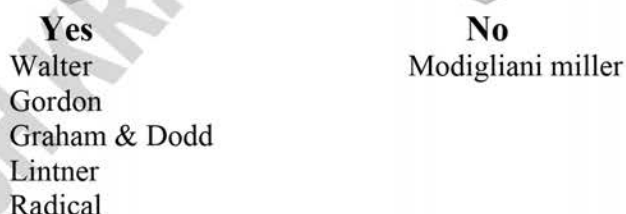
$P_1$  = Market price of a share at the end of period one.

- Q.1a.** On the 1<sup>st</sup> of November the board of directors of Zee Software announced a dividend payable on 1<sup>st</sup> of December to shareholders whose name appears in the register of members as at 20<sup>th</sup> November. The cheque will be paid out on 1<sup>st</sup> December and the shares go ex-dividend at the stock market on 17<sup>th</sup> November. Identify the various activities with the dates mentioned. If the share price ₹75 and dividend declare is ₹5 per share what will be the price on 17<sup>th</sup> November? What will be the price on other dates, other things remaining the same?

**Ans.**

Date	Activity	Share Price	
01 <sup>st</sup> November	Declaration date	75	
16 <sup>th</sup> November	Last cum-dividend-date	75	Until 16 <sup>th</sup> November the share
17 <sup>th</sup> November	Ex-dividend date	70	price will be ₹75, on the 17 <sup>th</sup>
20 <sup>th</sup> November	Record date	70	November it will fall to ₹70.
01 <sup>st</sup> December	Payment date	70	

### Relevance of Dividend



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##### Assumptions

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- (k) The firm has an infinite life
- (l) Earnings and dividends don't change

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Walter argues that the market price of a share is the sum of the present value of the following two cash flow streams:

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Thus the value of a share is the present value of all dividends plus the present value of all retentions (*a k a* capital gains).

$$P_0 = \frac{D}{K_e} + \frac{\frac{r}{K_e}(E-D)}{K_e}$$

Where

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#### **Criticism**

The Walter's model has been criticized on the following grounds:

- (b) **No external financing:** By assuming that the company shall not resort to borrowing, this model may result in a sub-optimal investment decision. Suppose funds can be borrowed at 10% and equity costs 15%. If the rate of return on investment opportunities is 12%, this model passes up a good investment just because the firm does not borrow money.

**Q. 1.** The following information is available in respect of a firm:

Capitalization rate ( $k_e$ ) = 0.10

Earnings per share ( $E$ ) = ₹10

Assumed rate of return on investments ( $r$ ): (i) 15, (ii) 8, and (iii) 10.

Show the effect of dividend policy on the market price of shares, using Walter's Method.

**Q. 2.** The cost of capital and the rate of return on investment of SK Ltd. is 10% and 15% respectively. The company has one million equity shares of ₹10 each outstanding and its earnings per share is ₹5. Calculate the value of the firm in the following situations using Walters model:

- (i) 100% retention,

**Ans. 75M**

(ii) 50% retention; and

Ans. 62.5M

(iii) No retention. Comment on your result.

Ans. 50M

**Q. 3. [Study Mat.]** Following are the details regarding three companies P Ltd., Q Ltd., and R Ltd.:

Details	P Ltd.	Q Ltd.	R Ltd.
Internal rate of return	15%	5%	10%
Cost of equity capital	0%	10%	10%
Earning per share	₹8	₹8	₹8

Calculate the value of an equity share of each of these companies applying Walter's formula when dividend payment ratio (D/P) is (i) 50% (ii) 75% (iii) 25%.

What conclusion do you draw?

**Q. 4.** Determine the market value of shares of the company from the following information as per Walters model;

Earning of the company	₹5,00,000
Dividend paid	₹3,00,000
Number of shares outstanding	1,00,000
Price earnings ratio	8
Rate of return on investment	15%

Are you satisfied with the current dividend policy of the firm? If not, what should be optimal dividend payout ratio?

Ans. Ph Net D/P = 0%

**Q. 5.** From the given information for Alpha & Company you are required to (I) to find out whether the firms dividend pay – out ratio is optimal according to Walters formula. The firm was started a year before with equity capital of ₹40 lakhs.

Earnings of the firm	₹4,00,000
Dividend paid	₹3,20,000
Price earnings ratio	12.5
Number of share	40,000 @ ₹100 each

Will the company change its dividend policy if P/E ratio is 8 instead of 12.5?

**Q. 6.** A company earns ₹10 lacs after tax and pays out 60% of its profits as dividends .The number of shares outstanding is 1 lacs . Price earnings multiple is 6 The company can invest its retained earnings in projects that give its retaining earnings in projects that give it an IRR of 15%

(i) Compute the theoretical market price using Walter's Model ? ₹57.58

(ii) Is the company's pay out practice in sync with maximizing the wealth of the shareholders ? D/P=100%

(iii) If the answer to (ii) above is " NO" what pay –out would you suggest ?

(iv) If the Walter's model very different from the all or nothing approach ? Explain .

## 2. GORDON'S MODEL:

The Gordon's model propounded in 1962 by Myron Gordon bases its arguments on the following assumptions.

### Assumptions:

- The firm is an all equity firm.
- The firm uses only retained earnings to finance its investments.
- The rate of return on the firm's investment is constant.
- The cost of equity is constant.
- The firm has an infinite life.
- The retention ratio is constant.



- (p) The growth ratio is constant.
- (q)  $K_e$  is greater than growth rate where growth is the product of retention ratio and return on equity.
- (r) Taxes are absent.

### Postulation

Gordon argues that the market price of a share is the present value of future dividends. Since under Gordon's assumption, dividends are assumed to grow at a uniform rate forever, the Gordon's model suggests that the market price of a share is the present value of a growing perpetuity.

$$P_0 = \left[ \frac{D_1}{K_e - g} \right]$$

Where

$D_1$  = DPS next year

$K_e$  = Cost of equity

$g$  = Growth rate in dividends

$P_0$  = Current market price

### Criticism

The Gordon's model suffers from the same imperfections as the Walter's model. The assumptions relating to 100% equity funding does not lead to maximization of wealth. The assumptions about constant rate of return and constant opportunity cost are suspect.

- Q. 7.** The following information is available in respect of the rate of return on investment ( $r$ ), the capitalization rate ( $k_e$ ) and earnings per share ( $E$ ) of Hypothetical Ltd.

$r$  = 12 per cent

$E$  = ₹20

Determine the value of its shares, assuming the following:

	D/P= (1 – b)	Retention ratio (b)	$k_e$ (%)
(a)	10	90	20
(b)	20	80	19
(c)	30	70	18
(d)	40	60	17
(e)	50	50	16
(f)	60	40	15
(g)	70	30	14

- Q. 8.** From the following information about XYZ Ltd. you are required to calculate the market price of a share under:

(i) Walter's Model

(ii) Dividend Growth Model

Earnings per share ₹10

Dividend per share ₹6

Cost of capital 15%

Internal Rate of return 20%

Retention ratio 50%

- 3. Modigliani and Miller (MM) Hypothesis:** Modigliani and Miller Hypothesis is in support of the irrelevance of dividends. Modigliani and Miller argue that firm's dividend policy has no effect on its value of assets and is, therefore of no consequence i.e. dividends are irrelevant to shareholders wealth. According to them, 'Under conditions of perfect capital markets, rational investors, absence of tax discrimination between dividend income and



capital appreciation, given the firm's investment policy, its dividend policy may have no influence on the market price of shares'.

**Assumptions:**

- The firm operates in perfect capital markets in which all investors are rational and information is freely available to all.
- There are no taxes. Alternatively, there are no differences in the tax rates applicable to capital gains and dividends.
- The firm has a fixed investment policy.
- There are no floatation or transaction costs.
- Risk of uncertainty does not exist. Investors are able to forecast future prices and dividends with certainty, and one discount rate is appropriate for all securities and all time periods. Thus,  $r = k = k_t$  for all  $t$ .

MM Hypothesis is primarily based on the arbitrage argument. Through the arbitrage process, the MM Hypothesis discusses how the value of the firm remains same whether the firm pays dividend or not. It argues that the value depends on the earnings of the firm and is unaffected by the pattern of income distribution. Suppose, a firm which pays dividends will have to raise funds externally to finance its investment plans, MM's argument, that dividend policy does not affect the wealth of the shareholders, implies that when the firm pays dividends, its advantage is offset by external financing. This means that the terminal value of the share declines when dividends are paid. Thus, the wealth of the shareholders - dividends plus terminal price - remains unchanged. As a result, the present value per share after dividends and external financing is equal to the present value per share before the payments of dividends. Thus, the shareholders are indifferent between payment of dividends and retention of earnings.

Market price of a share after dividend declared on the basis of MM model is shown below:

$$P_0 = \frac{P_1 + D_1}{1 + K_e}$$

Where,

$P_0$  = The prevailing market price of a share

$K_e$  = The cost of equity capital

$D_1$  = Dividend to be received at the end of period one

$P_1$  = Market price of a share at the end of period one.

**Q. 9.** Angle Ltd. belongs to a risk class which the appropriate capitalization rate is 10%. It currently has 1,00,000 shares selling at ₹100 each. The firm is contemplating declaration of a dividend of ₹6 per share at the end of the current fiscal year, which has just begun. Answer the following questions based on Modigliani and Miller Model and assumption of no taxes.

- What will be the price of the share at the end of the year if a dividend is not declared?
- What will be the price if dividend is declared?
- Assuming that the firm pays dividend has net income of ₹10 lakhs and makes new investments of ₹20 lakhs during the period, how many new shares must be issued?
- Is the Modigliani and Miller Model realistic with respect to valuation? What factors might mar its validity?

**Ans.** (i) 110      (ii) 104      (iii) 15385      (iv) 12000000

**Q.10.** A chemical company belongs to a risk class for which the appropriate P/E ratio is 10. It currently has 50,000 equity shares (outstanding) selling at ₹100. The firm is contemplating the declaration of dividend of ₹8 per share at the current fiscal year which has just started. Given the assumptions of Modigliani and Miller, answer the following questions:

- (i) What will be the price of share at the end of the year (a) if dividend is not declared; and (b) it is declared?
- (ii) Assuming that the company pays the dividend, having net income (y) of ₹5,00,000 and makes new investments of ₹10,00,000 during the period, how many new shares must be used?

Ans. (i) 110 (ii) 102

#### 4. Residual Approach:

When new equity is raised floatation costs are involved. This makes new equity costlier than retained earnings. Under the Residual approach, dividends are paid out of profits after making provision for money required to meet upcoming capital expenditure commitments.

**Q.11.** M. Corporation is considering four investment opportunities. The required investment outlays and expected rates of return for these investments are shown below:

The firm's cost of capital is 14%. The investments are to be financed by 40% debt 60% common equity. Internally generated funds obtaining funds totaling ₹7,50,000 are available for reinvestment.

- (a) Which investments should be accepted? According to the residual dividend theory, what amount should be paid out in dividends?
- (b) How would your answer change if the cost of capital were 10% ?

Investment	Investment cost	Internal rates of return
A	₹2,75,000	17.50%
B	3,25,000	15.72%
C	5,50,000	14.25%
D	4,00,000	11.65%

**MCQ QUESTIONS WITH ANSWER**

1. Dividend Payout Ratio is:
  - (a)  $PAT \div \text{Capital}$
  - (b)  $DPS \div EPS$
  - (c)  $\text{Pref. Dividend} \div PAT$
  - (d)  $\text{Pref. Dividend} \div \text{Equity Dividend}$
2. Dividend declared by a company must be paid in:
  - (a) 30 days
  - (b) 32 days
  - (c) 42 days
  - (d) 20 days
3. Dividend Distribution Tax is payable by :
  - (a) Shareholders to Government
  - (b) Shareholders to Company
  - (c) Company to Government
  - (d) Holding to Subsidiary Company
4. Shares of face value of Rs. 10 are 80% paid up. The company declares a dividend of 50%. Amount of dividend per share is :
  - (a) Rs.5
  - (b) Rs. 4
  - (c) Rs.80
  - (d) Rs.50
5. Which of the following generally not result in increase in total dividend liability ?
  - (a) Share-split
  - (b) Right Issue
  - (c) Bonus Issue
  - (d) All of the above
6. Dividends are paid out of:
  - (a) Accumulated Profits
  - (b) Gross Profit
  - (c) Profit after Tax
  - (d) General Reserve
7. In India, if dividend on equity shares is not paid within 30 days, it is transferred to Investors Education Fund in:
  - (a) 2 days
  - (b) 3 days
  - (c) 4 days
  - (d) 7 days
8. Every company should follow :
  - (a) High Dividend Payment
  - (b) Low Dividend Payment
  - (c) Stable Dividend Payment
  - (d) Fixed Dividend Payment
9. 'Constant Dividend Per Share' Policy is considered as:
  - (a) Increasing Dividend Policy
  - (b) Decreasing Dividend Policy
  - (c) Stable Dividend Policy
  - (d) None of the above



10. Which of the following is not a type of dividend payment?  
(a) Bonus Issue  
(b) Right Issue  
(c) Share Split  
(d) Both (b) and (c)
11. Which of the following is an element of dividend policy?  
(a) Production capacity  
(b) Change in Management  
(c) Informational content  
(d) Debt service capacity
12. Stability of dividend policy means that  
(a) Same amount of dividend be paid every year  
(b) Dividends be paid regularly two-three time in a year  
(c) Extra dividend be paid every year  
(d) There need not be much variation in dividend payment over years.
13. Stock split is a form of :  
(a) Dividend Payment  
(b) Bonus issue  
(c) Financial restructuring  
(d) Dividend in kind
14. In stock dividend,  
(a) Authorized capital always increases  
(b) Paid up capital always increases  
(c) Face value per share decreases  
(d) Market price for share decreases
15. Which of the following is not considered in Lintner's Model ?  
(a) Dividend payout ratio  
(b) Current EPS  
(c) Speed of Adjustment  
(d) Preceding year EPS
16. Which of the following is not relevant for dividend payment for a year ?  
(a) Cash flow position  
(b) Profit position  
(c) Paid up capital  
(d) Retained Earnings

[Answers : 1. (b), 2. (b), 3. (c), 4. (b), 5. (a), 6. (c), 7. (d), 8. (c), 9. (c), 10. (c), 11. (c), 12. (d), 13. (c), 14. (d), 15. (d), 16. (d)].

**DIVIDEND DECISION AND VALUATION OF THE FIRM**

1. Walter's Model suggests for 100% DP Ratio when:
  - (a)  $k_e = r$
  - (b)  $k_e < r$
  - (c)  $k_e > r$
  - (d)  $k_e = 0$
2. If a firm has  $k_e < r$ , the Walter's Model suggests for:
  - (a) 0% Payout
  - (b) 100% Payout
  - (c) 50% Payout
  - (d) 25% Payout
3. Walter's Model suggests that a firm can always increase the value of the share by:
  - (a) Increasing Dividend
  - (b) Decreasing Dividend
  - (c) Constant Dividend
  - (d) None of the above
4. 'Bird in hand' argument is given by:
  - (a) Walter's Model
  - (b) Gordon's Model
  - (c) MM Model
  - (d) Residuals Theory
5. Residuals Theory argues that dividend is a:
  - (a) Relevant Decision
  - (b) Active Decision
  - (c) Passive Decision
  - (d) Irrelevant Decision
6. Dividend irrelevance argument of MM Model is based on:
  - (a) Issue of Debentures
  - (b) Issue of Bonus Share
  - (c) Arbitrage
  - (d) Hedging
7. Which of the following is not true for MM Model?
  - (a) Share price goes up if dividend is paid
  - (b) Share price goes down if dividend is not paid
  - (c) Market value is unaffected by Dividend policy
  - (d) All of the above.
8. Which of the following stresses on investor's preference for current dividend than higher future capital gains?
  - (a) Walter's Model
  - (b) Residuals Theory
  - (c) Gordon's Model
  - (d) MM Model.

9. MM Model of Dividend irrelevance uses arbitrage between:
- (a) Dividend and Bonus
  - (b) Dividend and Capital Issue
  - (c) Profit and Investment
  - (d) None of the above
10. If  $k_e = r$ , then under Walter's Model, which of the following is irrelevant?
- (a) Earnings per share
  - (b) Dividend per share
  - (c) DP Ratio
  - (d) None of the above
11. MM Model argues that dividend is irrelevant as
- (a) the value of the firm depends upon earning power
  - (b) the investors buy shares for capital gain
  - (c) dividend is payable after deciding the retained earnings
  - (d) dividend is a small amount
12. Which of the following represents passive dividend policy?
- (a) that dividend is paid as a % of EPS
  - (b) that dividend is paid as a constant amount
  - (c) that dividend is paid after retaining profits for reinvestment
  - (d) all of the above
13. In case of Gordon's Model, the MP for zero payout is zero. It means that:
- (a) Shares are not traded
  - (b) Shares available free of cost
  - (c) Investors are not ready to offer any price
  - (d) None of the above
14. Gordon's Model of dividend relevance is same as :
- (a) No-growth Model of equity valuation
  - (b) Constant growth Model of equity valuation
  - (c) Price-Earning Ratio
  - (d) Inverse of Price Earnings Ratio
15. If ' $r$ ' = ' $k_e$ ', then MP by Walter's Model and Gordon's Model for different payout ratios would be :
- |             |              |
|-------------|--------------|
| (a) Unequal | (b) Zero     |
| (c) Equal   | (d) Negative |
16. Dividend Payout Ratio is
- |                                      |   |
|--------------------------------------|---|
| (a) $PAT \div \text{Capital}$        | (b) $DPS \div EPS$                                      |
| (c) $\text{Pref. Dividend} \div PAT$ | (d) $\text{Pref. Dividend} \div \text{Equity Dividend}$ |
17. Dividend declared by a company must be paid in
- |             |             |
|-------------|-------------|
| (a) 20 days | (b) 30 days |
| (c) 32 days | (d) 42 days |



18. Dividend Distribution Tax is payable by

- (a) Shareholders to Government
- (b) Shareholders to Company
- (c) Company to Government
- (d) Holding to Subsidiary Company

19. Shares of face value of Rs. 10 are 80% paid up. The company declares a dividend of 50%. Amount of dividend per share is

- (a) Rs. 5
- (b) Rs. 4
- (c) Rs. 80
- (d) Rs. 50

20. Which of the following generally not result in increase in total dividend liability ?

- (a) Share-split
- (b) Right Issue
- (c) Bonus Issue
- (d) All of the above

21. Dividends are paid out of

- (a) Accumulated Profits
- (b) Gross Profit
- (c) Profit after Tax
- (d) General Reserve

22. In India, Dividend Distribution tax is paid on

- (a) Equity Share
- (b) Preference Share
- (c) Debenture
- (d) Both (a) and (b)

23. In India, if dividend on equity shares is not paid within 30 days it is transferred to Investors Education Fund in:

- (a) 2 days
- (b) 3 days
- (c) 4 days
- (d) 7 days

24. Every company should follow

- (a) High Dividend Payment
- (b) Low Dividend Payment
- (c) Stable Dividend Payment
- (d) Fixed Dividend Payment

25. 'Constant Dividend Per Share' Policy is considered as:

- (a) Increasing Dividend Policy
- (b) Decreasing Dividend Policy
- (c) Stable Dividend Policy
- (d) None of the above

26. Which of the following is not a type of dividend payment?

- (a) Bonus Issue
- (b) Right Issue
- (c) Share Split
- (d) Both (b) and (c)

27. If the following is an element of dividend policy?

- (a) Production capacity
- (b) Change in Management
- (c) Informational content
- (d) Debt service capacity

28. Stock split is a form of

- (a) Dividend Payment
- (b) Bonus Issue
- (c) Financial restructuring
- (d) Dividend in kind

29. In stock dividend

- (a) Authorized capital always increases (b) Paid up capital always increases  
(c) Face value per share decreases (d) Market price for share decreases

30. Which of the following is not considered in Lintner's Model ?

- (a) Dividend payout ratio (b) Current EPS  
(c) Speed of Adjustment (d) Preceding year EPS

31. Which of the following is not relevant for dividend payment for a year ?

- (a) Cash flow position (b) Profit position  
(c) Paid up capital (d) Retained Earnings

[Answers : 1. (c), 2. (a), 3. (d), 4. (b), 5. (c), 6. (c), 7. (c), 8. (c), 9. (b), 10. (c), 11. (a), 12. (c), 13. (c), 14. (b), 15. (c), 16. (b), 17. (b), 18. (c), 19. (b), 20. (a), 21. (c), 22. (d), 23. (c), 24. (c), 25. (c), 26. (c), 27. (c), 28. (d), 29. (d), 30. (d)].

## VALUATION OF SECURITIES

- Deep Discount Bonds are issued at:
  - Face Value,
  - Maturity Value,
  - Premium to Face Value
  - Discount to Face Value.
- Principal value of a bond is called the
  - Maturity Value,
  - Issue Price,
  - Par Value,
  - Market Price.
- If the required rate of return of a particular bond is less than coupon rate, it is known as :
  - Discount Bond
  - Premium Bond
  - Par Bond
  - Junk Bond.
- Market interest rate and bond price have :
  - Positive relationship
  - Inverse relation
  - No relationship
  - Same relationship
- If a coupon bond is selling at discount, then which of the following is true ?
  - $P_0 < \text{Par}$  and  $\text{YTM} < \text{coupon}$
  - $P_0 < \text{Par}$  and  $\text{YTM} > \text{coupon}$
  - $P_0 > \text{Par}$  and  $\text{YTM} < \text{coupon}$
  - $P_0 > \text{Par}$  and  $\text{YTM} > \text{coupon}$

6. In the formula  $k_e = (D_1/P_0) + g$ ,  $D_1/P_0$  refers to:  
(a) Capital gain yield (b) Dividend yield  
(c) Interest yield (d) None of the above
7. The rate of interest payable on a bond is also called:  
(a) Effective Rate of Interest, (b) Yield to Maturity,  
(c) Coupon Rate, (d) Internal Rate of Return.
8. A long-term bond issued with collateral is called:  
(a) Junk Bond, (b) Treasury Bills,  
(c) Debenture, (d) Preference Share.
9. A company may call the bonds when:  
(a) Interest rates have dropped, (b) Interest rates have increased,  
(c) It is not earning profits, (d) None of the above.
10. Rate of Interest on convertible debenture is generally.....the rate on non-convertible debentures:  
(a) Lower than, (b) Higher than,  
(c) Same as, (d) None of the above.
11. A 16% bond with a face value of Rs. 250 is available for Rs. 200 in the market. They yield on the bond is:  
(a) 16% (b) 20%  
(c) 80% (d) 32%
12. At time to maturity comes closer, than market price of a bond approaches:  
(a) Face Value, (b) Redemption Value,  
(c) Issue Price, (d) Zero Value.
13. Market Price of Bond and Market Rate of Interest have:  
(a) Inverse relationship, (b) Positive relationship,  
(c) No relationship, (d) None of the above.
14. Which of the following is a feature of zero-coupon bonds?  
(a) Sold at Par, (b) Sold at premium,  
(c) Pays no Interest, (d) Not Redeemable.
15. Bonds that are covered by specific collaterals are called:  
(a) Junk Bond, (b) Floating Rate Bonds,  
(c) Secured Bonds, (d) Deep Discount Bonds.
16. Which of the following will cause an increase in bond values?  
(a) Decrease in Redemption Amount,  
(b) Decrease in Coupon Rate,  
(c) Increase in Redemption Amount,  
(d) Increase in Redemption Period.



17. Which of the following is always true for Bonds?  
(a) FV of a Bond = Issue Price,  
(b) Redemption Value = Amount received by bond-holder at maturity,  
(c) Bonds are redeemable at market value,  
(d) All of the above.
18. In a 3 years Bond purchased and held till maturity, the rate earned is called:  
(a) Coupon Rate, (b) Yield to Maturity,  
(c) Current Yield, (d) Holding Period Return.
19. An investor should buy a bond if:  
(a) Intrinsic Value < Market Value, (b) Intrinsic Value > Market Value,  
(c) Market Value < Redemption Value, (d) Market Value = Redemption Value.
20. In case the maturity period of a bond increases, the volatility:  
(a) Increases, (b) Decreases;  
(c) Remains same, (d) Both (a) and (b).
21. Current Market Price of a Bond is equal to its Par Value if:  
(a) Face Value is Rs. 1000 (b) Coupon is paid half yearly,  
(c) Coupon Rate = Current Yield, (d) It is a Government Bond.
22. If the coupon rate and required rate of return are equal, the value of the bond is equal to:  
(a) Market Value, (b) Par Value,  
(c) Redemption Value, (d) None of the above.
23. YTM of a Bond is not affected by:  
(a) Coupon Rate, (b) Issue Price,  
(c) Redemption Value, (d) Interest Amount.
24. If Coupon rate is less than Required Rate of Return; as the maturity approaches the discount on bond:  
(a) Increases, (b) Decreases,  
(c) Remains Constant, (d) None of the above.
25. An investor buys a bond today and sells after 3 months the rate of return realised is known as:  
(a) Yield to Maturity (b) Current yield,  
(c) Holding Period Return, (d) Required Rate of Return.

[Answers : 1. (d), 2. (c), 3. (c), 4. (b), 5. (b), 6. (b), 7. (c), 8. (c), 9. (a), 10. (a), 11. (b), 12. (b), 13. (a), 14. (c), 15. (c), 16. (c), 17. (b), 18. (b), 19. (b), 20. (a), 21. (c), 22. (c), 23. (b), 24. (b), 25. (c)]

## 8. WORKING CAPITAL

### Introduction

- A firm invests a part of its permanent capital in fixed assets and keeps a part of it for working capital i.e., for meeting the day to day requirements.
- We will hardly find a firm which does not require any amount of working capital for its normal operations. The requirement of working capital varies from firm to firm depending upon the nature of business, production policy, market conditions, seasonality of operations, conditions of supply etc.
- Working capital to a company is like the blood to human body. It is the most vital ingredient of a business.
- Working capital management if carried out effectively, efficiently and consistently, will assure the health of an organization.

### Meaning of Working Capital :

**Working capital** is defined as the excess of current assets over current liabilities.

Current assets are those assets which will be converted into cash within the current accounting period or within the next year as a result of the ordinary operations of the business. They are cash or near cash resources. These include:

- Cash and Bank Balances
- Receivables
- Inventory
  - Raw materials, stores and spares
  - Work – in - progress
  - Finished goods
- Prepaid expenses
- Short-term advances
- Temporary investments

The value represented by these assets circulates among several items. Cash is used to buy raw – materials, to pay wages and to meet other manufacturing expenses. Finished goods are produced. These are held as inventories. When these are sold, accounts receivables are created. The collection of accounts receivable brings cash into the firm. The cycle starts again. **Current liabilities** are the debts of the firms that have to be paid during the current accounting period or within a year.

These include:

- Creditors for goods purchased.
- Outstanding expenses i.e., expenses due but not paid.
- Short – term borrowings.
- Advances received against sales.
- Taxes and dividends payable
- Other liabilities maturing within a year.

**Working capital** is also known as circulating capital, fluctuating capital and revolving capital. The magnitude and composition keep on changing continuously in the course of business.

### Gross and Net Working Capital

Generally the Working capital has its significance in two perspectives – ‘Gross working capital’ and ‘Net Working capital’.

**Gross Working capital:** The gross working capital refers to investment in all the current assets. The total of investments in all current assets is known as gross working capital.



**Net Working Capital:**

- (i) It is the excess of current assets over current liabilities. This is, as a matter of fact, the most commonly accepted definition. Some people define it as only the difference between current assets and current liabilities.
- (ii) It is that portion of a firm's current assets which is financed by long – term funds.

**Need for Working Capital**

The basic objective of financial management is to maximize shareholders' wealth. This is possible only when the company earns sufficient profit. The amount of such profit largely depends upon the magnitude of sales. However, sales do not convert into cash instantaneously. There is always a time gap between the sale of goods and receipt of cash. Working capital is required for this period in order to sustain the sales activity. In case adequate working capital is not available for this period, the company will not be in a position to sustain the sales since it may not be in a position to purchase raw materials, pay wages and other expenses required for manufacturing the goods to be sold.

**Permanent and Temporary Working Capital:**

Working capital can be divided into two categories on the basis of time:

1. Permanent Working Capital
2. Temporary or Variable Working capital.

Permanent working capital represents the assets required on continuing basis over the entire year, whereas temporary working capital represents additional assets required at different items during the operation of the year.

**Permanent working capital:** This refers to that minimum amount of investment in all current assets, which is required at all times to carry out minimum level business activities. In other words, it represents the current assets required on a continuing basis over the entire year. Tandon Committee has referred to this type of working capital as "Hard Core current basis".

The following are the characteristics of this type of working capital:

1. Amount of permanent working capital remains in the business in one form or another. This is particularly important from the point of view of financing. The suppliers of such working capital should not expect its return during the life-term of the firm.
2. It also grows with the size of the business. In other words, greater the size of the business, greater is the amount of such working capital and vice versa.

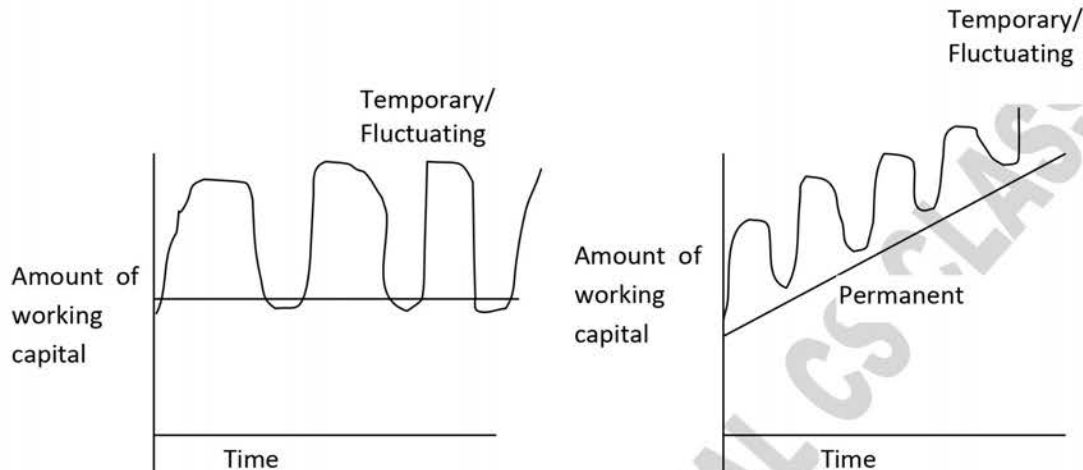
Permanent working capital is permanently needed for the business and therefore, it should preferably be financed out of long – term funds.

**Temporary working capital:** It refers to that part of total working capital which is required by a business over and above permanent working capital. It is also called variable working capital. Since the volume of temporary working capital keeps on fluctuating from time to time. In other words, it represents additional current assets required at different times during the operating year. For example, extra inventory has to be maintained to support sales during peak sales period. Similarly, receivable also increase and must be financed during period of high sales. On the other hand investment in inventories, receivables, etc., will decrease in periods of depression. Temporary working capital is generally financed from short – term sources of finance such as bank credit.

The diagrams given below illustrate the difference between permanent and temporary working capital. Permanent working capital is fixed over a period of time, while temporary working capital is fluctuating. The permanent working capital is increasing over a period of time with increase in the level of business



activity. This happens in case of a growing company. Hence, the permanent working capital line is not horizontal with the base line.



#### Importance of adequate working capital:

The need for adequate investment in working capital can be understood from the following points:

- (1) Working Capital is required to use fixed assets profitably. For example a machine cannot be used productively without raw materials etc.
- (2) Funds are required for day-to-day operations and transaction. These are provided by Cash and cash equivalents, forming part of current assets.
- (3) Adequate working capital determines the short-term solvency of the firm. An adequate working capital means that the firm will be unable to meet its immediate payment commitments. This represents under – Capitalization.
- (4) Increase in activity levels and sales should be backed up by suitable investment in working capital.
- (5) The aspects of liquidity and profitability should be suitably analysed by the finance manager. Too much emphasis on profitability may adversely affect liquidity.

Hence working capital levels are said to be adequate when:

- Current Assets are greater than Current Liabilities.
- Current Ratio = Current Assets / Current Liabilities is about 2 : 1. This may differ from industry to industry.
- Quick Ratio = Quick Assets/Quick Liabilities is at least 1:1. This may also differ from industry to industry.

#### Disadvantages of Insufficient Working Capital:

The disadvantages suffered by a company with insufficient working capital are as follows:

- The company is unable to take advantage of new opportunities or adapt to changes.
- Trade discounts are lost. A company with ample working capital is able to finance large stocks and can therefore place large orders.
- Cash discounts are lost. Some companies will try to persuade their debtors to pay early by offering them a cash discount off the price owed.
- The advantages of being able to offer a credit line to customers are foregone.
- Financial reputation is lost result in non – cooperation from trade creditors in times of difficulty.
- There may be concerted action by creditors and will apply to court for winding up.

**Working Capital Management:**

Working Capital Management is usually concerned with the administration of all the current assets and current liabilities, it is basically concerned with:

- (a) Determining the need for working capital.
- (b) Determining the optimal levels of investment in various current assets, and
- (c) Examining the salient points regarding each element of working capital.

It is obvious that given a constant level of production, higher the amount of working capital, the lower will be the return on investment since capital turnover ratio will be less. On the other hand, lower the amount of working capital, the higher would be the amount of the risk since the company would not have adequate liquidity to meet its short – term obligations. In working capital management, therefore, we have to strike a balance between risk and profitability. We have to find out that level of investment in working capital which gives us a reasonable amount of liquidity subject to a good working capital turnover ratio. In fact, working capital management policies have a great influence on a firm's profitability, liquidity and structural health.

**Major considerations in working capital management and policies:**

The three major considerations in working capital management are:

- (a) Profitability
- (b) Liquidity and
- (c) Structural health
  - If the amount of working capital is high, liquidity is high. But due to low Capital Turnover ratio, the return on investment or profitability will also be low.
  - Similarly, if the amount of working capital is less, a high turnover indicates higher profitability. But liquidity may be seriously affected, causing loss of reputation in the short – run.
  - Also, the structural health of the firm on the long – term and short – term basis depends upon the optimum amount of working capital.

Hence, the finance manager has to strike a balance between liquidity and profitability without affecting the structural health of the firm.

**Hard Core Working Capital**

Hard core working capital or core current assets may be defined as that part of the current assets which represents the very minimum level of raw materials, process stock, finished goods, stores, accounts receivable and cash which are in circulation to ensure continuity of production. Thus, the core current assets represent a fixed element just like assets of the company. Such current assets are basically in the nature of circulating assets but are blocked for long term. For example, funds invested in core inventories, comprising process stock plus minimum raw materials, finished goods and stores are tied up on long – term basis arising out of technological and business considerations, quite like the investment in fixed assets like machinery & building. In relation to inventory, the base stock would be – treated as “hard core”.

Determination of hard core working capital in different industries would require a careful analysis of the items of inventory, receivables, work in process and cash.

**Impact of double shift working capital requirements:**

Working capital Shift leads to economics of scale due to greater use of fixed assets. As a firm increases the number of production hours, working capital requirements also increase. But the increase in the working capital may not be directly proportional.

The impact of double shift working on various components of working capital is as under:

- (1) **Raw Materials:** Stock requirements as regard units, may double since consumption per day will be twice as earlier. However, due to bulk purchasing, the firm may avail of quantity discounts.
- (2) **Work in progress:** There will be no change in the quantity of work in progress since work commenced in first shift will be completed in the second and vice versa. At the end of any day, the average quantity of work – in – progress remains the same.



- (3) **Finished Goods:** Due to greater production, finished goods stocks may double in quantity. But cost of production per unit may be reduced to lower cost of raw materials, economies of fixed costs etc.
- (4) **Debtors:** Increase in demand and increased sales will lead to higher amount of Debtors, for the same credit period. But the increase may not be proportional or it may not double in case of reduction in credit period. Also discounted selling price may be offered in order to sell the increased production.
- (5) **Creditors:** Due to bulk purchasing and better bargaining power the firm may avail extended credit period for payment. Unless otherwise specified, the amount of creditors may double.
- (6) Fixed overheads will remain fixed whereas variable overheads will increase in proportion to the increased production. Semi – variable overheads will increase according to the variable element in them.

### Financing of Working Capital:

After determining the level of working capital, there comes the question of financing. Two other short term sources of working capital finance are

1. Trade Credit
2. Short term bank credit for working capital:
  - (i) Cash credit
  - (ii) Letter of credit
  - (iii) Bills finance
  - (iv) Working capital demand loan
  - (v) Overdraft facility.
3. Factoring of receivables
4. Commercial paper
5. Long term sources comprising equity capital and long term borrowings.

**Q. 1. [2004-Dec]** Distinguish between the hedging and conservative approaches to financing of working capital.

**Ans.** Hedging Approach (HA) and Conservative Approach (CA) are the two extreme approaches and do not help much the financial manager in managing the working capital need. The HA is more risky as the short – term (current) assets are financed by short-term liabilities only and the firm may not have sufficient liquidity with it. On the other hand, the CA is more costly as the long-term sources may remain idle in slack period. The comparison between the two is as follows:

Hedging Approach	Conservative Approach
<b>Advantages</b> 1. The cost of financing is reduced 2. The investment in net-working capital is nil or	It is less risky and the firm is able to absorb shocks. The firm does not face frequent financing problems
<b>Disadvantages</b> 1. Frequent efforts are required 2. The risk is increased as the firm is vulnerable to sudden shocks.	The cost of financing is higher. Large investment is blocked in temporary working capital.

**Q. 2. [1998-June]**

- (a) What are the alternative methods of working out the maximum permissible level of bank borrowings recommended by the Tandon Committee? Explain.
- (b) What are the aggressive and conservative current asset financing policies? State your preference with reasons.

**Ans. (a)** Tandon Committee had recommended following three methods to determine the maximum permissible level of bank borrowings.

*First Method:* 75% (Current Assets – Current Liabilities other than bank borrowings)



Under this method, the borrower will provide 25% of working capital gap from long term funds i.e. borrowed funds and equity capital. This method will give a minimum current ratio of 1:1.

*Second Method:* 75% (Current Assets) – Current Liabilities other than bank borrowings.

Under this method, the borrower will contribute 25% of total current assets from long term sources. This method will give a current ratio of 1:3:1.

*Third Method:* 75% (Current Assets – Core Current Assets) – Current Liabilities other than bank borrowings.

Under this method, the borrower will contribute 100% of core current assets and 25% of the balance of current assets from long term sources. This method will further strengthen the current ratio.

Thus, these methods successively, yield higher current ratio and make the decreasing reliance on bank finance.

**Q. 3.** [CS June 2007] Write notes on 'Determinants of working capital requirements'.

**Ans.** Requirements of working capital are dependent on number of factors. Some of the factor which determines the requirement of Working Capital are:-

1) Nature of Business

- The kind of business in which the company is engaged determines the requirement of working capital.
- A company engaged in manufacturing items requires more amount of working capital than a company which provides services on cash payment.
- Thus we can conclude that working capital of any enterprise is basically related to the conduct of business.

2) Production cycle

- Production cycle also determine the amount of working capital.
- Production cycle is the total time taken from the procurement of the raw material till the realization of sale proceeds.
- Longer the production cycle higher will be the requirement of working capital.
- Thus production cycle & working capital requirement are directly related to each other.

3) Dividend Policy

- Dividend policy of a company, affect the working capital requirement.
- A change in dividend policy of a company requires a change in the working capital policy also.
- A company that desires to pay a higher dividend needs more working capital and vice-versa.

4) Size

- Requirement of working capital depends on the size of the company.
- The amount needed may be relatively large per unit of output for a small company subject to higher overhead costs, less favourable buying terms and higher interest rates.

5) Growth & diversification

- A company that has a diversification programme requires more working capital.
- As a company grows, it is logical to expect that a larger amount of working capital is required.
- The composition of working capital in a growing company also shifts with economic circumstances and corporate practices, so the growth industries require more working capital than those that are static.

6) Sales Policies

- Working capital needs also vary with sales policy.

7) Operating Efficiency

- The operating efficiency of the management is also an important determinant of the level of working capital.

**Q. 4. [CS Dec 2008]** Write notes on 'Working capital and dividend policy'.

**Ans.**

- Working capital policy is the policy which governs the quantum, financing and other aspects of working capital.
- Dividend policy is the one which determines the quantum of dividend to be declared and that to be kept as reserves out of the surplus so generated.
- There is a relationship between working capital policy and dividend policy.
- Quantum of working capital required may have an impact on the amount of dividend to be declared and that which has to be kept as reserves for future use.

**Q. 5. [CS June 2010]** Write notes on 'ABC Analysis'.

**Ans.** The system is based on the assumption that in view of the scarcity of managerial time and attention should be paid to those items which account for a larger chunk of the value of rather than the quantity of consumption. Let us take an example of a firm having components of raw material:-

S NO.	Component	Units Consumed	% of Total Quantity	Value per unit	Total Value (Lacs)	% of Total Value
1	X	5,000.00	45.45	1,000.00	50.00	22.93
2	Y	4,000.00	36.36	1,200.00	48.00	22.00
3	Z	2,000.00	18.18	6,000.00	120.00	55.05
		<b>11000.00</b>			<b>218.00</b>	<b>99.98</b>

Thus the cost of raw material Z which accounts for 55% of the total consumption value should be given priority over item X although the number of units consumed of the latter is much more than former.

**Q. 6. [CS Dec 2010]** Write note on 'Important motives to hold cash'

**Ans.** There are three important motives to hold cash, being

1) Transactional Motive

- It is the prime motive of holding cash.
- Cash is the most liquid medium.
- It is cash which helps to carry out all the transaction of the firm.

2) Precautionary Motive

- As the name suggest, cash is also required for precautionary reasons.
- Cash helps to mitigate uncertainty and contingencies.

3) Speculative Motive

- The speculative motive covers the aspect that cash can be utilized to earn more cash by making investments in profitable avenues.

**Q. 7. [CS June 2004]** Distinguish between the hedging and conservative approaches to financing of working capital.

**Ans.**

S NO.	Hedging approach to financing of working capital	Conservative approaches to financing of working capital
1	It is quite risky approach.	This approach to financing of working capital is less risky.
2	Under hedging approach we deploy short	Under conservative approach current assets



	term liabilities to finance current assets.	term liabilities to finance current are financed using long term sources.
3	Cost of financing is less in comparison to that under conservative approach.	Cost of financing is higher.

**Q. 8.** [CS June 2009] Distinguish between 'Financing of current assets' and 'financing of fixed assets'.

**Ans.**

S NO.	Financing of Current Assets	Financing of Fixed Assets
1	Current Assets investment involves investment in debtors, stock etc.	Investment in fixed assets involve investment in plant & machinery land & building etc.
2	Financing of current assets is usually made in form of overdraft, cash credit etc.	Financing of fixed assets is carried on by procuring loans or by coming up with public issue.
3	Investment in current assets should be minimized.	Investment in fixed assets should be boosted up.

**Q. 9.** [CS June 1999] When will the working capital be negative? What does it signify in terms of the financial health of an enterprise?

**Ans.**

- Working capital is the difference between the current assets & current liabilities.
- When current liabilities are more than current assets, then the working capital will be negative.
- In terms of the financial position, it suggests that the liquidity position of the company is falling & it has a deteriorating liquidity.
- Company should take the steps to improve its working capital.

**Q.10.** [CS Dec 2000] Is the 'aggressive approach' to working capital financing a good proposition? Also state the consequences.

**Ans.**

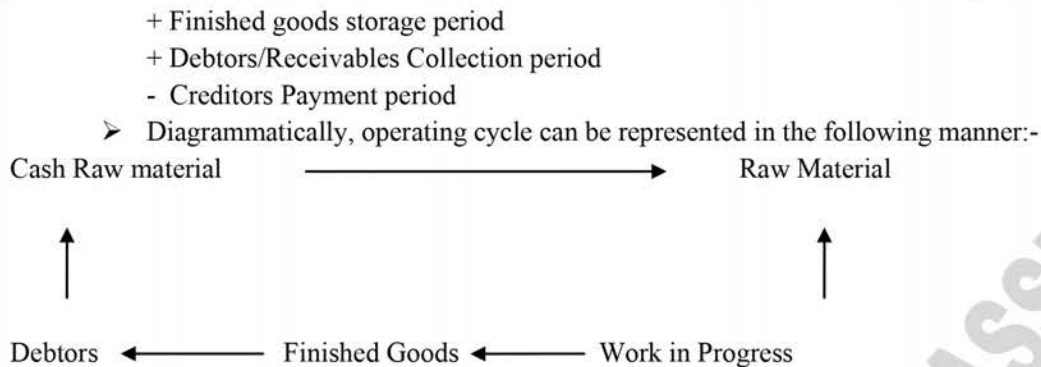
- 'Aggressive approach' to working capital financing refers to that approach wherein the organization deploys long term sources to finance its fixed assets and some portions of permanent current assets whereas short term sources to finance the remaining permanent current assets and the whole of temporary current assets.
- As against this, under the conservative approach to working capital financing, the organization business enterprise deploys long term sources to finance its fixed assets, part of temporary current assets and permanent current assets whereas short terms funds are employed merely to finance temporary current assets.
- While in aggressive approach the enterprises rely more on short term funds, in conservative financing is carried out mostly through long term source.
- Since short term funds are procured for financing under the 'aggressive approach', the enterprise has to continuously engage itself in the task of procuring funds.
- Though using short term funds results in reducing interest burden, it increases the degree of risk.

**Q.11.** [CS June 2003] What is the concept of 'operating cycle'? Why is it important in working capital management? Give a suitable example to illustrate the operating cycle concept.

**Ans.** Operating cycle refers to the length of time between the enterprise paying cash for raw material, conversion of raw material into goods and finally realizing cash from the debtors.

- Operating cycle = Raw Material Storage Period  
+ Work-in-Progress holding period





- Operating cycle reflects the time frame within which the funds once employed for production can be recouped back.
- Smaller the operating cycle, better it is, since it indicates lesser blockage of funds in working capital.
- Thus, operating cycle is an important tool in working capital management.
- It can rightly be said that the length of operating cycle is the major determinant of working capital needs of a business firm.

**Q.12. [CS Dec 2003]** “Efficient cash management will aim at maximizing the availability of cash inflows by decentralizing collections and decelerating cash outflows by centralizing disbursements.” Discuss.

**Ans.**

- Efficient cash management is one of the key indicator of good working capital management.
- Cash budget proves out to an effective method for better cash management.
- Control aspects of cash management includes:-
  - Speeding up of cash collection.
  - Prolongation/ lingering upon cash payments.
- For speeding up cash collection the enterprise should adopt lock-box system or go in for decentralization of the banking system by opening up collection centres in areas where debtors mostly reside resulting in lesser time frame and consequently prompt cash collection.
- Apart from this, exercising control over cash payment can also act as a means of cash management.
- The same can be ensured via billing float along with banking processing float.

**Q.13. [CS Dec 2007]** “Adequacy of current assets is a myth”. Comment.

**Ans.**

- It will be incorrect to state that adequacy of current assets is merely a myth.
- As opposed to this notion (viewpoint/belief) adequacy of current asset sis of vital importance.
- It is very crucial for an organization to ensure that current assets are well maintained by the company.
- Level of current assets has a direct impact on the working operations of the enterprise.
- Level of current assets is to be judiciously determined. In case current assets are kept at higher level it may adversely affect the profitability.
- Thus, adequacy of current assets in not a myth rather is a pre-requisite for the proper working of a business enterprise.

**Q.14. [CS June 2009]** “In addition to transaction motive, more motives force corporate to hold inventory”. Comment.

**Ans.**

- There are three main motives for investment in inventory, being:-
  - Transaction Motive
  - Precautionary Motive
  - Speculative Motive
- Transaction motive of holding inventory takes into consideration the view that inventory level needs to be maintained in the right quantum to ensure proper functioning of business.
- Precautionary motives provide that the level of inventory should also take into account the aspect that purchases may prove out to be time consuming in some cases and hence ample inventory should be maintained to avoid stock — out situation.
- Speculative motives talk about availment of discount and concessions associated with bulk purchase.
- Thus, in addition to transaction motive, corporate are influenced by precautionary and speculative motives to hold inventory.

**Q.15.** Most business need cash funds to meet contingencies. Comment.

**Ans.**

- Holding right quantum of cash funds is pre-requisite for proper functioning of any business house.
- Cash is required not only for purchasing raw material but also for carrying out other operations.
- The time period/length from purchase of raw materials till realization from debtors constitute working capital cycle/operating cycle.
- The length of operating cycle also influences the amount of cash deposits required to be kept.
- Apart from this, cash is also required to be held for contingencies i.e. uncertainties arising from unexpected & unprecedented happenings.

**Q.16. [Dec. 2011]** Comment, it is not always necessary that inventory is held for smooth manufacturing and sales operations.

**Ans.**

- Inventory or the stock in which an enterprise deals, is held by the enterprise depending upon the nature, size and scale of operations which it is carrying on.
- Holding inventory does not come free of cost, as it requires investment to build up inventory.
- The amount and quantum of inventory has to be decided rationally.
- Keeping huge inventory will require high cash outlay and involve high cost of carrying, while maintaining stock of less than required may lead to less of orders and customer dissatisfaction.
- However, it is not always necessary that inventory is to be held for smooth manufacturing & sales operation.
- The concept of JIT or Just in time advocates the philosophy of placing purchase order just before the sales orders are received & is a proven method of reducing inventory handling time & minimize carrying cost also.

## Practical Questions

**Q. 1.** The cost sheet of PQR Ltd. provides the following data:

	Cost per unit
Raw material	₹50
Direct Labour	20
Overheads (including depreciation of ₹10)	<u>40</u>
Total cost	110
Profits	<u>20</u>
Selling Price	<u>130</u>

Average raw material in stock is for one month. Average material in work-in-progress is for half month. Credit allowed by suppliers: one month; credit allowed to debtors: one month. Average time lag in payment of wages: 10 days; average time lag in payment of overheads 30 days. Cash balance expected to be ₹1,00,000. Finished goods lies in the warehouse for one month.

You are required to prepare a statement of the working capital needed to finance a level of the activity of 54,000 units of output. Production is carried on evenly throughout the year and wages and overheads accrue similarly. State your assumptions, if any, clearly.

Ans.	Cost/unit	Stage of Raw Material	1 month
Raw Material	₹ 50	Stage of WIP	½ month
Direct Labour	₹ 20	Stage of creditors	1 month
Overhead (including dep. ₹10)	<u>40</u>	Stage of debtors	1 month
Total	₹ 110	Stage of finished goods	1 month
Cash Balance	₹ 1,00,000	Time lag in payment of wages	10 days
Production unit	54000	Time lag in payment of outstanding	30 days

### Estimation of net working capital on cash cost basis

Current Assets	₹
Stock of Raw Material $\frac{27,00,000}{12} \times 1$	2,25,000
Work-in-progress	
Material $\frac{27,00,000}{12} \times \frac{1}{2}$	1,12,500
Labour $\frac{10,80,000}{12} \times \frac{1}{2} \times 0.5$	22,500
Overheads $\frac{16,20,000}{12} \times \frac{1}{2} \times 0.5$	<u>33,750</u>
	1,68,750
Stock of finished goods $\frac{54,00,000}{12} \times 1$	4,50,000
Debtors $\frac{54,00,000}{12} \times 1$	4,50,000
Cash & Bank	1,00,000
<b>Total Current Assets (A)</b>	<b>13,93,750</b>
Current liability	₹
Creditors $\frac{27,00,000}{12} \times 1$	2,25,000
Outstanding wages $\frac{10,80,000}{360} \times 10$	30,000



Outstanding overhead $\frac{16,20,000}{360} \times 30$	1,35,000
<b>Total Current liability (B)</b>	<b>3,90,000</b>
Working capital = Current Assets – Current Liability = (A) – (B)	10,3,750

**Working Note:**

Calculation of cost of production and cost of sales on cash basis

Raw Material	$54,000 \times 50 =$	27,00,000
Wages	$54,000 \times 20 =$	10,80,000
Overheads	$54,000 \times (40 - 10) =$	16,20,000
<b>Cost of Production</b>		<b>54,00,000</b>
Selling overhead		Nil
<b>Cost of sale</b>		<b>54,00,000</b>

- Q. 2.** Calculate the amount of working capital requirement of SRCC Ltd. from the following information:

	₹(per unit)
Raw material	160
Direct Labour	60
Overheads	120
Total cost	340
Profit	60
Selling Price	400

Raw materials are held in stock on an average for one month. Materials are in process on an average for half – a – month. Finished goods are in stock on average for one month.

Credit allowed by suppliers is one month and credit allowed to debtors is two months. Time lag in payment of wages is 1½ week. Time lag in payment of overhead expenses is one month. One fourth of the sales are made on cash basis.

Cash in hand and at the bank is expected to be ₹50,000; and expected level of production amounts to 1,04,000 units for a year of 52 weeks.

You may assume that production is carried on evenly throughout the year and a time period of four weeks is equivalent to a month.

<b>Ans.</b>	Cost/unit	Stage of Raw Material	1 month
Raw Material	₹ 160	Stage of WIP	½ month
Direct Labour	₹ 60	Stage of finished goods	1 month
Overhead	120	Stage of creditors	1 month
Total costs	₹ 340	Stage of debtors $\left(\frac{1}{4} \text{ sales on cash}\right)$	2 month
Selling price	400	Time lag in payment of overheads	1 month
Cash & Bank Balance	₹ 50,000	Time lag in payment of wages	½ week
Production unit	1,04,000	4 week	1 month
		1 year	52 weeks

Estimation of net working capital on cash cost basis

<b>Current Assets</b>	<b>₹</b>
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Stock of Raw Material $\frac{1,66,40,000}{52} \times 4$	12,80,000
Work-in-progress	
Material $\frac{1,66,40,000}{52} \times 2$	6,40,000
Labour $\frac{62,40,000}{52} \times 2 \times 0.5$	1,20,000
Overheads $\frac{1,24,80,000}{52} \times 2 \times 0.5$	<u>2,40,000</u>
Stock of finished goods $\frac{3,53,60,000}{52} \times 4$	27,20,000
Debtors $\frac{3,53,60,000}{52} \times 8 \times \left(1 - \frac{1}{4}\right)$	40,80,000
Cash & Bank	50,000
<b>Total Current Assets (A)</b>	<b>91,30,000</b>
<b>Current liability</b>	<b>₹</b>
Creditors $\frac{1,66,40,000}{52} \times 4$	12,80,000
Outstanding wages $\frac{62,40,000}{52} \times \frac{3}{2}$	1,80,000
Outstanding overhead $\frac{1,24,80,000}{52} \times 4$	<u>9,60,000</u>
<b>Total Current liability (B)</b>	<b>24,20,000</b>
Working capital = Current Assets – Current Liability = (A) – (B)	67,10,000

**Working Note**

Calculation of cost of production and cost of sales on cash basis

Raw Material	$1,04,000 \times 160 =$	1,66,40,000
Wages	$1,04,000 \times 60 =$	<u>62,40,000</u>
Prime cost		2,28,80,000
Add: Overheads	$1,04,000 \times 120 =$	<u>1,24,80,000</u>
<b>Cost of Production</b>		<b>3,53,60,000</b>
Add: Selling overhead		<u>Nil</u>
<b>Cost of sale</b>		<b>3,53,60,000</b>

**Note:** Where ever 1 month = 4 weeks and 1 year = 52 weeks is given, then must change month and year in week.

- Q. 3.** The management of Royal Industries has called for a statement showing the working capital to finance a level of activity of 1,80,000 units of output for the year. The cost structure for company's product for the above mentioned activity level is detailed below:

	Cost per unit
Raw material	₹20
Direct Labour	5
Overheads (including depreciation of ₹5 per unit)	<u>15</u>
Profit	40
Selling Price	<u>10</u>
	<u>50</u>

**Additional information:**

- a) Minimum desired cash balance is ₹20,000.

- b) Raw materials are held in stock, on an average, for two months.
- c) Work – in – progress (assume 50% completion stage) will approximate to half – a – month production.
- d) Finished goods remain in warehouse, on an average, for a month.
- e) Suppliers of materials extend a month's credit and debtors are provided two month's credit; cash sales are 25% of total sales.
- f) There is a time – lag in payment of wages of a month; and half – a – month in the case of overheads.

From the above facts, you are required to prepare a statement showing working capital requirements.

<b>Ans.</b>	Cost/unit	Stage of Raw Material	2 month
Raw Material	₹ 20	Stage of WIP (50% completion)	½ month
Direct Labour	₹ 5	Stage of finished goods	1 month
Overhead (including dep. ₹5/unit)	15	Stage of creditors	1 month
Total costs	₹ 40	Stage of debtors (25% cash sales)	2 month
Profit	10	Time leg in payment of overheads	$\frac{1}{2}$ month
Selling price	50	Time leg in payment of wages	1 month
Cash & Bank	₹ 20,000	Production unit	1,80,000

#### Estimation of net working capital on cash cost basis

Current Assets		₹
Stock of Raw Material	$\frac{36,00,000}{12} \times 2$	6,00,000
Work-in-progress		
Material	$\frac{36,00,000}{12} \times \frac{1}{2} \times 0.5$	75,000
Labour	$\frac{9,00,000}{12} \times \frac{1}{2} \times 0.5$	18,750
Overheads	$\frac{18,00,000}{12} \times \frac{1}{2} \times 0.5$	<u>37,500</u>
Stock of finished goods	$\frac{63,00,000}{12} \times 1$	5,25,000
Debtors	$\frac{63,00,000}{12} \times 2 \times (1 - 0.25)$	7,87,500
Cash & Bank		20,000
<b>Total Current Assets</b>	<b>(A)</b>	<b>20,63,750</b>
Current liability		₹
Creditors	$\frac{36,00,000}{12} \times 1$	3,00,000
Outstanding wages	$\frac{9,00,000}{12} \times 1$	75,000
Outstanding overhead	$\frac{18,00,000}{12} \times \frac{1}{2}$	75,000
<b>Total Current liability</b>	<b>(B)</b>	<b>4,50,000</b>
Working capital = Current Assets – Current Liability = (A) – (B)		16,13,750



**Working Note**

Calculation of cost of production and cost of sales on cash basis

Raw Material	$1,80,000 \times 20 =$	36,00,000
Wages	$1,80,000 \times 5 =$	9,00,000
Overheads	$1,80,000 \times (15 - 5) =$	18,00,000
<b>Cost of Production</b>		<b>63,00,000</b>
Add: Selling overhead & distribution overheads		Nil
<b>Cost of sale</b>		<b>63,00,000</b>

**Q. 4.** Grow More Ltd. is presently operating at 60% level, producing 36,000 units per annum. In view of favorable market conditions, it has been decided that from 1<sup>st</sup> January 2000, the Company would operate at 90% capacity. The following information's are available:

- Existing cost - price structure per unit is given below:
 

Raw material	₹ 4.00
Wages	2.00
Overheads (Variable)	2.00
Overheads (Fixed)	1.00
Profits	1.00
- It is expected that the cost of raw material, wages rate, expenses and sales per unit will remain unchanged in 2000.
- Raw materials remain in stores for 2 months before these are issued to production. These units remain in production process for 1 month.
- Finished goods remain in go down for 2 months.
- Credit allowed to debtors is 2 months. Credit allowed by creditors is 3 months.
- Lag in wages and overhead payments is 1 month. It may be assumed that wages and overhead accrue evenly throughout the production cycle.

You are required to:

- Prepare profit statement at 90% capacity level; and
- Calculate the working requirements on an estimated basis to sustain the increased production level.

Assumptions made if any, should be clearly indicated.

**Ans.** Calculation of production unit at 90% capacity =  $\frac{36,000}{60\%} \times 90\% = 54,000$

	Cost/unit	Stage of Raw Material	2 month
Raw Material	₹ 4	Stage of WIP	1 month
Direct Labour	₹ 2	Stage of finished goods	2 month
Overhead :			
Variable	2		
Fixed	1	Stage of creditors	3 month
Total costs	₹ 9	Stage of debtors	2 month
Profit	1	Time leg in payment of overheads	1 month
Selling price per unit	10	Time leg in payment of wages	1 month
Cash & Bank	₹ 20,000		

- Preparation of profit statement at 90% capacity

Cost of Raw material	$54,000 \times ₹ 4 =$	2,16,000
Add: Wages	$54,000 \times ₹ 2 =$	1,08,000
Add: Overheads		
Variable	$54,000 \times 2 =$	1,08,000

Fixed	$36,000 \times 1 =$	<u>36,000</u>	<u>1,44,000</u>
Cost of production			4,68,000
Profit			<u>72,000</u>
Sale revenue $36,000 \times 10$			5,40,000

**Note:** When ever fixed cost per unit is given then it is calculated at production unit at which cost structure (cost/unit) is given these after is production increase & decrease fixed cost doesn't change.

**(i) Estimation of net working capital on cash cost basis**

Current Assets		₹
Stock of Raw Material	$\frac{2,16,000}{12} \times 2$	36,000
Work-in-progress		
Material	$\frac{2,16,000}{12} \times 1$	18,000
Labour	$\frac{1,08,000}{12} \times 1 \times 0.5$	4,500
Overheads	$\frac{1,44,000}{12} \times 1 \times 0.5$	<u>6,000</u>
		28,500
Stock of finished goods	$\frac{4,68,000}{12} \times 2$	78,000
Debtors	$\frac{4,68,000}{12} \times 2$	78,000
Cash & Bank		Nil
<b>Total Current Assets</b>	<b>(A)</b>	<b>2,20,500</b>
Current liability		₹
Creditors	$\frac{2,16,000}{12} \times 3$	54,000
Outstanding wages	$\frac{1,08,000}{12} \times 1$	9,000
Outstanding overhead	$\frac{1,44,000}{12} \times 1$	12,000
<b>Total Current liability</b>	<b>(B)</b>	<b>75,000</b>
Working capital = Current Assets – Current Liability = (A) – (B)		1,45,500

**Working Note**

Calculation of cost of production and cost of sales on cash basis

Raw Material	$1,80,000 \times 20 =$	36,00,000
Wages	$1,80,000 \times 5 =$	9,00,000
Overheads	$1,80,000 \times (15 - 5) =$	<u>18,00,000</u>
<b>Cost of Production</b>		<b>63,00,000</b>
Add: Selling overhead & distribution overheads		<u>Nil</u>
<b>Cost of sale</b>		<b><u>63,00,000</u></b>

**Q. 5.** Prepare a working capital forecast from the following information:

Production during the previous year was 10,00,000 units. The same level of activity is intended to be maintained during the current year.

The expected ratios of cost to selling price are:

Raw Materials	40%
Direct Wages	20%

Overheads 20%

The raw materials ordinarily remain in stores for 3 months before production. Every unit of production remains in the process for 2 months and is assumed to be consisting of 100% raw material, wages and overheads. Finished goods remain in the warehouse for 3 months. Credit allowed by creditors is 4 months from the date of the delivery of raw material and credit given to debtors is 3 months from the date of dispatch.

The estimated balance of cash to be held ₹2,00,000

Lag in payment of wages  $\frac{1}{2}$  month

Lag in payment of expenses  $\frac{1}{2}$  month

Selling price is ₹8 per unit. Both production and sales are in a regular cycle. You are required to make a provision of 10% for contingency (except cash). Relevant assumptions may be made.

**Ans.** Selling price per unit ₹ 8

	Cost/unit	Stage of Raw Material	3 month
Raw Material 40% of ₹8	₹ 3.20	Stage of WIP (100% Mate. Lab. Ohd.)	2 month
Wages 20% of ₹8	₹ 1.60	Stage of finished goods	3 month
Overhead 20% of ₹8	₹ 1.60	Stage of creditors	4 month
Cash balance	₹ 2,00,000	Stage of debtors	3 month
Production unit	10,00,000	Time leg in payment of overheads	$\frac{1}{2}$ month
Contingency 10% except cash		Time leg in payment of wages	$\frac{1}{2}$ month

#### Estimation of net working capital on cash cost basis

Current Assets			₹
Stock of Raw Material	$\frac{32,00,000}{12} \times 3$		8,00,000
Work-in-progress			
Material	$\frac{32,00,000}{12} \times 2$	5,33,333.33	
Labour	$\frac{16,00,000}{12} \times 2$	2,66,666.67	
Overheads	$\frac{16,00,000}{12} \times 2$	<u>2,66,666.67</u>	10,66,666.67
Stock of finished goods	$\frac{64,00,000}{12} \times 3$		16,00,000
Debtors	$\frac{64,00,000}{12} \times 3$		16,00,000
Cash & Bank			2,00,000
<b>Total Current Assets</b>	<b>(A)</b>		<b>52,66,666.67</b>
Current liability			₹
Creditors	$\frac{32,00,000}{12} \times 4$		10,66,666.67
Outstanding wages	$\frac{16,00,000}{12} \times \frac{1}{2}$		66,666.67
Outstanding overhead	$\frac{16,00,000}{12} \times \frac{1}{2}$		66,666.67
<b>Total Current liability</b>	<b>(B)</b>		<b>12,00,000</b>



Working capital = Current Assets – Current Liability = (A) – (B)	40,66,666.67
Contingency add $(40,66,666.67 - 2,00,000) \times \frac{10}{100}$	3,86,666.67
Net working capital	44,53,334.00

**Working Note**

Calculation of cost of production and cost of sales on cash basis

Raw Material	$10,00,000 \times 3.2 =$	32,00,000
Direct Wages	$10,00,000 \times 1.6 =$	<u>16,00,000</u>
Prime cost		48,00,000
Add Overheads	$10,00,000 \times 1.6 =$	<u>16,00,000</u>
<b>Cost of Production</b>		<b>64,00,000</b>
Add: Selling overhead & distribution overheads		<u>Nil</u>
<b>Cost of sale</b>		<b>64,00,000</b>

**Q. 6.** On 1<sup>st</sup> January, 2000, the Board of Directors of Dowell Co. Ltd. wishes to know the amount of working capital that will be required to meet the program of activity they have planned for the year. The following information's are available:

- Issued and paid – up capital ₹2,00,000.
- 5% Debentures (secured on assets) ₹50,000.
- Fixed assets valued at ₹1,25,000 on 31.12.2000.
- Production during the previous year was 60,000 units. It is planned that the level of activity should be maintained during the present year.
- The ratios of cost to selling price are – raw materials 60%, direct wages 10%, and overheads 20%.
- Raw materials are expected to remain in stores for an average of two months before these are issued for production.
- Each unit production is expected to be in process for one month.
- Finished goods will stay in warehouse for approximately three months.
- Creditors allow credit for 2 months from the date of delivery of raw materials.
- Credit allowed to debtors is 3 months from the date of dispatch.
- Selling price per unit is ₹5.
- There is a regular production and sales cycle.

**Prepare -----**

- working capital requirement forecast; and
- an estimated Profit and Loss Account and Balance Sheet at the end of the year.

**(Similar questions 34,42,43,54)**

**Ans.** W/c = 161250, Profit = 27500

**Q 7.** Prepare an estimate of net working capital requirement for the WCM Ltd. adding 10% for contingencies from the information given below:

Estimated cost per unit of production ₹170 includes raw materials ₹80, direct labour ₹30 and overheads (exclusive of depreciation) ₹60. Selling Price is ₹200 per unit. Level of activity per annum 1,04,000 units. Raw material in stock: average 4 weeks; work – in – progress (assume 50% completion stage): average 2 weeks; finished goods in stock: average 4 weeks; credit allowed by suppliers: average 4 weeks; credit allowed to debtors: average 8 weeks; lag in payment of wages: average 1.5 weeks, and cash at bank is expected to be ₹25,000. You may assume that production is carried on evenly throughout the year (52 weeks) and wages and overheads accrue similarly. All sales are on credit basis only. You may state your assumptions, if any.

<b>Ans.7.</b>	Cost/unit	Stage of Raw Material	4 weeks
Raw Material	₹ 80	Stage of WIP (50% completion stage)	2 weeks
Direct Labour	₹ 30	Stage of finished goods	4 weeks
Overhead	₹ 60	Stage of creditors	4 weeks
Total costs	₹ 170	Stage of debtors	8 weeks
Profit	30	Time lag in payment of wages	1.5 weeks
Selling price per unit	200	10% contingency	
Cash & Bank	₹ 25,000	Production unit	1,04,000

**Estimation of net working capital on cash cost basis**

<b>Current Assets</b>		<b>₹</b>
Stock of Raw Material	$\frac{83,20,000}{52} \times 4$	6,40,000
Work-in-progress		
Material	$\frac{83,20,000}{52} \times 2 \times 0.5$	1,60,000
Labour	$\frac{31,20,000}{52} \times 2 \times 0.5$	60,000
Overheads	$\frac{62,40,000}{52} \times 2 \times 0.5$	<u>1,20,000</u>
		3,40,000
Stock of finished goods	$\frac{1,76,80,000}{52} \times 4$	13,60,000
Debtors	$\frac{1,76,80,000}{52} \times 8$	27,20,000
Cash & Bank		25,000
<b>Total Current Assets</b>	<b>(A)</b>	<b>50,85,000</b>
<b>Current liability</b>		<b>₹</b>
Creditors	$\frac{83,20,000}{52} \times 4$	6,40,000
Outstanding wages	$\frac{31,20,000}{52} \times 1.5$	90,000
<b>Total Current liability</b>	<b>(B)</b>	<b>7,30,000</b>
Working capital = Current Assets – Current Liability = (A) – (B)		43,55,000
Add: 10% contingency		4,35,500
<b>Net working capital</b>		<b>47,90,500</b>

**Working Note**

Calculation of cost of production and cost of sales on cash basis

Raw Material	$1,04,000 \times 80 =$	83,20,000
Wages	$1,04,000 \times 30 =$	<u>31,20,000</u>
Prime cost		1,14,40,000
Add: Overheads	$1,04,000 \times 60 =$	<u>62,40,000</u>
<b>Cost of Production</b>		<b>1,76,80,000</b>
Add: Selling overhead & distribution overheads		<u>Nil</u>
<b>Cost of sale</b>		<b><u>1,76,80,000</u></b>

**MCQ QUESTIONS WITH ANSWER**

1. Management of working capital implies trade-off between:
  - (a) Cost and Revenue
  - (b) Assets and Liabilities
  - (c) Debtors and Creditors
  - (d) Liquidity and Profitability
2. Gross Working Capital is equal to:
  - (a) Total Assets
  - (b) Total Liabilities
  - (c) Total Current Assets
  - (d) Total Current Liabilities
3. Permanent Working Capital is also known as :
  - (a) Gross Working Capital
  - (b) Net Working Capital
  - (c) Total Current Asset
  - (d) None of the above.
4. Hedging Approach to Working Capital deals with :
  - (a) Financing of CA
  - (b) Financing of CL
  - (c) Level of CA
  - (d) Level of CL
5. In which of the following, the permanent working capital is financed by long-term sources of funds?
  - (a) Hedging Approach
  - (b) Aggressive Approach
  - (c) Conservative Approach
  - (d) All of the above.
6. Negative Net Working Capital implies that:
  - (a) Long-term funds have been used for long-term assets
  - (b) Long-term funds have been used for current assets
  - (c) Short-term funds have been used for fixed assets
  - (d) Short-term funds have been used for current assets.
7. Positive Net Working Capital implies that:
  - (a) Liquidity position is not comfortable
  - (b) Current Ratio is less than one
  - (c) Current Assets are partly financed out of long- term sources
  - (d) All of the above.
8. Operating cycle of a firm can be shortened by
  - (a) Increasing credit period to customers
  - (b) Increasing stock of raw material
  - (c) Increasing working-in-progress period
  - (d) Increasing credit period from suppliers.
9. Which of the following does not usually affect working capital requirement ?
  - (a) Operating leverage
  - (b) Financial leverage
  - (c) Both of (a) and (b)
  - (d) None of (a) and (b)



10. Which of the following is not a feature of current assets?  
(a) Shorter liquidity  
(b) Longer life  
(c) Controllable  
(d) Relevant
11. Net Operating Cycle is equal to :  
(a) GOC-DP  
(b) GOC + DP  
(c) RMCP + RCP  
(d) RMCP-RCP
12. Net Operating Cycle increases if:  
(a) More raw materials are purchased  
(b) Payment to creditors is made earlier  
(c) Goods are sold in shorter period  
(d) Both (a) and (b).
13. Find out the Cash Conversion Period if Receivable Conversion Period is 40 days, Deferral Period in 30 days and Inventory Holding Period in 25 days :  
(a) 30 days  
(b) 25 days  
(c) 35 days  
(d) 45 days
14. Which of the following is a determinant of working capital ?  
(a) Production Schedule  
(b) Production Capacity  
(c) Depreciation Policy  
(d) Tax Policy
15. Gross operating cycle is defined as :  
(a) Equal to accounting period  
(b) One calendar year  
(c) Either of (a) or (b)  
(d) None of (a) and (b)
16. Management of Working Capital deals with :  
(a) Short-term Liquidity,  
(b) Long-term Liquidity,  
(c) Cash Balance,  
(d) Issue of Share capital.
17. Which of the following is not included in Operating Cycle ?  
(a) Fixed Assets Level,  
(b) Raw Materials Stock,  
(c) Finished Goods Stock,  
(d) Creditors Payment Period.
18. Working Capital is defined as excess of:  
(a) Current Assets Over Capital,  
(b) Current Liabilities over Capital,  
(c) Current Assets over Current liabilities,  
(d) Share capital over Resources.

19. Deferral Period refers to the credit period allowed by  
(a) Creditors,  
(b) Debtors,  
(c) Bank holders,  
(d) Shareholders.
20. Operating Cycle is a technique of:  
(a) Working Capital Management,  
(b) Receivables Management,  
(c) Inventory Management,  
(d) Creditors Management.
21. Operating Cycle is equal to Inventory Conversion Cycle Plus:  
(a) Receivable Conversion Period,  
(b) Creditors Deferral Period,  
(c) (a) Minus (b)  
(d) (a) Plus (b).
22. Permanent Working Capital:  
(a) Includes Fixed Assets,  
(b) Is minimum level of Current Assets,  
(c) Varies with seasonal pattern,  
(d) Includes Equity Capital.
23. Working Capital Management involves financing and management of  
(a) All Assets,  
(b) All Current Assets,  
(c) Cash and Bank Balance,  
(d) Receivables and Payables.
24. Which of the following is classified as Current Liability?  
(a) Inventory,  
(b) Marketable Securities,  
(c) Provision for Tax,  
(d) Investments.
25. Current liabilities are those obligations which are generally to be discharged in:  
(a) 1 month,  
(b) 1 year,  
(c) 1 week,  
(d) 1 day.
26. With reference to Creditors, the cash discount date is missed, when the payment be made ?  
(a) As early as possible,  
(b) On the Scheduled day,  
(c) On receipt of Notice,  
(d) Never.
27. Which of the following is not a component of working capital ?  
(a) Debtors,  
(b) Term/loan,  
(c) Creditors,  
(d) Short term Marketable Investments.

28. What is generally applicable to a retail firm ?  
(a) High level of fixed assets,  
(b) Higher capital intensity,  
(c) Low inventory turnover,  
(d) Higher liquidity.
29. Which of the following is generally untrue for manufacturing firm ?  
(a) High level of Raw material,  
(b) High level of cash balance,  
(c) High level of Fixed Assets,  
(d) Higher level of Debtors and Creditors.
30. Which of the following is not true for aggressive working capital policy ?  
(a) Low level of current assets,  
(b) Greater reliance of long-term finance,  
(c) Low level of cash,  
(d) Greater reliance on short-term finance.
31. The type of collateral (security) used for short-term loan is  
(a) Real estate  
(b) Plant & Machinery  
(c) Stock of good  
(d) Equity share capital
32. Which of the following is a liability of a bank?  
(a) Treasury Bills  
(b) Commercial papers  
(c) Certificate of Deposits  
(d) Junk Bonds
33. Commercial paper is a type of  
(a) Fixed coupon Bond  
(b) Unsecured short-term debt  
(c) Equity share capital  
(d) Government Bond
34. Which of the following is not a spontaneous source of short-term funds ?  
(a) Trade credit  
(b) Accrued expenses  
(c) Provision for dividend  
(d) All of the above
35. Concept of Maximum Permissible Bank finance was introduced by  
(a) Kannan Committee  
(b) Chore Committee  
(c) Nayak Committee  
(d) Tandon Committee.
36. In India, Commercial Papers are issued as per the lines issued by  
(a) Securities and Exchange Board of India  
(b) Reserve Bank of India  
(c) Forward Market Commission,  
(d) None of the above
37. Commercial paper are generally issued at a price  
(a) Equal to face value  
(b) More than face value  
(c) Less than face value  
(d) Equal to redemption value
38. Which of the following is not applicable to commercial paper  
(a) Face Value  
(b) Issue Price  
(c) Coupon Rate  
(d) None of the above



39. The basic objective of Tandon Committee recommendations is that the dependence of industry on bank should gradually  
 (a) Increase (b) Remain Stable (c) Decrease (d) None of the above
40. Cash discount terms offered by trade creditors never be accepted because  
 (a) Benefit in very small (b) Cost is very high  
 (c) No sense to pay earlier (d) None of the above
41. What is cost of production?  
 A} 53,00,000 B} 54,00,000 C} 50,00,000 D} 55,00,000
42. What is cost of sales?  
 A} 53,00,000 B} 54,00,000 C} 50,00,000 D} 55,00,000
43. What is the stock of Raw Material?  
 A} 2,24,000 B} 2,26,000 C} 2,25,000 D} 2,23,000
44. What is the stock of Work In Progress ?  
 A} 1,68,750 B} 1,66,750 C} 1,67,750 D} 1,68,650
45. What is the stock of Finished Goods ?  
 A} 4,48,000 B} 4,49,000 C} 4,40,000 D} 4,50,000
46. What is Debtors?  
 A} 4,48,000 B} 4,49,000 C} 4,50,000 D} 4,40,000
47. What is the Total Current Assets?  
 A} 13,98,750 B} 13,93,750 C} 13,97,750 D} 13,93,650
48. What is the Creditors?  
 A} 2,25,000 B} 2,23,000 C} 2,24,000 D} 2,20,000
49. What is the Out Standing Wage?  
 A} 35,000 B} 30,000 C} 33,000 D} 32,000
50. What is the Out Standing Overheads?  
 A} 1,36,000 B} 1,34,000 C} 1,35,000 D} 1,33,000
51. What is the current liability?  
 A} 3,90,000 B} 3,92,000 C} 3,89,000 D} 3,91,000
52. What is the Gross Working Capital?  
 A} 13,91,000 B} 13,92,750 C} 13,93,650 D} 13,93,750

[Answers : 1. (d), 2. (c), 3. (d), 4. (a), 5. (a), 6. (c), 7. (c), 8. (d), 9. (d), 10. (b), 11. (a), 12. (d), 13. (c), 14. (a), 15. (d), 16. (a), 17. (a), 18. (c), 19. (a), 20. (a), 21. (c), 22. (b), 23. (b), 24. (c), 25. (b), 26. (b), 27. (b), 28. (d), 29. (b), 30. (b)]

### 3. RECEIVABLE MANAGEMENT

#### Meaning of receivables

- Receivables are asset accounts representing amounts owed to the firm as a result of sale of goods/services in the ordinary course of business.
- They represent the claims of a firm against its customers and are carried to the “assets side” of the balance sheet under titles such as accounts receivable, trade receivables, customer receivables, customer receivables or book debts.
- They are the result of extension of credit facility to the customers.
- The objective of such a facility is to allow the customers.
- The objective of such a facility is to allow the customers a reasonable period of time in which they can pay for the goods purchased by them.

#### Purpose of receivables:

Accounts receivables are created because of credit sales. Hence, the purpose of receivables is directly connected with the objectives of making credit sales. The objectives of credit sales are as follows:

- Achieving growth in sales:** If a firm sells goods on credit, it will generally be in a position to sell more goods than if it insisted on immediate cash payment. This is because many customers are either not prepared or not in a position to pay cash when they purchase the goods. The firm can sell goods to such customers, in case it resort to credit sales.
- Increasing profits:** Increase in sales results in higher profits for the firm not only because of increase in the volume of sales but also because of the firm charging a higher margin of profit on credit sales as compared to cash sales.
- Meeting competition:** A firm may have to resort to granting of credit facilities to its customers because of similar facilities being granted by the competing firms to avoid the loss of sales from customers who would buy elsewhere if they did not receive the expected credit.

#### Meaning of receivables management:

Receivables are a direct result of credit sales —→ Credit sale is resorted to by a firm to push up its sales, which ultimately result in pushing up the profits earned by the firm —→ At same time, selling goods on credit results in blocking of funds in accounts receivable. Additional funds are therefore, required for the operational needs of the business, which involve extra costs in terms of therefore, required for the operational needs of the business which involve extra costs in terms of interest.

Moreover, increase in receivables also increases chances of bad debts. Thus, —→ creation of accounts receivable is beneficial as well as dangerous.

The finance manager has to follow a policy which uses cash funds as economically as possible in extending receivables without adversely affecting the chances of increasing sales and making more profits.

Management of accounts receivable may, therefore, be defined as the process of making decisions relating to the investment of funds in this asset which will result in maximizing the overall return on the investment of the firm.

Thus, “the objective of receivables management is to promote sales and profits until that point is reached where the return on investment in further funding of receivables is less than the cost of funds raised to finance that additional credit (i.e. cost of capital).

#### Costs of maintaining receivables:

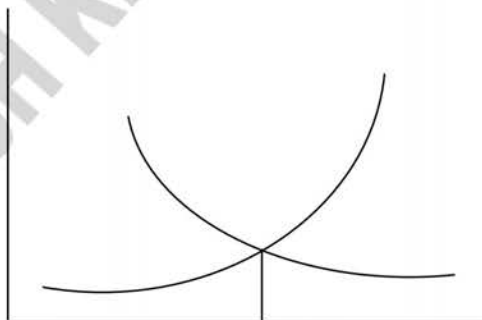
The cost with respect to maintenance of receivables can be identified as follows:



1. **Capital Costs:** Maintenance of accounts receivable results in blocking of the firm's financial resources in them. This is because there is a time lag between the sale of goods to customers and the payments by them. The firm has, therefore, to arrange for additional funds to meet its own obligations, such as payment to employees, suppliers of raw materials, etc., while awaiting for payments from its customers. Additional funds may either be raised from outside or out of profits retained in the business. In both the cases, the firm incurs a cost. In the former case, the firm has to pay interest to the outsider while in the latter case, there is an opportunity cost to the firm, i.e., the money which the firm could have earned otherwise by investing the funds elsewhere.
2. **Administrative costs:** the firm has to incur additional administrative costs for maintaining accounts receivable in the form of salaries to the staff kept for maintaining accounting records relating to customers, cost of conducting investigation regarding potential credit customers to determine their creditworthiness, etc.
3. **Collection costs:** The firm has to incur costs for collecting the payments from its credit customers. Sometimes, additional steps may have to be taken to recover money from defaulting customers.
4. **Defaulting costs:** Sometimes after making all serious efforts to collect money from defaulting customers, the firm may not be able to recover the over dues because of the inability of the customers. Such debts are treated as bad debts and have to be written off since they cannot be realized.

#### Optimum size of receivables :

The optimum investment in receivables will be at a level where there is a trade – off between costs and profitability. When the firm resorts to a liberal credit policy results in increased investment in receivables, increased chances of bad debts and more collection costs. The total investment in receivables increases and, thus, the problem of liquidity is created. On the other hand, a stringent credit policy reduces the profitability but increases the liquidity of the firm. Thus, optimum credit policy occurs at a point where there is a “trade – off” between liquidity and profitability as shown in chart below.



#### Credit period :

**Meaning:** Credit Period denotes the period allowed for payment by customers, in the normal course of business. The credit period is generally stated in terms of net days. For example, if the credit terms are “net 30”, it means that customers will repay credit obligations not later than 30 days.

**Factor:** Credit period depends on a number of factors, for example:

- (1) Nature of product i.e., if demand is inelastic, credit period may be small.
- (2) Quantum of Sales – Credit may not be allowed is small quantities are purchased.
- (3) Customs and Practices – normal trade practices and those followed by competitors.
- (4) Funds available with the Company.
- (5) Credit Risk i.e. possibility of bad debts.



**Discount Policy :**

**Meaning:** In the context of Debtors Management, Discount Policy involves decisions relating to:

- Percentage of Cash Discount to be offered as incentive for early settlement of invoice.
- Period within which cash discount can be availed.

Normally, credit terms are expressed in this order:

- (a) the rate of discount,
- (b) the cash discount period and
- (c) the net credit period.

For example, credit terms of “2/10 net 30” means that cash discount of 2% will be granted if customer pays within 10 days; if he does not avail the offer he must pay within 30 days, being the credit period.

**Role:** Discounts are given to speed up the collection of debts. Hence, it improves the liquidity of the seller.

**Credit Evaluation :**

A firm selling on credit terms cannot extend credit to all customers. Credit granting decision is taken on a case – to – case basis, based on the following illustrative factors:

- (1) **Trade references:** The prospective customer may be required to give two / three trade references. Thus, the customers may give a list of personal acquaintances or some other existing credit – worthy customers. The credit manager can send a short questionnaire, seeking relevant information, to the referees.
- (2) **Bank references:** Sometimes, the customer is asked to request the banker to provide the required information. In India, bankers do not generally give detailed and unqualified credit reference.
- (3) **Credit bureau reports:** Associations for specific industries may maintain a credit bureau, which provides useful and authentic credit information for their members.
- (4) **Past experience:** The past experience of dealings with an existing customer is a valuable source of essential data. The transactions should be carefully scrutinized and interpreted for finding out the credit risk involved.
- (5) **Published financial statements:** Published financial statements of a customer, (in case of limited companies) can be examined to determine the credit – worthiness.
- (6) **Salesman’s interview and reports:** Credit – worthiness can be evaluated by the reports provided by consulting salesmen or sales representatives. Such reports provide first hand information to the Company for proper determination of the credit limit.
- (7) **Credit-worthiness of the customer:** The credit-worthiness of the customer is the most crucial factor in deciding whether credit should be granted or not. This based on past experience (for existing customers) and credit analysis (for existing new customers).
- (8) **Credit Rating:** If the customer is an corporate institution the firm selling on credit may also check its credit rating so as to check the safety of its dues.

**Collection Policy :**

**Role of Collection Policy :** Average Collection Period and Bad Debt losses are reduced by efficient and timely collection of debtors. Hence, a proper collection policy should be laid down.

**Aspects of Collection Policy :** The following aspects should be covered in Collection Policy and procedures.

- Timing of the collection process-when to start reminding etc.
- Despatch of reminder letters to customers.
- Personal follow-up by Company’s representatives and telephonic calls.
- Appointment of agents for collection or follow-up.
- Dealing with default accounts, legal action to be initiated, notice to defaulting customer etc.

**Measures for monitoring receivables:**

Monitoring of receivables involves the following measures:-

- (1) **Average Age of Receivables:** Debtors Turnover Ratio and Average Collection Period are worked out at periodic intervals. These are compared with the industry norms or the standards set by the firm. In case of high collection period, intense collection efforts are initiated.

- (2) **Ageing Schedule:** The pattern of receivables is determined by preparing the Ageing schedule. If the receivables denote old outstanding due for longer periods, suitable action should be taken to collect them immediately.
- (3) **Collection Programme:** The procedures for collection e.g. reminding letters, direct follow – up etc. should be initiated based on the company's

#### Ageing Schedule:

**Meaning:** In a 'Ageing Schedule', the receivables are classified according to their age, i.e. period for which they have been outstanding, e.g. less than 30 days, 30-45 days, above 60 days etc.

**Role:** Preparation of ageing schedule helps management in the following ways:

- (a) Analysis of quality of individual accounts.
- (b) Intimation of due dates to customers.
- (c) Telegraphic and telephonic advice to customers on the due date.
- (d) Threat of legal action on overdue accounts.
- (e) Legal action on overdue accounts.

#### Decision trees :

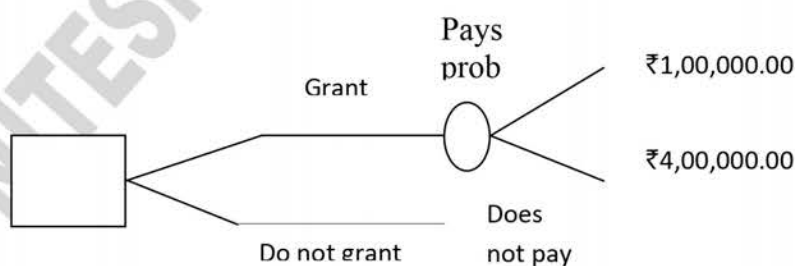
In practice there may be more than one source of uncertainty, which must be simultaneously taken into account when making a decision, and the interaction of different sources of uncertainty can greatly increase the number of possible outcomes. Decision trees provide a useful means of representing a decision problem in a way that illustrates the interaction of different variables and choices leading to the range of possible outcomes.

Decision tree technique provides a useful graphical way of representing decision problems and their possible outcomes, and of keeping track of the many interactions between different variables that can occur.

**Decision tree analysis of credit granting :** The decision whether to grant credit or not, is a decision involving costs and benefits. When a customer pays, the seller makes profit but when he fails to pay the amount of cost going into the product is also gone. If the relative chances of recovery are 9 out of 10 then probability of recovery is 0.9 and that of default is 0.1.

Credit evaluation of a customer shows that the probability of recovery is 0.9 and that of default is 0.1. The revenue from the order is ₹5 lakhs and cost is ₹4 lakhs. The decision is whether credit should be granted or not.

The analysis is presented in the following diagram:



The weighted net benefit is ₹[1,00,000 x 0.9 i.e. 90,000 prob 0.1, 00,000 i.e. 40,000] = 50,000. So credit should be granted.

#### Factoring :

**“Factoring”** is a new financial service that is presently being developed in India. It is not just single service, rather a portfolio of complementary financial services available to clients i.e. sellers. The sellers are free to avail of any combination of services offered by the factoring organizations according to their individual requirements.

Generally, **Factoring involves provision of specialized services relating to :**

- Credit investigation;
- Sales ledger management;



- Purchase and collection of debts;
- Credit protection as well as provision of finance against receivables and risk bearing.

In factoring, accounts receivables are generally sold to a financial Institution (a subsidiary of commercial bank – called “Factor”), who charges commission and bears the credit risks associated with the accounts receivables purchased by it.

Its operating is very simple. Clients enter into an agreement with the “factor” working out a factoring arrangement according to his requirements. The factor then takes the responsibility of monitoring, follow up, collection and risk taking and provision of advance. The factor generally fixed up a limit customer – wise for the client (seller).

In factoring, an agreement between the factor and the seller is entered into to spell out legal obligations and procedural arrangements. As soon as the seller receives an order from a buyer, a credit approval slip is written and immediately sent to factoring company for a credit check. If the factors do not approve the sale, the seller generally refuses to fulfill the order. The details about the buyer’s credit worthiness are given to the seller by the factor. If the sale is approved, shipment is made. When sale is affected, the receivable is immediately turned over to the factor for collection. When the bill is paid, the factor forwards the money to the selling firm, less a discount for its services. More often, the factor also provides financing by purchasing the receivables at a discount on the day of sale. In this way, the borrowing firm gets money in exchange for its receivables.

Factoring offers the following advantages which makes it quite attractive to many firms:

- (1) The firm can convert accounts receivables into cash without bothering about repayment.
- (2) Factoring ensures a definite pattern of cash in flows.
- (3) Continuous factoring virtually eliminates the need for the credit department. That is why receivables financing through factoring is gaining popularity as useful source of financing short term funds requirements of business enterprises because of the inherent advantage of flexibility it affords to the borrowing firm. The seller firm may continue to finance its receivables on a more or less automatic basis. Its sales expand or contract, it can vary the financing proportionately.
- (4) Unlike an unsecured loan, compensating balances are not required in this case. Another advantage consists of relieving the borrowing firm of substantially credit and collection costs and to a degree from a considerable part of cash management.

In India RBI has permitted selected commercial banks to operate the business of factoring. At present only two government agencies are involved in the business – SBI Factors Limited and Can bank Factors Limited. In addition, many non – banking finance companies and other agencies are also factoring in book debts.

However, factoring as a means of financing is comparatively costly source of financing since its cost of financing is higher than the normal lending rates.

**Q. 1. [CS Dec 2011] Write notes on Forfaiting.**

**Ans.**

- Forfaiting is that mode of export trade financing whereby bank advances cash to the exporter.
- The advance so granted is against the invoices and is generally for a long period.
- The amount advanced is lesser than the invoice since it is discount by the bank at a rate so determined taking into account all risk factors.

**Q. 2. [Dec2005/ 2008/ 2009/ 2010] Factoring & bill discounting**

**Ans.** Factoring is a continuing arrangement between a financial intermediary called a Factor & a seller of goods or services. Based on the type of factoring, the factor performs the following services in respect of the accounts receivables:-



- Purchase all accounts receivables of the seller for immediate cash.
- Administers the sales ledger of the seller.
- Collects the accounts receivables.
- Assumes the losses which may arise from bad debts.
- Provides relevant advisory services to the seller.

The factor handle all the receivables arising out of the credit sales of the seller company & not just some specific bills or invoices as is done in a bills discounting agreement.

Factoring offers a very flexible mode of cash generation against receivables. Once a line of credit is established, availability of cash is directly geared to sales so that as sales increase so does the availability of finance. The mechanics of factoring comprises of the sequence of events outlined below

**Q. 3. [CS June 2003]** Recourse factoring.

**Ans.** Recourse factoring can be referred as a non-fund based financial service wherein a finance company called 'factor', undertakes to collect the receivables of a company in return for collection charges called factoring commission (as a % of the factor receivables)

Factoring can be of two types:-

- Recourse factoring
- Non recourse factoring

In non recourse factoring the risk of bad debts is on the client .the factor provider's finance & in case of default in payment of debt he is in entitled to recover the same from the client.

**Q. 4. [CS June 2000]** Write notes on undisclosed factoring.

**Ans.**

- Undisclosed factoring refers to that form of factoring wherein client's customers are not notified about the factoring arrangement
- Customers continue to make payment to the client though the same have been assigned to the factor
- Thus, in such a case the customers are not informed or notified about the arrangement entered into between factor and client.
- This agreement is entered in respect of organisations enjoying good business reputation.

**Q. 5. [CS June 2005]** Describe the mechanics involved in factoring.

**Ans.** Factoring offers a very flexible mode of cash generation against receivables. Once a line of credit is established, availability of cash is directly geared to sales so that as sales increase so does the availability of finance. The mechanics of factoring comprises of the sequence of events outlined below:-

- 1) Seller (client) negotiates with the factor for establishing factoring relationship.
- 2) Seller requests credit check on buyer (client).
- 3) Factor checks credit credentials and approves buyer. For each approved buyer a credit limit and period of credit are fixed.
- 4) Seller sells goods to buyer.
- 5) Seller sends invoice to factor. The invoice is accounted in the buyers account in the factor's sales ledger.
- 6) Factor sends copy of the invoice to buyer.
- 7) Factor advises the amount to which seller is entitled after retaining a margin, say 20%, the residual amount paid later.

- 8) On expiry of the agreed credit period, buyer makes payment of invoice to the factor.
- 9) Factor pays the residual amount to seller after his agreed compensation.

**Q. 6. [CS Dec 2008]** 'Factoring' and 'securitization'

**Ans.** Factoring

1. Factoring is associated with receivables of manufacturing and trading companies.
2. It mainly deals with trade receivables of clients.
3. The entire credit risk is passed on to the factor subject to the terms of agreement
4. Factor himself takes up the collection work.
5. No issue of securities against book debts.

Securitisation

1. Securitisation is concerned with loans and receivables of financial institutions.
2. It deals with receivables arising out of loans like Hire purchase finance and receivables from Government departments.
3. Part of the credit risk is absorbed by the originator by transferring the assets at a discount.
4. In this case, collection work can be done by the originator or by a servicing agent.

Marketable securities are issued against loans and receivables, term loans to financial companies, receivables from Government departments and government companies, hire purchase loans (vehicle loans), Mortgage loans, lease finance and credit card receivables etc.

## Practical Question

### CREDIT POLICY

**Q. 1.** A firm is currently selling a product @ ₹10 per unit. The most recent annual sales (all credit) were 30,000 units. The variable cost per unit is ₹6 and the average cost per unit, given a sales volume of 30,000 units, is ₹8. The total fixed cost is ₹60,000. The average collection period may be assumed to be 30 days.

The firm is contemplating a relaxation of credit standards that is expected to result in a 15 per cent increase in unit sales; the average collection period would increase to 45 days with no change in bad debt expenses. It is also expected that increased sales will result in additional net working capital to the extent of ₹10,000. The increase in collection expenses may be assumed to be negligible. The required return on investment is 15 per cent.

Should the firm relax the credit standard?

**Ans.1.** Evaluation of credit policy

Credit period	Existing policy 30 days	Proposed policy 45 days
Credit sales unit	30000	$30000(1+0.15) = 34500$
Sales revenue @ 10	3,00,000	3,45,000
Less variable cost @ 6	1,80,000	2,07,500
Less fixed cost 30000(8-6)	60,000	60,000
Operating Profit (A)	60,000	78,000
Average debtors = $\frac{V.C. + F.C.}{360} \times C.P.$	$\frac{1,80,000 + 60,000}{360} \times 30$ = 20,000	$\frac{2,07,500 + 60,000}{360} \times 45$ = 33,437.50
Less expenditure due to credit sale (B)		
Opportunity cost @15%	3,000	5,015.62
Opportunity cost on		1500
Net profit	57,00	71,484
Net profit		14,484

### CASH DISCOUNT

**Q. 2.** Assume that the firm in Q1 is contemplating to allow 2 per cent discount for payment within 10 days after a credit purchase. It is expected that if discounts were offered, sales will increase by 15 per cent and the average collection period will drop to 15 days. Assume bad debt expenses will not be affected; return on investment expected by the firm is 15 per cent; 60 per cent of the total sales will be on discount. Should the firm implement the proposal?

**Ans.**

Credit period	Existing policy 30 days	Proposed policy:- cash discount=2%; 15 days
Sales revenue @ 10	3,00,000	$30000(1+0.15) \times 10 = 3,45,000$
Less variable cost	1,80,000	2,07,500
Less fixed cost	60,000	60,000
Profit	60,000	78,000
Cash discount customer		60% of 3,45,000 = 2,07,000
Average debtors =	20,000	



$\frac{V.C. + F.C.}{360} \times C.P.$		$\frac{2,07,000 + 60,000}{360} \times 15$ = 11,125
Less expenditure due to credit sale		
Opportunity cost @15%	3,000	1,669
Cash discount		4,140
Net profit (A) – (B)	57,00	72,191
Net profit		15,191

**CREDIT PERIOD**

- Q. 3.** Suppose, a firm is contemplating an increase in the credit period from 30 to 60 days. The average collection period which is at present 45 days is expected to increase to 75 days. It is also likely that the bad debt expenses will increase from the current level of 1 per cent to 3 per cent of sales. Total credit sales are expected to increase from the level of 30,000 units to 34,500 units. The present average cost per unit is ₹8, the variable cost and sales per unit is ₹6 and ₹10 per unit respectively. Assume the firm expects a rate of return of 15 per cent. Should the firm extend the credit period?

**Ans.** Evaluation of credit period

Average collection period	Existing policy 45 days	Proposed policy 75 days
Bad debt	1%	3%
Sales unit	30000	34500
Sales revenue @ 10	3,00,000	3,45,000
Less variable cost @ 6	1,80,000	2,07,500
Less fixed cost 30000(8–6)	60,000	60,000
Operating Profit (A)	60,000	78,000
Average debtors = $\frac{V.C. + F.C.}{360} \times C.P.$	$\frac{1,80,000 + 60,000}{360} \times 45$ = 30,000	$\frac{2,07,000 + 60,000}{360} \times 75$ = 55,625
Less expenditure due to credit sale (B)		
Opportunity cost @15%	4,500	8,343.75
Bad debts	3,000	10350
Net profit (A) – (B)	52,500	59,306.25
Net profit		6,806.25

**COLLECTION POLICIES**

- Q. 4.** A Firm is contemplating stricter collection policies. The following details are available:
- At present, the firm is selling 36,000 units on credit at a price of ₹32 each; the variable cost per unit is ₹25 while the average cost per unit is ₹29; average collection period is 58 days; and collection expenses amount to ₹10,000; bad debts are 3 per cent.
  - If the collection procedures are tightened, additional collection charges amounting to ₹20,000 would be required, bad debts will be 1 per cent; the collection period will be 40 days; sales volume is likely to decline by 500 units.
- Assuming a 20 per cent rate of return on investments, what would be your recommendation? Should the firm implement the decision?

**Ans.** Collection policies

	Existing policy	Proposed policy
Sales unit	36000	36,000–500 = 35,500
Collection expenses	10000	10,000+20,000 = 30,000
Bad debt	3%	1%
Collection period	58 days	40 Days

Sales revenue @ 32	11,52,000	11,36,000
Less variable cost @ 25	9,00,000	8,87,500
Less fixed cost 36,000(29–25)	1,44,000	1,44,000
Operating Profit (A)	1,08,000	1,04,5000
Average debtors = $\frac{V.C. + F.C.}{360} \times C.P.$	$\frac{9,00,000 + 1,44,000}{360} \times 58$ = 1,68,200	$\frac{8,87,500 + 1,44,000}{360} \times 40$ = 1,14,611
Less expenses due to credit sales opportunity cost @20%	33,640	22,922.22
Bad debts	34,560	11,360
Collection expenses	10,000	30,000
Net profit (A) – (B)	29,800	40,218
Gain Profit		10,418

**FACTORING**

**Q. 5.** The turnover of R Ltd. is ₹60 lakhs of which 80% is on credit. Debtors are allowed one month to clear off the dues. A factor is willing to advance 90% of the bills raised on credit for a fee of 2% a month plus a commission of 4% on the total amount of debts. R Ltd. as a result of this likely to save ₹21,600 annually in management costs and avoid bad debts at 1% on the credit sales. A scheduled bank has come forward to make an advance equal to 90% of the debts at an interest rate of 18% p.a. However its processing fee will be at 2% on the debts. Would you accept factoring or the offer from the bank?

**Ans.** Bank borrow is better Factor 17400, Bank 13400

**Q. 6.** Under an advance factoring arrangement Bharat Factors Ltd. (BFL) has advanced a sum of ₹14 lakhs against the receivables purchased from ABC Ltd. The factoring agreement provides for an advance payment of 80% (maintaining 'factor reserve' of 20% to provide for disputes and deductions relating to the bills assigned) of the value of factored receivables and for guaranteed payments after three months from the date of purchasing the receivables. The advance carries a rate of interest of 20% per annum compounded quarterly and the factoring commission is 1.5% of the value of factored receivables. Both the interest and commission are collected up – front.

- Compute the amount of advance payable to ABC Ltd.
- Calculate per annum the effective cost of funds made available of ABC Ltd.
- Calculate the effective cost of funds made available to ABC Ltd. assuming that the interest is collected in arrear and commission is collected in advance.

**Ans.** (i) 13.042, (ii) 32.85% (iii) 31.03%

**Q. 7.** Kareena Kapoor Ltd. intends to produce a new product period at ₹1,000 per unit with expected annual sales of 5,000 units. Variable costs amount to ₹750 per unit and 2 months credit is to be granted. It is estimated 10 per cent of customer's will default, other will pay on the due day. Interest rates are 15 per cent annum. A credit agency has offered the company a system, which it claims can help identify possible bad debts. It will cost ₹2,50,000 per annum to run and will identify 20 per cent of customers as being potential bad debts. If these customers are rejected no actual bad debts will result. Should the credit agency's system be use?

**Ans.** Evaluation of credit average offer

Credit period	Existing policy 30 days	Proposed policy 45 days
Credit sales unit	50000	50000(1-0.20) = 4000
Credit period	2 months	2 months
Sales revenue @ 1000	50,00,000	40,00,000
Less variable cost @ 750	37,50,000	30,00,000
Contribution (A)	12,50,000	10,00,000
Average debtors = $\frac{V.C. + F.C.}{12} \times C.P.$	$\frac{37,50,000}{12} \times 12$	$\frac{30,00,000}{12} \times 2$



	= 6,25,000	= 5,00,000
Less expenses due credit sale		
Opportunity cost @ 15%	93,750	75,000
Bad debts 10%	5,00,000	
Credit agency fee		2,50,000
Net profit	6,56,250	6,75,000
Saving due to credit		
Agency suggestion		18,750

**Decision** Since there is saving due to credit policy agency by ₹18,750 hence credit agency suggestion is followed.

- Q. 8.** Easy Limited specializes in the manufacture of a computer component. The component currently sold for ₹1,000 and its variable cost is ₹800. For the year ended 31.12.1992 the company sold on an average 400 components per month.

At present the company grants one month credit to its customers. The Company is thinking of extending the same to two months on account of which the following is expected: -

Increase in sales	25%
Increase in stock	₹2,00,000
Increase in creditors	₹1,00,000

**You are required:**

To advise the company on whether or not to extend the credit terms if:

- (a) all customers avail the extended credit period of two month and  
(b) existing customers do not avail the credit terms but only the new customers avail the same.

Assume in this case entire increase in sales is attributable to the new customers.

The company expects a minimum return of 40% on the investment.

- Ans.** Evaluation of credit policies

	Existing policy	Proposed I	Proposed II
Sales unit per annum	400×12 = 4800 1 month	4,800(1+0.25) = 6,000 2 months	6000 (4800 = 1 month) (1200 = 2 months)
Sales revenue @1000	48,00,000	60,00,000	12,00,000
Less variable cost @ 800	30,40,000	48,00,000	9,60,000
Profit (A)	9,60,000	12,00,000	2,40,000
Average debtors = $\frac{V.C. + F.C.}{12} \times C.P.$	$\frac{38,40,000 + 0}{12} \times 1$ = 3,20,000	$\frac{48,00,000 + 1}{12} \times 2$ = 8,00,000	$\frac{9,60,000}{12} \times 2$ = 1,60,000
Opportunity cost @ 40% on average debtors	1,28,000	3,20,000	64,000
Opportunity cost on increase wage capital 1,00,000		40,000	40,000
Net profit	8,32,000	8,40,000	1,36,000+8,32,000
Gain profit		8,000	1,36,000

**Decision** Under both proposed policy profit is going to increase but profit under second policy is more.

Working capital = Current Assets – Current Liabilities

= Increase Stock – Increase Credit

= 2,00,000 – 1,00,000 = 1,00,000

- Q. 9.** ABC Ltd. is examining the question of relaxing its policy. It sells at present 20,000 units at a price of ₹100 per unit, the variable cost per unit is ₹88 and average cost per unit at the volume is ₹92. All the sales on credit, the average collection period being 36 days.



A relaxed credit policy is expected to increase sales by 10% and the average age of receivable to 60 days. Assuming 15% return, should the firm relax its credit policy?

Ans. Evaluation of credit period

Average collection period	Existing policy	Proposed policy
Sales revenue @ 100	20,000×100 = 20,00,000	20,000(1+0.10)×100 = 22,00,000
Less variable cost @ 88	20,000×88 = 17,60,000	22,000×88 = 19,36,000
Less fixed cost 20,000(92-88)	80,000	80,000
Profit	1,60,000	1,84,000
Average debtors = $\frac{V.C. + F.C.}{360} \times C.P.$	$\frac{1,76,000 + 80,000}{360} \times 36$ = 1,84,000	$\frac{19,36,000 + 80,000}{360} \times 60$ = 3,36,000
Less expenses due to credit sale		
Opportunity cost @15%	27,600	50,400
Bad debts		
Net profit	1,32,400	1,33,600
		1,200

**Q.10.** A company has sales of ₹10,00,000. Average collection period is 50 days, bad debt losses 6% of sales and collection expenses ₹10,000. The cost funds is 15% p.a. The company has two alternative collection programmes.

	I	II
Average collection period reduced to	40 days	30 days
Bad debt losses reduced to	4% of sales	3% of sales
Collection expenses	₹20,000	₹30,000
Evaluate which programme is viable		

Ans. Evaluation of collection policies

	Existing policy	Proposed I	Proposed II
Average debtors = $\frac{\text{Sales}}{360} \times C.P.$	$\frac{10,00,000}{360} \times 50$ = 1,38,888.89	$\frac{10,00,000}{360} \times 40$ = 1,11,111.111	$\frac{10,00,000}{360} \times 30$ = 83,333.333
<b>Expenditure due to credit sale</b>			
Opportunity cost @15%	20,833.33	16,666.67	12,500
Bad debts			
Collection expenses	60,000	40,000	30,000
	10,000	20,000	30,000
Total expenditure due to credit sales	90,833.33	76,666.67	72,500

Proposed II has lowest cost hence proposed II is consider.

**Q.11.** In order to increase sales from the normal level of ₹24 lakhs per annum, the marketing manager submits a proposal for liberalising credit policy as under:

Normal Sales -	₹24 lakhs
Normal credit period -	30 days
Proposed increase in credit	Relevant increase over
<b>Period beyond normal 30 days</b>	<b>Normal sales (₹)</b>
15 days	1,20,000
30 days	1,80,000
45 days	2,10,000
60 days	2,40,000

The P.V. ratio is 25%.

The company expects a pre – tax return of 20% on investment. Evaluate the above four alternatives and advise the management. (Assume 360 days in a year).

**Ans.** Evaluation of credit policies

Credit policy	Existing policy 30 days	Proposed I 30+15 = 45 days	Proposed II 30+30 = 60 days	Proposed II 30+45 = 75 days	Proposed IV 30+60 = 90 days
Credit sales	24,00,000	25,20,000	25,80,000	26,10,000	26,40,000
Less variable cost 75%	18,00,000	18,90,000	19,35,000	19,57,500	19,80,000
Contribution 25% (A)	6,00,000	6,30,000	6,45,000	6,52,500	6,60,000
Average debtors = $\frac{V.C.+F.C.}{360} \times C.P.$	$\frac{6,00,000+0}{360} \times 30$ = 1,50,000	$\frac{18,90,000+0}{360} \times 45$ = 2,36,250	$\frac{19,35,000}{360} \times 60$ = 3,22,500	$\frac{19,57,500}{360} \times 75$ = 4,07,812.5	$\frac{19,800,000}{360} \times 90$ = 4,95,000
Less expenses due to credit sales (B) Opportunity cost @ 20%	30,000	47,250	64,500	81,562.5	99,000
Net profit	5,70,000	5,82,750	5,80,500	5,70,937.5	5,61,000
Gain profit		12,750	10,500	937.50	--9000

**Decision** Increase profit under credit policy I i.e. 45 days credit period is 12,750 which is maximum than other credit policy hence 45 days credit policy is accepted.

**Note:** If P/V ratio is 25% it means contribution of sales is 25%, Hence variable cost of sales is 75%.

Working capital = Current Assets – Current Liabilities

= Increase Stock – Increase Credit

= 2,00,000 – 1,00,000 = 1,00,000

**Q.12. [June 2007]** The present credit terms of P Company are 1/10 net 30. Its annual sales are ₹80 lakhs, its average collection period is 20 days. Its variable costs and average total costs to sales are 0.85 and 0.95 respectively and its cost of capital is 10 per cent. The proportion of sales of which customers currently take discount is 0.5. P company is considering relaxing its discount terms to 2/10 net 30. Such relaxation is expected to increase sales by ₹5 lakhs, reduce the average collection period to 14 days and increase the proportion of discount sales to 0.8. What will be the effect of relaxing the discount policy on company's profit? Take year as 360 days.

**Q.13.** A company is considering using a factor the following information is relevant:

- The current average collection period for the company's debt is 80 days and ½ % of debtors default. The factor has agreed to pay over money due, after 60 days, and it will suffer the loss of any bad debts.
- The annual charge for the factoring is 2% of turnover payable annually in arrears. Administration cost saving will total ₹1,00,000 per annum.
- Annual sales, all on credit are ₹1,00,00,000. Variable costs total 80% of sales price. The company's cost of borrowings is 1.5% per annum. Assume year consisting of 365 days.

Should the company enter into a factoring agreement?

**Ans.** Salary due to Each 15758

**Q.14.** Household Appliances Ltd. deals with consumer durables, having an annual turnover of ₹80 lacs, 75% of which are credit sales effected through a large number of dealers while the balance sales are made through showrooms on cash basis. Normal credit allowed is 30 days.

The company proposes to expand its business substantially and there is good demand as well. However, the marketing manager finds that the dealers have difficulty in holding more stocks due to financial problems. He, therefore, proposes a change in the credit policy as follows:

Proposal	Credit Period	Expected Credit Sales
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Plan I	60 days	₹70,00,000
Plan II	90 days	75,00,000

The products yield an average contribution of 25% on sales. Fixed costs amount to be ₹5,00,000 per annum. The company expects a pre – tax return of 20% on capital employed.

The finance manager after a review of the proposal has recommended increasing the provision for bad debts from the current 1% of 1½ for Plan I and to 2% for Plan II.

Evaluate the merits of the new proposals and recommend the best policy.

**Ans.** Evaluation of credit policies

	Existing policy	Proposed I	Proposed II
Credit period	30 days	60 days	90 days
Bad debts	1%	1½ %	2%
Sales revenue	60,00,000	70,00,000	75,00,000
Less variable cost 75%	45,00,000	52,50,000	56,25,000
Less Fixed cost	5,00,000	5,00,000	5,00,000
	10,00,000	12,50,000	13,75,000
Bad debts	60,000	1,05,000	1,50,000
Profit	9,40,000	11,45,000	12,25,000
Incremental Profit (A)		2,05,000	2,85,000
Average debtors = $\frac{V.C.+F.C.}{360} \times C.P.$	$\frac{45,00,000+5,00,000}{360} \times 30$ = 4,16,666.67	$\frac{52,50,000+5,00,000}{360} \times 60$ = 9,58,333.33	$\frac{56,25,000+5,00,000}{360} \times 90$ =15,31,125
Gain Average debtors		5,41,666.67	11,14,583.33
Opportunity cost 20%		1,08,333	2,22,916.67
Net increase profit		96,666.67	62,083

**Decision** Since incremental profit under 60 days credit is more than 90 days credit policy hence 60 days credit policy is assumed.

**Q.15.** [2006 –June] A dealer having annual sales of ₹50 lakh. Extends 30 days credit period to its debtors. The variable costs are 80% on sales and fixed costs are ₹6,00,000. The dealer intends to change the credit policy for which the following information is given :

Credit Policy	Average Collection period (Days )	Annual Sales( ₹In lakh )
A	45	56
B	60	60
C	75	62

Rate of return (pre tax ) required on investment is 20%.

You are required to assess the most profitable policy with the help of incremental approach .Calculation may be restricted to two decimal places

#### Evaluation credit policy

Credit period	Existing	proposed-A	proposed-B	Proposed-C
Credit sales	50,00,000	56,00,000	60,00,000	62,00,000
Less : Variable cost – 80%	40,00,000	44,80,000	48,00,000	49,60,000
Fixed Cost	6,00,000	6,00,000	6,00,000	6,00,000



Profit- A	4,00,000	5,20,000	6,00,000	6,40,000
Average debtor	$\frac{40,00,000 + 600,000}{360} \times 30$	$\frac{44,80,000 + 600,000}{360} \times 45$	$\frac{48,00,000 + 600,000}{360} \times 60$	$\frac{49,60,000 + 600,000}{360} \times 90$
$\frac{V.C. + F.C.}{360} \times \text{credit period}$	3,83,333.33	6,35,000	9,00,000	13,90,000
Less opportunity cost @ 20%	76,666.67	1,27,000	1,80,000	2,78,000
Increase profit		69,666.67	96,666.67	38,666.67

Ans. **Policy B having Average Collection period 60 day's yields the maximum profit and this is must profitable**

Q.16. [2006–Dec.] Sales manager of a company process to sell goods to a group of new customers with 10% risk of non payment .This group would require one and a half month's credit and is likely to increase sales by ₹1,00,000 per annum .Production and selling expenses amount to 80% of sales and income tax rate is 30% .The company's minimum required rate of return after tax is 25% .

**Should the sales manager's proposal be accepted ?**

**Find the degree of risk of non payment that the company should be willing to assume, if required rate of return after tax is (i) 30% (ii) 40% or (iii) 60%**

Ans. Available rate of return is 70% which is higher than the required rate of return of 25%, the sales manager proposal should be accepted.

Q.17. [June 2011] Peacock Ltd. has been engaged in manufacturing of textiles. It has a current sales of 30 lakh per annum. The cost of sales is 75% of sales and bad debts are 1 % of sales. The cost of sales comprises 80% variable costs and 20% fixed cost, while the company's required rate of return is 12%. The company 'currently allows customers 30 days' credit, but is now considering increasing this to 60 days' credit in order to attract more customers.

It has been estimated that this change in policy will increase sales by 15%, while bad debts will increase from 1 % to 4%. It is expected that the policy change will not result in any increase in fixed costs, creditors and stock level. Should Peacock Ltd. introduce proposed policy?

Evaluation of credit policy

Credit period	30 Days	60 Days
Bad debts	1%	4%
Sales revenue	30,00,000	34,50,000
Less : Variable cost	18,00,000	20,70,000
Fixed cost	4,50,000	4,50,000
Profit (A)	7,50,000	9,30,000
Average debtor = $\frac{V.C. + F.C.}{360} \times \text{credit period}$	$\frac{18,00,000 + 4,50,000}{360} \times 30$ 1,87,500	$\frac{20,70,000 + 4,50,000}{360} \times 60$ 4,20,000
Less exp <sup>n</sup> due to credit sale		
Opportunity cost @ 12%	22,500	50,400
Bad debts	30,000	1,38,000
Net profit	6,97,500	7,41,600
Increase profit		44,100

Since profit increases due to increase of credit period therefore it is better decision to change credit period.

**Q.18. [Dec. 2011]** Following are the details regarding operations of Radiance Enterprises Ltd. during a period of last 12 months:

Sales	12,00,000
Selling price (per unit)	10
Variable cost (per unit)	7
Total cost (per unit)	9

Credit period allowed to customers is one month.

The company is considering a proposal for a more liberal credit by increasing the average collection period from one month to two months. This relaxation is expected to increase sales by 25%. You are asked to advise the company regarding adoption of new credit policy assuming that the company's required rate of return on investment is 30%.

**Answer -18**

Sales revenue = 12,00,000

s.p./unit = 10

sales unit =  $\frac{12,00,000}{10} = 1,20,000$  unit

variable cost =  $1,20,000 \times 7 = 8,40,000$

variable cost as a % of sales =  $\frac{8,40,000}{12,00,000} \times 100 = 70\%$

fixed cost =  $(9-7) \times 1,20,000 = 2,40,000$

Evaluation of credit policy

Credit period	Existing policy One month	Proposed policy Two months
Sales revenue	12,00,000	12,00,000(1+0.25) 15,00,000
Less : Variable cost	8,40,000	20,70,000
Fixed cost	2,40,000	4,50,000
Profit (A)	1,20,000	2,10,000
Average debtor = $\frac{V.C. + F.C.}{360} \times \text{credit period}$	$\frac{8,40,000 + 2,40,000}{12} \times 1$ 90,000	$\frac{10,50,000 + 2,40,000}{12} \times 2$ 2,15,000
Less exp <sup>n</sup> due to credit sale		
Opportunity cost @30%	27,000	64500
Net profit	93,000	1,45,500
Increase profit		52,500

Since profit increases due to increase of credit period therefore it is better decision to change credit period.

**Q.19. [June 2012]** Sawan Ltd. currently has sales of 30,00,000 with an average collection period of two months. At present, no discounts are offered to the customers. The management of the company is thinking to allow a discount of 2% on cash sales which will result as under:

(i) The average collection period would reduce to one month.

- (ii) 50% of customers would take advantage of 2% discount. The company would normally require a 25% return on its investment.

Advise the management whether to extend the discount on cash sales.

Credit period	Existing policy 2 months	Proposed policy:- cash discount=2%; 1month
Cash discount customer Average debtors = $\frac{\text{sales}}{12} \times \text{credit period}$	$\frac{50,00,000}{12} \times 2 = 8,33,333.33$	50% of 30,00,000 = 25,00,000 $\frac{50,00,000}{12} \times 1 = 4,16,666.67$
Less: expenditure due to credit sale (B) Opportunity cost @ 25%	2,08,333.33	1,04,166.67  2% OF 25,00,000=50,000
Cash discount		
Total cost	2,08,333.333	1,54,166.67

- Q.20. (CS Final Dec. 2010 & 2012):** Dec 2010 (b) Gel Corporation presently gives credit terms of 'net 30 days'. It has 60 lakh in credit sales and its average collection period is 45 days. To stimulate sales, the company may give credit terms of 'net 60 days' with sales expected to increase by 15%. After the change, the average collection period is expected to be 75 days with no difference in payment habits between old and new customers. Variable costs are Re. 0.80 for every Re. 1 of sales; and the company's before tax required rate of return on investment in receivables is 20%. Assume 360 days in a year. Should the company extend its credit period? (8 marks)

**Answer :**

**Evaluation credit policy**

Credit policy Credit period	Existing 45 days	Proposed policy 75 days
Sales revenue	60,00,000	60,00,000(1+0.15 ) 69,00,000
Less : variable cost	48,00,000	55,20,000
Operating profit A	12,00,000	13,80,000
Average debtor $\frac{V.C.+F.C.}{360} \times \text{credit period}$	$\frac{48,00,000+0}{360} \times 45 = 6,00,000$	$\frac{55,20,000+0}{360} \times 75 = 11,15,000$
Less: exp <sup>n</sup> due to credit sales (B) Opportunity cost @ 20% on debtor	1,20,000	2,23,000
Net profit	10,80,000	11,57,000
Increase profit		77,000



**MCQ QUESTIONS WITH ANSWER**

1. 5 Cs of the credit does not include:  
(a) Collateral, (b) Character,  
(c) Conditions, (d) None of the above.
2. Which of the following is not an element of credit policy?  
(a) Credit Terms, (b) Collection Policy,  
(c) Cash Discount Terms, (d) Sales Price.
3. Ageing schedule incorporates the relationship between:  
(a) Creditors and Days Outstanding, (b) Debtors and Days Outstanding,  
(c) Average Age of Directors, (d) Average Age of All Employees.
4. Bad debt cost is not borne by factor in case of:  
(a) Pure Factoring, (b) Without Recourse Factoring,  
(c) With Recourse Factoring, (d) None of the above.
5. Which of the following is not a technique of receivables management?  
(a) Funds Flow Analysis, (b) Ageing Schedule,  
(c) Days sales outstanding, (d) Collection Matrix.
6. Which of the following is not a part of credit policy?  
(a) Collection Effort, (b) Cash Discount,  
(c) Credit Standard, (d) Paying Practices of debtors.
7. Which is not a service of a factor?  
(a) Administrating Sales Ledger, (b) Advancing against Credit Sales,  
(c) Assuming bad debt losses, (d) none of the above.
8. Credit Policy of a firm should involve a trade-off between increased:  
(a) Sales and Increased Profit, (b) Profit and Increased Costs of Receivables,  
(c) Sales and Cost of goods sold, (d) None of the above.
9. Out of the following, what is not true in respect of factoring?  
(a) Continuous Arrangement between Factor and Seller,  
(b) Sale of Receivables to the factor,  
(c) Factor provides cost free finance to seller,  
(d) None of the above.
10. Payment to creditors is a manifestation of cash held for:  
(a) Transactionary Motive, (b) Precautionary Motive,  
(c) Speculative Motive, (d) All of the above.
11. If the closing balance of receivables is less than the opening balance for a month then which one is true out of?  
(a) Collections > Current Purchases, (b) Collections > Current Sales,  
(c) Collections < Current Purchases, (d) Collections < Current Sales.
12. If the average balance of debtors has increased, which of the following might not show a change in general?  
(a) Total Sales, (b) Average Payables,  
(c) Current Ratio, (d) Bad Debt loss.

13. Securitization is related to conversion of:  
(a) Receivables, (b) Stock,  
(c) Investments, (d) Creditors.
14. 8096 of sales of Rs. 10,00,000 of a firm are on credit. It has a Receivable Turnover of 8. What is the Average collection period (360 days a year) and Average Debtors of the firm?  
(a) 45 days and Rs. 1,00,000, (b) 360 days and Rs. 1,00,000,  
(c) 45 days and Rs. 8,00,000, (d) 360 days and Rs. 1,25,000.
15. In response to market expectations, the credit period has been increased from 45 days to 60 days. This would result in:  
(a) Decrease in Sales, (b) Decrease in Debtors,  
(c) Increase in Bad Debts, (d) Increase in Average Collection Period.
16. If a company sells its receivable to another party to raise funds, it is known as:  
(a) Securitization, (b) Factoring,  
(c) Pledging, (d) None of the above.
17. Cash Discount term 3/15, net 40 means:  
(a) 3 % Discount if payment in 15 days, otherwise full payment in 40 days,  
(b) 15% Discount if payment in 3 days, otherwise full payment 40 days,  
(c) 3% Interest if payment made in 40 days and 1596 interest thereafter,  
(d) None of the above.
18. If the sales of the firm are Rs. 60,00,000 and the average debtors are Rs. 15,00,000 then the receivables turnover is:  
(a) 4 times (b) 25% (c) 400% (d) .25 times
19. If cash discount is offered to customers, then which of the following would increase?  
(a) Sales (b) Debtors  
(c) Debt collection period (d) All of the above
20. Receivables Management deals with:  
(a) Receipts of raw materials (b) Debtors collection  
(c) Creditors Management (d) Inventory Management
21. Which of the following is related to Receivables Management?  
(a) Cash Budget (b) Economic Order Quantity:  
(c) Ageing schedule (d) All of the above

**The firm is contemplating a relaxation of credit standards that is expected to result in a 15 per cent increase in unit sales; the average collection period would increase to 45 days with no change in bad debt expenses. It is also expected that increased sales will result in additional net working capital to the extent of ₹10,000. The increase in collection expenses may be assumed to be negligible. The required return on investment is 15 per cent. Should the firm relax the credit standard?**

- 22:- Calculate expected sales in 45 days credit
- (a) 34,500 units  
(b) 34,598 units  
(c) 33,987 units  
(d) 43,098 units

- 23:- Operating profit in 30 days credit sales  
(a) 70,000  
(b) 60,000  
(c) 87,000  
(d) 90,000
- 24:- Operating profit in 45 days credit sales  
(a) 78,000  
(b) 76,000  
(c) 57,000  
(d) 50,000
- 25:- Average debtor in 30 days credit  
(a) 50,000  
(b) 65,000  
(c) 20,000  
(d) 40,000
- 26:- Average debtor in 45 days credit  
(a) 33,437.50  
(b) 33,765.76  
(c) 33,546.76  
(d) 98,765.98
- 27:- Opportunity cost in 30 days credit  
(a) 30,000  
(b) 3,000  
(c) 4,000  
(d) 9,000
- 28:- Opportunity cost in 45 days credit  
(a) 33438.56  
(b) 33486.50  
(c) 33437.50  
(d) 33987.54
- 29:- Net profit in 30 days credit  
(a) 56,000  
(b) 57,000  
(c) 54,000  
(d) 55,000
- 30:- Net profit in 45 days credit  
(a) 71,484  
(b) 71,486  
(c) 71,487  
(d) 71,987
- 31:- Incremental profit in 45 days credit sales  
(a) 14,485  
(b) 14,486  
(c) 14,484  
(d) 14,432



32. 5Cs of the credit does not include  
(a) Collateral, (b) Character, (c) Conditions, (d) None of the above
33. Which of the following is not an element of credit policy?  
(a) Credit Terms (b) Collection Policy (c) Cash Discount Terms (d) Sales Price
34. Ageing schedule incorporates the relationship between  
(a) Creditors and Days Outstanding (b) Debtors and Days Outstanding  
(c) Average Age of Directors (d) Average Age of All Employees
35. Bad debt cost is not borne by factor in case of  
(a) Pure Factoring (b) Without Recourse Factoring  
(c) With Recourse Factoring (d) None of the above
36. Which of the following is not a technique of receivables Management?  
(a) Funds Flow Analysis (b) Ageing Schedule  
(c) Days sales outstanding (d) Collection Matrix
37. Which of the following is not a part of credit policy?  
(a) Collection Effort (b) Cash Discount  
(c) Credit Standard (d) Paying Practices of debtors.
38. Which is not a service of a factor?  
(a) Administering Sales Ledger (b) Advancing against Credit Sales  
(c) Assuming bad debt losses (d) None of the above.
39. Credit Policy of a firm should involve a trade-off between increased  
(a) Sales and Increased Profit (b) Profit and Increased Costs of Receivables  
(c) Sales and Cost of goods sold (d) None of the above
40. Out of the following, what is not true in respect of factoring?  
(a) Continuous Arrangement between Factor and Seller (b) Sale of Receivables to the factor  
(c) Factor provides cost free finance to seller (d) None of the above
41. Payment to creditors is a manifestation of cash held for:  
(a) Transactionary Motive (b) Precautionary Motive  
(c) Speculative Motive (d) All of the above
42. If the closing balance of receivables is less than the opening balance for a month then which one is true out of  
(a) Collections > Current Purchases (b) Collections > Current Sales  
(c) Collections < Current Purchases (d) Collections < Current Sales.
43. If the average balance of debtors has increased, which of the following might not show a change in general?  
(a) Total Sales (b) Average Payables  
(c) Current Ratio (d) Bad Debt loss.

44. Securitization is related to conversion of

- (a)Receivables (b)Stock
- (c)Investments (d)Creditors

45. 80% of sales of Rs. 10,00,000 of a firm are on credit. It has a Receivable Turnover of 8. What is the Average collection period (360 days a year) and Average Debtors of the firm?

- (a)45 days and Rs. 1,00,000 (b)360 days and Rs. 1,00,000
- (c)45 days and Rs. 8,00,000 (d)360 days and Rs. 1,25,000

46. In response to market expectations, the credit period has been increased from 45 days to 60 days. This would result in

- (a)Decrease in Sales (b)Decrease in Debtors
- (c)Increase in Bad Debts (d)Increase in Average Collection Period

47. If a company sells its receivable to another party to raise funds, it is known as

- (a)Securitization (b)Factoring
- (c)Pledging (d)None of the above

48. Cash Discount term 3/15, net 40 means

- (a) 3% Discount if payment in 15 days, otherwise full payment in 40 days
- (b) 15% Discount if payment in 3 days, otherwise full payment 40 days
- (c) 3% Interest if payment made in 40 days and 15%
- (d) interest thereafter, None of the above.

49. If the sales of the firm are Rs. 60,00,000 and the average debtors are Rs. 15,00,000 then the receivables turnover is

- (a) 4 times (b) 25% (c) 400% (d) 0.25 times

50. If cash discount is offered to customers, then which of the following would increase?

- (a)Sales (b)Debtors
- (c)Debt collection period (d)All of the above

51. Receivables Management deals with

- (a)Receipts of raw materials (b)Debtors collection
- (c)Creditors Management (d)Inventory Management

52. Which of the following is related to Receivables Management?

- (a) Cash Budget (b)Economic Order Quantity
- (c)Ageing schedule (d)All of the above

[Answers : 1. (d), 2. (d), 3. (b), 4. (c), 5. (a), 6. (d), 7. (d), 8. (b), 9. (c), 10. (a) 11. (b), 12. (b), 13. (a), 14. (a), 15. (d), 16. (b), 17. (a), 18. (a), 19. (a), 20. (b), 21. (c), 22. (a), 23. (b), 24. (a), 25. (c), 26. (a), 27. (b), 28. (c), 29. (b), 30. (a), 31. (c) 32. (d), 33. (d), 34. (b), 35. (c), 36. (a), 37. (d), 38. (d), 39 (b), 40. (c), 41. (a) 42. (b), 43. (b), 44. (a), 45. (a), 46. (d), 47. (b), 48. (a), 49. (a), 50. (a), 51. (b), 52. (c)]



## 10. Inventory Management

1. **Economic Order Quantity (EOQ).** (Recording Quantity). It is not a stock level. It is a quantity to be ordered when the stock reaches the minimum level. Reorder quantity is such that when it is added to the minimum stock, it should not exceed the maximum level. It is the quantity of inventory which can be reasonably ordered at a time and purchased economically. It is also known as standard order quantity, optimum quantity or economic lot size. It means that the total cost is at minimum. The problem is, how much to buy at a time. In case, large quantities are to be purchased the cost of carrying the inventory is high. This includes interest on investment obsolescence, overstocking losses, space costs etc. On the other hand, for frequent purchases, in small quantities, the cost is high – short of materials, loss of sales, increased in buying expenses such as stationary, postage etc. therefore, the quantity to be ordered depends upon two factors, i.e. the acquisition cost and cost of possessing materials. When order for material is placed, it must facilitate more trade discount, economy in transport etc. and at the same time it should not incur heavy charges on account of storage, insurance etc.

$$\text{Formula EOQ} = \sqrt{\frac{2AB}{CS}}$$

EOQ	=	Economic Order quantity
A	=	Annual consumption
B	=	Buying cost per order
C	=	Cost per unit
S	=	Storage and carrying cost.

### Average Stock

The level indicates the average stock held by the firm. It is calculate by the following formula:

$$\text{Average Stock Level} = \text{Maximum Level} + \text{Minimum Level} \times \frac{1}{2}$$

A more refined method of measuring average stock level is given below:

$$\text{Average Stock Level} = \text{Minimum Stock Level} + \frac{1}{2} \text{Reorder quantity}$$

- Q. 1.** From the following particulars, calculate the Economic Order Quantity.

Annual consumption of material	-	1,20,000 units
Cost of placing one order	-	Rs.80
Cost per unit	-	Rs.1.50
Cost of Carrying Inventory	-	20% per annum.

- Q. 2.** A company manufactures a product having monthly demand of 2000 units. For one unit of the finished product, 2 kgs of a particular raw material is needed. The purchase price of the material is Rs.20 per kg. The ordering cost is Rs.120 per order and holding cost is 10% per annum. Calculate

- (i) Economic Order Quantity (EOQ)
- (ii) Ordering and Holding Cost.

- Q. 3.** JP Ltd. manufacturer of a special product, follows the policy of EOQ for one of its components. The components details are as follows:

	Rs.
Purchase Price per Components	200
Cost of an Order	100



Annual Cost of Carrying One unit in Inventory 10% of Purchase Price

Total Cost of storage and Ordering per Annum 4,000

The company has been offered a discount of 2% on the price of the component provided the lot size is 2,000 components at a time.

You are required to:

- Compute the EOQ
- Advise whether the quantity discount can be accepted. (Assume that the inventory carrying cost does not vary according to discount policy.)
- Would your advice differ if the company is offered 5% discount of a single order?

- Q. 4.** Pumpkin Pump Co. uses amount 75,000 valves per year and the usage is fairly constant at 6,250 valves per month, the valves cost Rs.1.50 per unit when bought in quantities and the carrying cost is estimated to be 20% of average inventory investment on the annual basis. The cost to place an order and process the delivery is Rs.18. It takes 45 days to receive delivery from the date of an order and a safety stock of 3,200 valves is desired.

You are required to:

- the most economical order quantity and frequency of orders.
- The order point.

- Q. 5.** A company manufactures a product which is purchased at Rs.60 per kg. The company incurs handling cost of Rs.360 plus freight of Rs.390 per order. The carrying cost of inventory of raw material is Re.0.50 per kg per month. In addition, the cost of working capital finance on investment in inventory of raw material is Rs.9 per kg per annum. The annual production is 1,00,000 units and 2.5 units are obtained from 1kg of raw material.

You are required to:

- Calculate EOQ of raw material.
- How frequently the orders should be placed.
- If the company proposes to rationalize placement of order on quarterly basis, what percentage of discount in the price of raw material should be negotiated.

- Q. 6.** EXE Ltd. has received an offer of quantity discounts on its order of materials as under

Price per tonne	Tonnes Nos.
1,200	Less than 500
1,180	500 and less than 1,000
1,160	1,000 and less than 2,000
1,140	2,000 and less than 3,000
1,120	3,000 and above

The annual requirement for the material is 5,000 tonnes. The ordering cost per order is Rs.1,200 and the stock-holding cost is estimating at 20% of material cost per annum. You are required to compute the most economical purchase level.

What will be your answer to the above question if there are no discounts offered and the price per tonne is Rs.1,500?

- Q. 7.** The quarterly production of a company's product is 20,000 units. Each unit of product requires 0.5 kg of raw material. The cost of placing one order is Rs.100 and inventory carrying cost of 1 kg. is Rs.2 per annum. The lead time for procurement of order is 36 days and safety stock of 1,000 kgs. of raw material is maintained by the company. The company has been able to negotiate following discount structure with the raw material supplier:

Order	Quantity (kgs.)	Total Discount (Rs.)
Upto 6,000		NIL
6,000 –	8,000	400
8,000 –	16,000	2,000

16,000 – 30,000	3,200
30,000 – 45,000	4,000

**You are required to:**

- Calculate the reorder point taking 30 days in a month.
- Prepare a statement showing total cost of procurement and storage of raw material after considering the discount if the company elects to place one, two, four or six orders in a year.
- State the number of orders which the company should place to minimize the cost after taking EOQ into consideration.

**Q. 8. [2007 June] Blue Berry Ltd. estimates its carrying cost at 12% and its ordering cost at Rs. 12 per order. The estimated annual requirement is 40,000 units at a price of Rs. 5 per unit. What is the most economical number of units to order and how often will an order need to be placed?**

**Ans.**  $EOQ = \sqrt{\frac{2 \times 40,000 \times 12}{0.6}} = 1265 \text{ units}$      $Time = \frac{1265}{109.589} = 11.54 \text{ days}$

**Q. 9. [2010 June]** Ratan Enterprises requires 1,80,000 units of a certain item annually. The cost per unit and the cost per purchase order are Rs. 6 and Rs. 600 respectively. The inventory carrying cost is Rs. 6 per unit per year

- What is the economic order quantity?
- What should the firm do if the supplier offers discount as below

Order quantity	Discount (%)
9000-11999	2
12,000 and above	3

**Q.10. [CS Final June 2008]** Elite Ltd. manufactures a product from a raw material, which is purchased at Rs.100 per kg. The company incurs a handling cost of Rs.300 plus freight of Rs.325 per order. The incremental carrying cost of inventory of raw material is Re.0.50 per kg. per month. In addition, the annual cost of working capital finance on the investment in inventory of raw material is Rs.4 per kg. The annual production of the product is 1,00,000 units and 2 units are obtained from one kg. of raw material.

Required –

- Calculate the economic order quantity (EOQ) of raw materials.
- Advise how frequently the orders for procurement of raw materials should be placed.

**If the company proposes to rationalize placement of orders for procurement of raw materials on quarterly basis, what percentage of discount in the price of raw materials should be negotiated?**

**Q.11. [2009 –Dec]** Vaibhav Ltd. is engaged in manufacturing of machine used in construction. It is considering the possibility of purchasing from a supplier a component it now makes. A supplier has agreed to supply the component in the required quantities at a unit price of Rs. 18. Transportation and insurance charges are Re. 1 per unit. Presently the company produces the component from a single raw material in economic lots of 3,000 units at a cost of Rs. 4 per unit. The average annual demand is Rs. 40,000 units. The annual holding cost for company is Re. 0.50 per unit and it has set a minimum stock level of 800 units. The direct labour costs of the component are Rs. 12 per unit. The company also hires a machine at a rate of Rs. 400 per month on which the component are produced. Suggest whether the company should procure the component.



- Ans.** Ordering cost = Rs. 56.25 .Average stock level = 2,300 units  
 Cost of manufacturing component = Rs. 6,46,681.25  
 Purchase cost of component = Rs. 7,20,000  
 Add: Transpiration and insurance Charges = 40,000  
 Since the cost of manufacturing component is less than the purchase of component , the company should manufacture the component .
- Q.12. [Dec. 2011]** Prakash Motors Pvt. Ltd. purchases 9,000 spare parts for its annual requirements ordering one month usage at a time. Each spare part costs 20. The ordering cost per order is 15 and the carrying charges are 15% of unit cost. You have been asked to suggest the most economical purchasing policy for the company. What advice would you offer and how much would it save for the company per year?
- Q.13. [June 2012]** Priyanka Ltd. requires 2,000 units of an item annually. The cost of the item per unit is 20 and ordering cost is 50 per order. If the carrying cost is 25% of the cost of item, find the optimum lot size.  
 If the company purchases in lots of 1,000 or more units of the item, it gets a rebate of 3%. Should the company accept the offer?

### Cash budget

**Cash Budget.** This budget represents the amount of cash receipts and payments, and a balance during the budgeted period. It is prepared after monthly or weekly giving the following hints

- (1) It ensures sufficient cash for business requirements.
- (2) It proposes arrangements to be made overdraft to meet any shortage of cash.
- (3) It reveals the surplus amount, and the effect of the seasonal fluctuations on cash position. The objective of cash budget is the proper co-ordination of total working capital, sale, investment and credit.

- Q.14.** From the following forecasts of income and expenditure prepare a cash budget for the three months commencing 1<sup>st</sup> June, when the bank balance was Rs.1,00,000.

	Sales	Purchases	Wages	Factory Expenses	Admin. & Selling Expenses
	Rs.	Rs.	Rs.	Rs.	Rs.
April	80,000	41,000	5,600	3,900	10,000
May	76,500	40,500	5,400	4,200	14,000
June	78,500	38,000	5,400	5,100	15,000
July	90,000	37,000	4,800	5,100	17,000
August	95,000	35,000	4,700	6,000	13,000

A sales commission of 5 per cent on sales, due two months after sales, is payable in addition to selling expenses. Plant value at Rs.65,000 will be purchased and paid in August, and the dividend for the last financial year of Rs.15,000 will be paid in July. There is a two month credit period allowed to customers and received from suppliers.

A company expects to have Rs.37,500 cash in hand on 1<sup>st</sup> April, and requires you to prepare an estimate of cash position during the three months, April, May and June. The following information is supplied to you:

	Sales	Purchases	Wages	Factory Expenses	Office Expenses	Selling Expenses
		Rs.	Rs.	Rs.	Rs.	Rs.
Feb	75,000	45,000	9,000	7,500	6,000	4,500
March	84,000	48,000	9,750	8,250	6,000	4,500
April	90,000	52,500	10,500	9,000	6,000	5,250
May	1,20,000	60,000	13,500	11,250	6,000	6,570
June	1,35,000	60,000	14,250	14,000	7,000	7,000

Other Information:

- (1) Period of credit allowed by suppliers 2 months.
- (2) 20% of sales is for cash and period of credit allowed to customers for credit is one month.



- (3) Delay in payment of all expenses – 1 month.
- (4) Income tax of Rs.57,500 is due to be paid on June 15<sup>th</sup>.
- (5) The company is to pay dividends to shareholders and bonus to workers of Rs.15,000 and Rs.22,000 respectively in the month of April.
- (6) Plant has been ordered to be received and paid in May. It will cost Rs.1,20,000.

**Q.15. [CS Final June 2008]** Based on the following information prepare a cash budget for ABC Ltd.

	1 <sup>st</sup> Quarter	2 <sup>nd</sup> Quarter	3 <sup>rd</sup> Quarter	4 <sup>th</sup> Quarter
Opening cash balance	Rs.10,000			
Collection from customers	1,25,000	Rs.1,50,000	Rs.1,60,000	Rs.2,21,000
Payment:				
Purchase of materials	20,000	35,000	35,000	54,200
Other expenses	25,000	20,000	20,000	17,000
Salary and wages	90,000	95,000	95,000	1,09,200
Income tax	5,000	—	—	—
Purchase of machinery	—	—	—	20,000

The company desires to maintain a cash balance of Rs.15,000 at the end of the each quarter. Cash can be borrowed or repaid in multiples of Rs.500 at an interest of 10% per annum. Management does not want to borrow cash more than what is necessary and wants to repay as early as possible. In any event, loans cannot be extended beyond four quarters. Interest is computed and paid when repayment is made at the end of the quarter.

**Ans.** Cash budget

Particulars	1 <sup>st</sup> quarter	2 <sup>nd</sup> quarter	3 <sup>rd</sup> quarter	4 <sup>th</sup> quarter
Opening cash balance	10,000	15,000	15,000	15,325
Receipts:				
Collection from Customers	1,25,000	1,50,000	1,60,000	2,21,000
(A)	1,35,000	1,65,000	1,75,000	2,36,325
Payments:				
Purchase of materials	20,000	35,000	35,000	54,200
Other expenses:	25,000	20,000	20,000	17,000
Salary and wages	90,000	95,000	95,000	1,09,200
Income Tax	5,000	.....	.....	.....
Purchase of machinery	.....	.....	.....	20,000
(B)	1,40,000	1,50,000	1,50,000	2,00,400
(A) – (B)	(5,000)	15,000	25,000	35,925
Add: Loan taken	20,000	.....	.....	.....
*Less: Loan Repaid	.....	.....	(9,000)	(11,000)
*Payment of interest	.....	.....	(675)	(1,100)
Closing balance	15,000	15,000	15,325	23,825

\*9,000 X 10% X 9/12 = 675

11,000 X 10% = 1,100.

**Q.16.** Prepare a Cash Budget for the three months ending 30<sup>th</sup> June from the following information:

(a)

Month	Sales Rs.	Materials Rs.	Wages Rs.	Overheads Rs.
February	14,000	9,600	3,000	1,700
March	15,000	9,000	3,000	1,900
April	16,000	9,200	3,200	2,000
May	17,000	10,000	3,600	2,200
June	18,000	10,400	4,000	2,300

(b) Credit terms are:

Sales/Debtors – 10% sales are on cash, 50% of the credit sales are collected next month and the balance in the following month.

- (c) Creditors : Materials, 2 months  
Wages,  $\frac{1}{4}$  month  
Overheads,  $\frac{1}{2}$  month
- (d) Cash and Bank Balance on 1<sup>st</sup> April is expected to be Rs.6,000.
- (e) Other relevant information's are:
  - (1) Plant and Machinery will be installed in February at a cost of Rs.96,000. The monthly instalments of Rs.2,000 are payable from April onwards.
  - (2) Dividend @ 5% on Preference share capital of Rs.2,00,000 will be paid on 1<sup>st</sup> June.
  - (3) Advance to be received for sale of vehicles Rs.9,000 in June.
  - (4) Dividends from investments amounting to Rs.1,000 are expected to be received in June.
  - (5) Income-tax (advance) to be paid in June is Rs.2,000.

## MCQ QUESTION WITH ANSWERS

1. EOQ is the quantity that minimizes
 

(a) Total Ordering Cost,	(b) Total Inventory Cost,
(c) Total Interest Cost,	(d) Safety Stock Level.
2. ABC Analysis is used in:
 

(a) Inventory Management,	(b) Receivables Management,
(c) Accounting Policies,	(d) Corporate Governance.
3. If no information is available, the General Rule for valuation of stock for balance sheet is:
 

(a) Replacement Cost,	(b) Realizable Value,
(c) Historical Cost,	(d) Standard Cost.
4. In ABC inventory management system, class A items may require:
 

(a) Higher Safety Stock,	(b) Frequent Deliveries,
(c) Periodic Inventory system,	(d) Updating of inventory records.
5. Inventory holding cost may include:
 

(a) Material Purchase Cost,	(b) Penalty charge for default,
(c) Interest on loan,	(d) None of the above.
6. Use of safety stock by a firm would:
 

(a) Increase Inventory Cost,	(b) Decrease Inventory Cost,
(c) No effect on cost,	(d) None of the above.
7. Which of the following is true for a company which uses continuous review inventory system?
 

(a) Order Interval is fixed,	(b) Order Interval varies,
(c) Order Quantity is fixed,	(d) Both (a) and (c).
8. In the EOQ Model:
 

(a) EOQ will increase if order cost increases,	(b) EOQ will decrease if holding cost decreases,
(c) EOQ will decrease if annual usage increases,	(d) None of the above.
9. EOQ determines the order size when:
 

(a) Total Order cost is Minimum,	(b) Total Number of order is least,
(c) Total inventory costs are minimum,	(d) None of the above.
10. ABC Analysis is useful for analyzing the inventories :
 

(a) Based on their Quality,	(b) Based on their Usage and value,
(c) Based on Physical Volume,	(d) All of the above.
11. If A = Annual Requirement, O = Order Cost and C = Carrying Cost per unit per annum; there EOQ is :
 

(a) $(2AO/C)^2$	(b) $\sqrt{2 AO/C}$	(c) $2A \div OC$ ,	(d) $2 AOC$ .
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12. Inventory is generally valued as lower of:  
(a) Market Price and Replacement Cost,  
(b) Cost and Net Realizable Value,  
(c) Cost and Sales Value,  
(d) Sales Value and Profit.
13. Which of the following is not included in cost of inventory?  
(a) Purchase cost, (b) Transport in Cost,  
(c) Import Duty, (d) Selling Costs.
14. Cost of not carrying sufficient inventory is known as:  
(a) Carrying Cost, (b) Holding Cost,  
(c) Total Cost, (d) Stock-out Cost
15. Which of the following is not a benefit of carrying inventories?  
(a) Reduction in ordering cost, (b) Avoiding lost sales,  
(c) Reducing carrying cost, (d) Avoiding Production Shortages.
16. Which of the following is not a standard method of inventory valuation?  
(a) First in First out, (b) Standard Cost,  
(c) Average Pricing, (d) Realizable Value.
17. System of procuring goods when required, is known as:  
(a) Free on Board (FOB), (b) Always Butter Control (ABC),  
(c) Just in Time (JIT), (d) Economic Order Quantity.
18. A firm has inventory turnover of 6 and cost of goods sold is Rs. 7,50,000. With better inventory management, the inventory turnover is increased to 10. This would result in:  
(a) Increase in inventory by Rs. 50,000,  
(b) Decrease in inventory by Rs. 50,000,  
(c) Decrease in cost of goods sold,  
(d) Increase in cost of goods sold.
19. What is Economic Order Quantity?  
(a) Cost of an Order, (b) Cost of Stock,  
(c) Reorder level, (d) Optimum order size.

[Answers : 1. (a), 2. (a), 3. (c), 4. (a), 5. (d), 6. (a), 7. (b), 8. (a), 9. (c), 10. (b), 11. (b), 12. (b), 13. (d), 14. (d), 15. (c), 16. (c), 17. (c), 18. (b), 19. (d)]

## 11. MANAGEMENT OF CASH & MARKETABLE SECURITIES

1. Cash Budget does not include :
  - (a) Dividend Payable
  - (b) Capital Expenditure
  - (c) Issue of Capital
  - (d) Total Sales Figure.
2. Which of the following is not a motive to hold cash?
  - (a) Transactionary Motive
  - (b) Precautionary Motive
  - (c) Capital Investment
  - (d) None of the above.
3. Cheques deposited in bank may not be available for immediate use due to :
  - (a) Payment Float
  - (b) Receipt Float
  - (c) Net Float
  - (d) Playing the Float.
4. Difference between the bank balance as per Cash Book and Pass Book may be due to:
  - (a) Overdraft
  - (b) Float
  - (c) Factoring
  - (d) None of the above.
5. Concentration Banking helps in:
  - (a) Reducing Idle Bank Balance
  - (b) Increasing Collection
  - (c) Increasing Creditors
  - (d) Reducing Bank Transactions.
6. The Transaction Motive for holding cash is for:
  - (a) Safety Cushion
  - (b) Daily Operations
  - (c) Purchase of Assets
  - (d) Payment of Dividends.
7. Which of the following should be reduced to minimum by a firm?
  - (a) Receipt Float
  - (b) Payment Float
  - (c) Concentration Banking
  - (d) All of the above.
8. Cash required for meeting specific payments should be invested with an eye on :
  - (a) Yield
  - (b) Maturity
  - (c) Liquidity
  - (d) All of the above.

9. Miller-Orr Model deals with:
- (a) Optimum Cash Balance
  - (b) Optimum Finished goods
  - (c) Optimum Receivables
  - (d) All of the above.
10. Float management is related to:
- (a) Cash Management
  - (b) Inventory Management
  - (c) Receivables Management
  - (d) Raw Materials Management.
11. Which of the following is not an objective of cash management?
- (a) Maximization of cash balance
  - (b) Minimization of cash balance
  - (c) Optimization of cash balance
  - (d) Zero cash balance.
12. Which of the following is not true of cash budget?
- (a) Cash budget indicates timings of short-term borrowing
  - (b) Cash budget is based on accrual concept
  - (c) Cash budget is based on cash flow concept
  - (d) Repayment of principal amount of loan is shown in cash budget.
13. Baumol's Model of Cash Management attempts to:
- (a) Minimize the holding cost
  - (b) Minimization of transaction cost
  - (c) Minimization of total cost
  - (d) Minimization of cash balance
14. Which of the following is not considered by Miller- Orr Model?
- (a) Variability in cash requirement
  - (b) Cost of transaction
  - (c) Holding cost
  - (d) Total annual requirement of cash.
15. Basic characteristic of short-term marketable securities:
- (a) High Return
  - (b) High Risk
  - (c) High Marketability
  - (d) High Safety
16. Marketable securities are primarily:
- (a) Equity shares
  - (b) Preference shares
  - (c) Fixed deposits with companies
  - (d) Short-term debt investments.



17. Cash Budget does not include

- (a) Dividend Payable,
- (b) Postal Expenditure,
- (c) Issue of Capital,
- (d) Total Sales Figure.

18. Which of the following is not a motive to hold cash?

- (a) Transactionary Motive
- (b) Pre-cautionary Motive
- (c) Capital Investment
- (d) None of the above.

19. Cheques deposited in bank may not be available for immediate use due to

- (a) Payment Float
- (b) Receipt Float
- (c) Net Float
- (d) Playing the Float.

20. Difference between the bank balance as per Cash Book and Pass Book may be due to:

- (a) Overdraft
- (b) Float
- (c) Factoring
- (d) None of the above.

21. Concentration Banking helps in

- (a) Reducing Idle Bank Balance
- (b) Increasing Collection
- (c) Increasing Creditors
- (d) Reducing Bank Transactions

22. The Transaction Motive for holding cash is for

- (a) Safety Cushion
- (b) Daily Operations
- (c) Purchase of Assets
- (d) Payment of Dividends

23. Which of the following should be reduced to minimum by a firm?

- (a) Receipt Float
- (b) Payment Float
- (c) Concentration Banking
- (d) All of the above

24. Cash required for meeting specific payments should be invested with an eye on

- (a) Yield
- (b) Maturity
- (c) Liquidity
- (d) All of the above.

25. Miller-Orr Model deals with

- (a) Optimum Cash Balance
- (b) Optimum Finished goods
- (c) Optimum Receivables
- (d) All of the above.

26. Float management is related to

- (a) Cash Management
- (b) Inventory Management
- (c) Receivables Management
- (d) Raw Materials Management.

27. Which of the following is not an objective of cash management ?

- (a) Maximization of cash balance
- (b) Minimization of cash balance
- (c) Optimization of cash balance,
- (d) Zero cash balance.

28. Which of the following is not true of cash budget ?

- (a) Cash budget indicates timings of short-term borrowing
- (b) Cash budget is based on accrual concept
- (c) Cash budget is based on cash flow concept
- (d) Repayment of principal amount of loan is shown in cash budget.

29. Baumol's Model of Cash Management attempts to:

- (a) Minimise the holding cost
- (b) Minimization of transaction cost
- (c) Minimization of total cost
- (d) Minimization of cash balance

30. Which of the following is not considered by Miller-Orr Model?

- (a) Variability in cash requirement
- (b) Cost of transaction
- (c) Holding cost
- (d) Total annual requirement of cash.

[Answers : 1. (d), 2.(c), 3. (b), 4. (b), 5. (b), 6. (b), 7. (a), 8. (b), 9. (a), 10. (a), 11. (c), 12. (b), 13. (c), 14. (d), 15. (c), 16. (d), 17. (d), 18.(c), 19. (b), 20. (b), 21. (b), 22. (b), 23. (a), 24. (a), 25. (c), 26. (b), 27. (c), 28. (d), 29. (c), 30. (d)]

## 12. PROJECT PLANNING AND CONTROL

**Q. 1. [June 2001]** Write notes on Technical appraisal of projects.

**Ans.** Technical appraisal of projects involves the assessment of the following issues:-

- Evaluating the feasibility of technology and related issues.
- Determining whether scale of operations is suitable.
- Suitability of plants and machinery.
- Proper arrangement of complying with environmental regulation.
- Supply of water and electricity also needs to be ensured.
- Existence of proper means of transportation is a must.
- Assurance regarding appropriateness of the location is a prerequisite and is covered within the purview of technical examination of project appraisal.
- Adequacy and quality of assets should also be properly evaluated.

**Q. 2. [Dec 2002]** Write notes on Social Cost Benefit Analysis.

**Ans.**

- As the very name suggest 'social cost benefit analysis' refers to the process of evaluating any proposal by comparing its benefits and cost keeping in mind the social implications also.
- Social cost benefit analysis also termed as (SCBA) is based on calculation of social benefits.
- Social benefits are computed by subtracting social costs from the profits and gain.
- For the purpose of SCBA, Economic rate of return (ERR) based on predetermined norms is also employed.
- Thus, apart from normal cost, impact on environment health, hygiene and employment is also given due importance in case of such analysis.

**Q. 3. [June 2007]** Write notes on Economic Rate of Return.

**Ans.**

- While evaluating any project using social cost benefit analysis (SCBA), economic rate of return (ERR) is deployed.
- As against this, while making economic appraisal of any project Internal Exchange Rate (ER) is made use of.
- Economic rate of return equates real economic cost to its economic benefits during the project life time.
- Thus, economic rate of return acts as an important tool to evaluate and select the project.
- ERR is based on shadow prices which depicts real cost of inputs & real benefits of output to the society.

**Q. 4. [Dec 2009/2010]** Write notes on Domestic Resource cost.

**Ans.**

- Domestic resource cost refers to the resource cost involved in manufacturing a particular product rather importing the same.
- It reflects the competitive edge the country has in producing the good.



- It helps in maintaining favorable balance of payment.
- By calculating the domestic resource cost (DRC) a judicious decision can be made whether or not it is feasible to produce the good or is it better to outrightly purchase (import) the goods under consideration.

**Q. 5. [June 2010]** Write notes on Technical aspects of Feasibility report.

**Ans.** Technical aspects of feasibility report

Technical examination of a project involves consideration of the following factors:-

- Feasibility of the selected technical process and its suitability under Indian conditions.
- Scales of operations.
- Location.
- Plant and Equipment and their specifications.
- Plant Layout.
- Facilities for the supply of water, power and fuel.
- Facilities for disposal of effluents and also of the by-products, if any.
- Availability and economies of the means of transport in the region be examined and ensured.
- Arrangements for securing the technical know-how and training of personnel and labour that have to operate in the shop-floor be certified and ensured.
- Construction Schedule.
- Cost Estimates.

**Q. 6. [June 2012]** Write notes Financial Viability of a Project. **OR**

[June 2010] Distinguish between the 'Financial aspects of Project Appraisal' and 'Economic aspects of Project Appraisal'.

**Ans.** The Financial Aspects of Project Appraisal

The financial aspects of the project are analyzed under the following heads:-

- Amount of resources required to bring the project into operation and the sources from which finance will be obtained.
- Equity-Debt ratio.
- Profitability and Cash flow.
- Security.

Economic Aspects of Project Appraisal

An economic analysis of industrial projects is made on the basis of the following techniques of economic appraisal.

There are three measures commonly used for economic appraisal:-

- 1) Economic Rate of Return (ERR)
- 2) Domestic Resources Cost (DRC)
- 3) Effective Rate of Protection (ERP)

**Q. 7. [June 2003]** What are the steps taken by financial institutions while appraising the project? How do the financial institutions monitor the projects financed by them?

**Ans.** Various steps undertaken by financial institutions while appraising the project are as follows:-

- Evaluating the project to ensure whether the same meets the requisite standard and whether it falls within approved category.

- Examination of skill, competence and reliability of promoters and management.
- Evaluating the technical aspects of project.
- Analysing the economic aspects of the project.
- Considering the financial aspects of project by ensuring:-
  - Appropriate debt equity ratio.
  - Investigating quantum of finance required is correct.
  - Security against which Loan is to be procured is enough.
  - Cash flows are sufficient.
- Investigating into the commercial aspects by probing whether arrangement for plants and other equipment and procuring raw material has been made.
- Environment aspects like disposal of effluent also need to be taken care of.
- Last but not the least, impact of the project on the society also needs to be given due importance.

Financial institutions monitor the projects financed by them in following manner:-

- Stipulating the borrower company to submit to the financial institution report of current progress after specified period of time say quarterly/ half yearly.
- The borrower is also bound to submit annual accounts to such financial institutions.
- The financial institution also reserves the right to inspect the book of accounts of the borrower.
- Thus, the lending institution exercises surveillance over the borrowers.

**Q. 8.** [Dec 2003] Discuss in brief the techniques of economic appraisal for an Industrial Project.

**Ans.** The various techniques of economic appraisal for any industrial proposal are as follows:-

Discounted Techniques

- Net present value
- Internal rate of return
- Profitability index

Without Discounted Techniques

- Pay-back period.
- Average rate of return.

Apart from the aforementioned techniques, following methods / techniques are also deployed to evaluate any project:-

- Social Cost Benefit Analysis. (SCBA)
- Economic Rate of Return. (ERR)
- Domestic Resource Cost. (DRC)

**Q. 9.** [June 2007] Comment on the Project planning aims at choosing the minimum quantum of investment which may yield the highest return or maximize investments for obtaining the highest growth of the project.

**Ans.**

- It is true to state that project planning aims at choosing minimum quantum of investment which may yield the highest return or maximise investments for obtaining highest growth of the project.
- Rate of return on investment is also decided by management.

- Management strives to maximise this return on investment by formulating proper plans & executing the same.
- Return on investment (RI) should exceed cost of capital ( $R_e / K_e$ ).
- Therefore, cost of capital also acts as a determinative/ crucial factor in taking decision whether to take an investment project or drop it.



## 13. FINANCIAL SERVICES

**Q. 1.** [Dec 2007/ 2009] Distinguish between financial lease & operating lease?

Or

[Dec 2010] Distinguish between leasing hire purchase?

Or

[Dec 2004/ 2006] Leveraged lease?

**Ans. Meaning:**

Lease can be defined as a right to use equipment or capital goods on payment of periodical amount.

### **Parties to a Lease Agreement:**

There are two principal parties to any lease transaction as under:-

- 1. Lessor:** Who is actual owner of equipment permitting use to the other party on payment of periodical amount.
- 2. Lessee:** Who acquires the right to use the equipment on payment of periodical amount.

### **Type of Leasing**

The difference leasing option may however, be grouped in by two board categories as under

#### **1. Operating lease**

Feature of Operating lease:-

- It is short term arrangement.
- It can be cancelled by the lease prior to its expiration date.
- The lease rental is generally not sufficient to fully amortize the cost of the asset.
- The cost of maintenance, taxes, insurance is the responsibility of the lesser.
- The lease is protected against the risk of obsolescence.
- The lessor has the option to recover the cost of the asset from another party on Cancellation of the lease by leasing out the asset.
- The lease term is significantly less than the economic life of the equipment.
- These agreements may generally be preferred by the lease in the following circumstances:-
  - When the long-term suitability of asset is uncertain.
  - When the asset is subject to repaid obsolescence.
  - When the asset is required for immediate use to tide over a temporary problem.
  - Computers & other office equipments is very common asset which form subject matter of many operating lease agreements.

#### **2. Financial Lease**

Features of financial lease

- It is a long term arrangement.
- During the primary lease period the lease cannot be cancelled.
- The lease is more or less fully amortized during the primary lease period.
- The costs of maintenance taxes, insurance etc. are to be incurred by the leases unless the contract provides otherwise.
- The lease is required to take the risk of obsolescence.

- The lessor is only the financier and is not interested in the asset.
- The lease is term generally covers the full economic life of the equipment.
- The variants /forms under financial lease are as under:-

S No.	Basis	Finance Lease	Operating Lease
1	Life of Contract	Approximates the economic life of the asset.	Shorter than the economic life of the asset.
2	Maintenance	The burden of the costs of maintenance repairs, taxes insurance etc are borne by the lessee.	The burdens of all these expenses are borne by the lessor.
3	Cancellation	It is a non revocable contract i.e. it cannot be cancelled by the lessee prior to its expiration date.	It is a revocable one i.e. can be cancelled by the lessee prior to its expiration date.
4	Duration	In this case the lease period is usually related to the useful life of the asset.	It is usually of a shorter duration & bears no relation to the economic life of the asset.
5	Risk of Obsolescence	The lessee has to take the risk of obsolescence in the case of financial lease.	The lease is protected against risk of obsolescence.
6	Cost of Asset	The lease rental would cover the lessor's original investment cost plus return on investment.	The lease rental is generally not sufficient to fully amortize the cost of the asset.
7	Risk & Reward	The risk and reward incident to ownership are passed on the lease. The lessor only remains the legal owner of the asset.	The lease is only provided the use of the asset for a certain time, risk incident to ownership belong wholly to the lessor.
8	Full Payout	The lease is usually full pay out that is the single lease the cost of the asset together with the interest.	The lease is usually non payout, since the Lesser expects to lease the same asset over and over again to several users.

S No.	Basis	Lease Finance	Hire Purchase
1	Meaning	A transaction is a commercial arrangement, where by an equipment owner or manufacturer conveys to the equipment user the right to use the equipment in return for a rental.	Hire-purchase is a type of installments credit under which the hire - purchase agrees to take the goods on hire at a stated rental, which is inclusive of the repayment of principal as well interest, with an option to purchase.
2	Option of User	No option is provided to the lessee (user) to purchase the goods.	Option is provided to the hirer (user).
3	Nature of expenditure	Lease rental paid by the lessee is entirely revenue expenditure of the lessee.	Only interest element included in the HP installments is revenue expenditure by nature.
4	Components	Lease rentals comprise of 2 elements:- 1) Finance charge & 2) Capital recovery	HP installments comprise of 3 element:- 1) Normal trading profit 2) Finance charge and 3) Recovery of cost of goods/assets



**Q. 2. [CA Nov 2008]** Cross border leasing?

**Ans.** Cross border is a leasing agreement where lessor and lessee are situated in different countries. This raises significant additional issues relating to tax avoidance and tax shelters. It has been widely used in some European countries, to arbitrage the difference in the laws of different countries.

Cross border leasing have been in practice as a means of financing infrastructure development in emerging nations. Cross- border leasing may have significant applications in financing infrastructure development in emerging nations-such as rail & air transport equipment, telephone & telecommunications, equipment & assets incorporated into power generation and distribution system and other projects that have predictable revenue streams.

A major projective of cross- border leases is to reduce the overall cost of financing through utilization by the lessor of tax depreciation allowances to reduce its taxable income. The tax savings are passed through to the lessee as a lower cost of finance .The basic prerequisites are relatively high tax rate in the lessor's country, liberal depreciation rules and either very formalistic rules governing tax ownership

**Q. 3. [CS Dec 2005]** "For the lessor, lease decision is akin to a capital budgeting exercise."Examine the statement and explain its implication.

**Ans.**

- When a proposal of lease is evaluated from the point of lessor the same is in the form of capital budgeting problem.
- Just like capital budgeting, the lessor will provide the asset on lease only when the cash inflows (lease rentals) are more than the cash outflows.
- Capital budgeting techniques are deployed by the lessor to evaluate the lease
- Lease rentals, residual value, initial cash investments, period for which lease is to be granted constitutes valid basis for evaluating lease proposal.
- Thus, it can truly be regarded that for the lessor, lease decision is akin to a capital budgeting exercise.

**Q. 3. [CS Dec 2004]** Discuss the basic of depository system implemented in India.

Or

[CS June 2006] Write a note on depository system in India.

Or

[CS Dec 2007] Depository system in India.

**Ans.** A depository is a person with whom one can deposit a property for safekeeping. A bank for example, is a depository for money. The term depository in the context of financial market dealings means an organization which receives security scrip's from investors, issues a receipt in acknowledgement thereof (the depository receipts) & maintains accounts in its computer system to record further receipts & delivery of securities. The maintenance of such accounts makes it possible to complete receipts & deliveries of securities by transfer entries from one account to another.



The issuer company enters into an agreement with its depository who agrees to act as such in India in respect of the securities issued by the company.

The depository engages agents called the depository participant (DP). The depository participants are required to apply SEBI for registration through the depository. As per SEBI (depositories & participant) Regulations, 1996, public financial institutions, state financial corporations, scheduled banks, foreign banks, clearing corporations, custodians of securities can act as a depository participants, Subject to capital adequacy requirements & other conditions, non-banking financial companies, registrar to an issue stockbrokers can also apply to act as a depository participant. The stock holding corporation of India Ltd. is the first depository participants to be registered with the NSDL.

An investor intending to hold securities in the electronic form in a depository system should open an account with a participants, also should all the clearing members (a member of clearing corporation) who intend to provide settlement function in the depository system. The principal types of accounts maintained by a depository participant engaged by NSDL are as below.

#### Beneficiary account

These are accounts maintained by investors for holding their securities with the depository.

#### Clearing accounts

A clearing account is an account held with the participant by clearing member of a clearing corporation for the purpose of carrying out clearing & settlement functions in respects of electronic trades. A clearing accounts, delivery account & receipts account.

The depository is governed by the depositories act. The depository act has the following objectives:-

- Marking securities of public limited company freely transferable subject certain exception.
- Dematerialization the securities in the depository mode.
- Providing for maintenance of ownership records in book entry form.

**Q. 4. [CS Dec 2008/ 2010]** The depository system functions very much like banking system?

**Ans.** Depository functions like securities bank, where the dematerialized physical securities are traded & held in custody this facilitates faster risk free & low cost settlement. The depository is much like a bank & performs many activities that are similar to a bank. Following table compares the

S No.	Bank	Depository
1	Hold fund in account.	Hold securities in an account.
2	Transfers between accounts.	Transfers securities between accounts.
3	Transfers without holding money.	Transfers without handing securities
4	Safe keeping of money.	Safe keeping of securities.

**Q. 5. [CS June 2007]** Models of depository?

**Ans.** There are following two models of depository:-

Immobilization

Where physical share certificates are kept in vaults with the depository for safe custody. All subsequent transactions in these securities take place in book entry form. The actual owner has the right to withdraw his physical securities as and when desired. The immobilization of fresh issue may be achieved by issuing a jumbo certificate representing the entire issue in the name of depository, as nominee of the beneficial owners.

Dematerialization

No physical scrip in existence, only electronic records maintained by depository. This type of system is cost effective and simple and has been adopted in India.

**Q. 6. [CS June 2011]** Write notes on the Benefits of depository system.

**Ans.** Depository refers to an organisation in which securities of the shareholder is held in the form of electronic accounts.

They help in transferring securities without handling them in physical form and thus leading to the development of scripless trading system and forming basis for dematerialised system.

Benefits of Depository System are as follows:-

- 1) It helps in elimination of bad deliveries. - In depository system as the securities are traded in dematerialised form so there are no chances of bad delivery.
- 2) Immediate transfers and registration of securities – In depository system the dematerialised security once bought or sold are transferred immediately. There is no further need to send it to the company is register for registration.
- 3) Depository system helps in faster disbursement of non cash corporate benefits like right issue / bonus etc.

In depository system all the non cash corporate benefits are directly credited to the investor account thus helps in faster disbursement.

- 4) Depository system helps in elimination of problem related to the change in address of investor, transmission etc.

In case of change of address the investors need not report the same to the Company register; they need to report only to the DP.

- 5) It helps to reduce the handling of huge volume of papers and periodic status reports to the investors on their holding and transactions, leading to better control.
- 6) Brokerage cost charged by the broker is also less in trading in dematerialised form.
- 7) Elimination of all the risk associated with trading in physical securities.

Dealing in physical securities involves too much risk including the risk of theft, mutilation of securities or loss of certificates during movements through or from the registrars. Investors are saved from all these risk by trading in dematerialised form.



**Q. 7.** [CS Dec 2011] Write notes on Forfaiting.

**Ans.**

- Forfaiting is that mode of export trade financing whereby bank advances cash to the exporter.
- The advance so granted is against the invoices and is generally for a long period.
- The amount advanced is lesser than the invoice since it is discount by the bank at a rate so determined taking into account all risk factors.

**Q. 8.** [Dec2005/ 2008/ 2009/ 2010] Factoring & bill discounting.

**Ans.** Factoring is a continuing arrangement between a financial intermediary called a Factor & a seller of goods or services. Based on the type of factoring, the factor performs the following services in respect of the accounts receivables:-

- Purchase all accounts receivables of the seller for immediate cash.
- Administers the sales ledger of the seller.
- Collects the accounts receivables.
- Assumes the losses which may arise from bad debts.
- Provides relevant advisory services to the seller.

The factor handle all the receivables arising out of the credit sales of the seller company & not just some specific bills or invoices as is done in a bills discounting agreement.

Factoring offers a very flexible mode of cash generation against receivables. Once a line of credit is established, availability of cash is directly geared to sales so that as sales increase so does the availability of finance. The mechanics of factoring comprises of the sequence of events outlined below

**Q. 9.** [CS June 2003] Recourse factoring.

**Ans.** Recourse factoring can be referred as a non-fund based financial service wherein a finance company called 'factor', undertakes to collect the receivables of a company in return for collection charges called factoring commission (as a %of the factor receivables )

Factoring can be of two types:-

- Recourse factoring
- Non recourse factoring

In non recourse factoring the risk of bad debts is on the client .the factor provider's finance & in case of default in payment of debt he is in entitled to recover the same from the client.

**Q.10.** [CS June 2000] Write notes on undisclosed factoring.

**Ans.**

- Undisclosed factoring refers to that form of factoring wherein client's customers are not notified about the factoring arrangement
- Customers continue to make payment to the client though the same have been assigned to the factor.



- Thus, in such a case the customers are not informed or notified about the arrangement entered into between factor and client.
- This agreement is entered in respect of organisations enjoying good business reputation.

**Q.11. [CS June 2005]** Describe the mechanics involved in factoring.

**Ans.** Factoring offers a very flexible mode of cash generation against receivables. Once a line of credit is established, availability of cash is directly geared to sales so that as sales increase so does the availability of finance. The mechanics of factoring comprises of the sequence of events outlined below:-

- 10) Seller (client) negotiates with the factor for establishing factoring relationship.
- 11) Seller requests credit check on buyer (client).
- 12) Factor checks credit credentials and approves buyer. For each approved buyer a credit limit and period of credit are fixed.
- 13) Seller sells goods to buyer.
- 14) Seller sends invoice to factor. The invoice is accounted in the buyers account in the factor's sales ledger.
- 15) Factor sends copy of the invoice to buyer.
- 16) Factor advises the amount to which seller is entitled after retaining a margin, say 20%, the residual amount paid later.
- 17) On expiry of the agreed credit period, buyer makes payment of invoice to the factor.
- 18) Factor pays the residual amount to seller after his agreed compensation.

**Q.12. [CS Dec 2008]** 'Factoring' and 'securitization'

**Ans. Factoring**

6. Factoring is associated with receivables of manufacturing and trading companies.
7. It mainly deals with trade receivables of clients.
8. The entire credit risk is passed on to the factor subject to the terms of agreement
9. Factor himself takes up the collection work.
10. No issue of securities against book debts.

**Securitisation**

5. Securitisation is concerned with loans and receivables of financial institutions.
6. It deals with receivables arising out of loans like Hire purchase finance and receivables from Government departments.
7. Part of the credit risk is absorbed by the originator by transferring the assets at a discount.
8. In this case, collection work can be done by the originator or by a servicing agent.
9. Marketable securities are issued against loans and receivables, term loans to financial companies, receivables from Government departments and government companies, hire purchase loans (vehicle loans), Mortgage loans, lease finance and credit card receivables etc.

**Q.13.** [CS June 2000] ABC Ltd. is a new company intending to issue equity shares to public. Enumerate the activities involved in a public issue with reference to:-

- 1) Pre-issue management; and
- 2) Post-issue management.

**Ans. Pre Issue Management**

Pre Issue management covers in its ambit the activities commencing with the coming of the idea of issuing equity shares till opening of the subscription list.

It includes:-

- Appointment of merchant bankers, registrar to issue, credit rating agency.
- Appointment of other financial intermediaries such as bankers, underwriters, brokers and sub-brokers, auditors, solicitors etc.
- Getting the memorandum and articles of association approved by the concerned stock exchanges.
- Drafting the prospectus.
- Include all necessary details in the prospectus as required.
- Getting the prospectus approved in the board meeting
- Filing prospectus with R.O.C. and stock exchange.
- Fulfilling the requirements of listing at the stock exchange.
- Certificate relating to promoters contribution.
- Opening the subscription list.

**Post Issue Management**

Post Issue management covers in its purview activities after the subscription list gets opened.

It includes:-

- Co-coordinating with the bankers to the issue.
- Ensuring minimum subscription deciding about basis of allotment.
- Allotment of shares in e-form 2 within 30 days from date of allotment alongwith requisite fee.
- Issuing refund orders.
- Issuance of share certificates within 3 months after the allotment of shares as prescribed under section 113 of the Companies Act.

**Q.14.** [CS June 2000] How are financial markets and financial services regulated in India? In this context, critically examine the role of SEBI.

**Ans.**

- 1) Securities and Exchange Board of India (SEBI) has been given enormous powers to regulate the financial markets and financial services in India.
- 2) Chapter IV of SEBI Act 1992 provides the powers and functions of SEBI.
- 3) As per Section 11 of the said Act - It is the duty of the Board to:



- Protect the interests of the investors in securities
- Promote the development of securities market.
- Regulate the securities market.

Various measures that can be undertaken by SEBI to accomplish the aforesaid are as follows:-

- ❖ Regulating the business in stock exchanges and other securities markets.
- ❖ Registering and regulating the functions of:-
  - Merchant bankers
  - Bankers to an issue
  - Portfolio managers
  - Registrar to an issue
  - Brokers and sub brokers
- ❖ Registering and regulating the working of:-
  - Depositories
  - Custodians
  - FII (Foreign institutional Investors)
  - CRA (Credit Rating Agencies)
- ❖ Registering and regulating:-
  - Venture capital funds
  - C.I.S (Collective Investment Schemes)
- ❖ Prohibiting insider trading.
- ❖ Prohibiting unfair trade practices.
- ❖ Promoting and, regulating SRO (Self Regulatory Organizations).
- ❖ Promoting investor education.

**Q.15. [CS Dec 2004]** How does 'outsourcing' benefit the company?

**Ans.** Following are the benefits of outsourcing to the company:-

- Outsourcing allows the company to have core concentration on its operations only.
- It gives privilege to the company to carry out its operations without entering into capital commitment.
- It surely results in specialisation since there is proper division of work according to one's potential.
- It also helps the organisation to hedge its risk to the minimum.
- Last but not the least, outsourcing helps the companies to initiate new projects quickly and efficiently.

**Q.16. [CS June 2006]** Discuss the advantages of investing in mutual funds.

**Ans.** Various advantages of investing in mutual funds are as follows:-

- Mutual funds provide services of experienced and skilled professionals to retail investors who lack such in-depth knowledge.



- They provide higher return as investment is made in a diversified basket of securities.
- They are less expensive when compared to investment in capital markets directly.
- Also, they have the additional feature of providing transparency to the investor.
- Provides diversified portfolio, whereby risk gets hedged since these funds invest in large number of diversified companies.
- Ensures liquidity to the investors along with safety.

**Q.17. [CS June 2006]** Briefly explain the services offered by merchant bankers to an issue.

**Ans.**

- 1) Merchant banker means any person engaged in the business of issue management by making arrangements regarding selling buying for subscribing to securities or acting as manager/consultant/advisor in relation to issue management.
- 2) Merchant bankers constitute an important segment of capital market intermediaries.
- 3) Following are the activities, under taken by the merchant bankers:-
  - Managing of public issue.
  - Managing international issues in form of ADRs, GDRs and Euro bonds.
  - Private placement of securities.
  - Underwriting.
  - Stock broking.
  - Advisory services related to diverse issues such as mergers & acquisitions.

The activities of Merchant Bankers are regulated by SEBI (Merchant Bankers) Rules 1992 and SEBI (Merchant Bankers) Regulations, 1992.

**Q.18. [CS June 2010]** Comment on the financial services industry encompasses a considerable range and depth of activities.

**Ans.**

- Financial services industry encompasses a considerable range and depth of activities.
- It includes traditional financial intermediaries such as commercial banks, insurance companies, mutual funds and unit trust etc.
- Also it includes modern services like credit information, credit rating, deposit, insurance, discounting, re-discounting, factoring, guarantees, funds transfer, hire purchase, leasing, loan syndication, underwriting etc.

**Q.19. [CS June 2000]** Write a short note on 'scripless trading'.

**Ans.**

- As the very name suggests 'scripless trading' refers to trading without scrips in physical form.
- Thus, scripless trading is the act of dealing in securities i.e. buying or selling by means of book entry itself without physical delivery of securities
- It helps in fastening the process of trading and facilitates liquidity in the market.
- It does away with the transfer of security in physical form, thereby eradicating the problem of safety of security.
- Scripless trading is practiced since it is much superior than trading in scrips in the physical form.

**Q.20. [CS Dec 2005]** Write a short note on 'Credit rating'.

**Ans.** Credit rating refers to the process of rating any instrument with regards to its ability and credit worthiness of repayment.

Credit rating is thus an opinion of credit rating agency (CRA) generated on the basis of assessment and analysis.

Process of credit rating:-

- Request from issuer of security/ holder of instrument for credit rating.
- Formation of rating committee.
- Credit evaluation by credit rating agency.
- Acceptance of rating by client.
- Public announcement of rating.
- Continuous monitoring of the ratings.

Approaches of credit rating:-

- Explicit judgmental approach
- Implicit judgmental approach
- Statistical approach

Examples of Credit Rating Agencies:-

- CRISIL
- ICRA
- CARE
- FITCH

Advantages of Credit Rating:-

- Helps the investors to make investment decisions
- Provides superior /better information at least cost.
- Gives suitable base for risk-return structure.
- Helps companies to comply with requirements of SEBI.

**Q.21. [CS Dec 2006]** Write notes on: Sources of real estate funding.

**Ans.**

- 1) Real estate financing refers to the process whereby real estate i.e. Land & buildings are financed. Thus, the whole process undertaken for arranging the funds for owning real estate is termed as real estate financing.
- 2) The 2 main instruments dealing in real estate financing are as follows:-
  - Real estate mortgages
  - Real estate leases
- 3) The main source of real estate financing is procuring loans from financial institutions.
- 4) Apart from the aforementioned ways other sources of finance which may be used to acquire real estate's are:-
  - Employer's loan.

- 'Own your house' scheme of LIC.
- Long term loans of State Housing Board.
- Loans provided by HDFC.
- Schemes of co-operative housing societies.

CS NITESH KR. JAISWAL CS CLASSES



## 14. INDIAN CAPITAL MARKET: EMERGING TRENDS

1. An Assets Management Company is formed
  - (a) To manage bank's assets
  - (b) To manage mutual funds investments
  - (c) To construct infrastructure projects
  - (d) To run a stock exchange
2. Prime duty of a merchant banker is:
  - (a) Maintaining records of clients
  - (b) Giving loans to clients
  - (c) Working as a Capital Market Intermediary
  - (d) None of the above
3. Basic objective of a money market mutual fund is:
  - (a) Guaranteed rate of return
  - (b) Investment in short-term securities
  - (c) Both (a) and (b)
  - (d) None of (a) and (b)
4. Short selling refers to:
  - (a) Buying shares and then selling them on the same day
  - (b) Selling shares without owning them
  - (c) Selling some shares out of a large holding
  - (d) Continuously selling shares in lots.
5. Which of the following is not regulated by SEBI?
  - (a) Foreign Institutional Investors
  - (b) Foreign Direct Investment
  - (c) Mutual Funds
  - (d) Depositories
6. Which of the following is true for mutual funds in India?
  - (a) Exit load is not allowed
  - (b) Entry load is allowed
  - (c) Entry load is not allowed
  - (d) Exit load allowed in some cases
7. Which of the following is not available in India?
  - (a) Index Options
  - (b) Index Futures
  - (c) Commodity Options
  - (d) Commodity Futures
8. Which of the following is the benefit of Depositories?
  - (a) Reduction in the share transfer time to the buyer
  - (b) Reduced Risk of stolen, fake, forged shares
  - (c) No Stamp duty on transfer of shares in dematerialized form
  - (d) All of the above
9. Credit Rating of a debt security is:
  - (a) Guarantee of Repayment
  - (b) Merely opinion
  - (c) Positive suggestion
  - (d) None of the above

10. The first computerized online stock exchange in India was:  
(a) NSE (b) OTCEI  
(c) BSE (d) MCX
11. Which of the following is working as demutualized stock exchange since from beginning?  
(a) NSE (b) BSE  
(c) DSE (d) All of the above
12. Which of the following derivative is not traded on Indian Stock Market?  
(a) Index Options (b) Stock Futures  
(c) Index Futures (d) Forward Rate Agreements
13. How many depositories are there in India?  
(a) 2 (b) 3  
(c) 0 (d) 1
14. The amount in unpaid dividend accounts of companies shall be transferred to the:  
(a) Dividend Equalization Reserve of the company  
(b) Investor Education and Protection fund  
(c) Investor Protection Fund  
(d) General Revenue Account of the Central Government
15. Secondary Market in India is regulated by:  
(a) Reserve Bank of India  
(b) Securities and Exchange Board of India  
(c) Ministry of Finance  
(d) Forward Market Commission
16. Funds do not have a fixed date of redemption.  
(a) Open ended funds (b) Close ended funds  
(c) Diversified funds (d) Both A and B.
17. In India, NIFTY and SENSEX are calculated on the basis of:  
(a) Market Capitalization (b) Paid up Capital  
(c) Free-float Capitalization (d) Authorized Share Capital

[Answers: 1. (b), 2. (c), 3. (b), 4. (b), 5. (b), 6. (d), 7. (c), 8. (d), 9. (b), 10. (b), 11. (a), 12. (d), 13. (a), 14. (b), 15. (b), 16. (a), 17. (c).]