

Code: 23HS1401

**II B.Tech - II Semester – Regular / Supplementary Examinations  
APRIL 2026**

**MANAGERIAL ECONOMICS AND FINANCIAL  
ANALYSIS**

**(Common for CIVIL, EEE, ECE, CSE)**

Duration: 3 hours

Max. Marks: 70

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 Note: 1. This question paper contains two Parts A and B.

2. Part-A contains 10 short answer questions. Each Question carries 2 Marks.

3. Part-B contains 5 essay questions with an internal choice from each unit. Each Question carries 10 marks.

4. All parts of Question paper must be answered in one place.

BL – Blooms Level

CO – Course Outcome

**PART – A**

		BL	CO
1.a)	Explain the importance of Managerial economics.	L1	CO1
1.b)	State the concept of Total outlay method.	L1	CO1
1.c)	Differentiate between Isocosts and Isoquants.	L2	CO2
1.d)	Explain the Objectives of Pricing.	L2	CO2
1.e)	Explain the impact of Unlimited liability on partners in Partnership.	L2	CO3
1.f)	Mention any two strategies to improve economic position in recession.	L2	CO3
1.g)	Mr. X purchases a house for Rs. 2,00,000. He agrees to pay for the house in 5 equal installments at the end of each year. If the money is worth 5% per annum effective, what would be size of each investment?	L3	CO4

1.h)	What are the objectives of Accounting?	L2	CO4
1.i)	Mention the suitable asset to be depreciated under sum of years digits method.	L2	CO4
1.j)	Write the Objectives of Capital budgeting.	L2	CO4

## PART – B

			BL	CO	Max. Marks
<b>UNIT-I</b>					
2	a)	Define Economics. Explain the scope and importance of Economics.	L2	CO2	5 M
	b)	Describe the methods of Demand forecasting.	L2	CO2	5 M
<b>OR</b>					
3	a)	Write a note on Micro Economics and Macro Economics.	L2	CO2	5 M
	b)	What is Law of demand? Explain with neat diagram and state the assumptions.	L2	CO2	5 M
<b>UNIT-II</b>					
4	a)	Explain Production function.	L2	CO2	5 M
	b)	Illustrate Break even analysis with neat sketch and assumptions.	L2	CO2	5 M
<b>OR</b>					
5	a)	Explain the Law of returns to scale.	L2	CO2	5 M
	b)	Explain different pricing strategies and also explain how it influences the product's market positioning and profitability.	L2	CO2	5 M
<b>UNIT-III</b>					
6	a)	State the merits and demerits of Sole trading firm.	L2	CO3	5 M
	b)	Explain the advantages and disadvantages of Public enterprises.	L2	CO3	5 M

**OR**

7	a)	Define Joint Stock Company. Explain it's features and Merits.	L2	CO3	5 M
	b)	Describe the impact of Liberalization policy on economic growth in India.	L2	CO3	5 M

**UNIT-IV**

8	a)	Explain the functions of Financial Management.	L2	CO4	5 M
	b)	M/S Shanthi Trading company borrowed Rs. 80,000 for furniture at a monthly interest of 1.50 percent. The loan is to be repaid in 12 equal installments, payable at the end of each month. What is the monthly installment?	L3	CO4	5 M

**OR**

9	a)	Explain the concepts of Financial Accounting.	L2	CO4	5 M
	b)	A person wishes to have a future sum of Rs. 2,00,000 for his son's education after 15 years from now. What is the single payment that he should deposit now so he gets the desired amount after 15 years. The bank gives 15% interest rate compounded annually.	L3	CO4	5 M

**UNIT-V**

10	a)	Illustrate the different types of Capital Budgeting techniques.	L3	CO4	5 M
	b)	A company has purchased an equipment whose first cost is Rs. 1,00,000 with an estimated life of 5 years. The estimated salvage value of the equipment at the end of its life time is Rs. 20,000. Determine the depreciation charge and book value at the end of various years using declining balancing method of depreciation by assuming $k=0.2$ .	L3	CO4	5 M

**OR**

11 A company has an investment opportunity costing Rs.40000 with following expected net cash flow after taxes and before depreciation.

L3	CO4	10 M
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Year	1	2	3	4	5	6	7	8	9	10
Net cash inflows	7000	7000	7000	7000	7000	8000	10000	15000	10000	4000

Using 10% as cost of capital determine the following.

- i) Payback period
- ii) Net Present Value

II B.Tech II Semester Regular Exams April 2026

Managerial Economics & Financial Analysis

( Common to Civil, EEE, ECE, CSE )

( Scheme of evaluation )

Part A

- a, 1 mark for each importance point  $1 \times 2 = 2m$
- b, 1 mark for each concept point  $1 \times 2 = 2m$
- c, 1 mark for ISO Cost  $1+1 = 2m$   
 & 1 mark for ISO Quant
- d, 1 mark for each objective point  $2 \times 2 = 2m$
- e, 1 mark for each impact point  $1 \times 2 = 2m$
- f, 1 mark for each strategy point  $1 \times 2 = 2m$
- g, 1 mark for data & 1 mark for answer  $1+1 = 2m$
- h, 1 mark for each objective point  $1 \times 2 = 2m$
- i, 1 mark for each suitable asst mention  $1 \times 2 = 2m$
- j, 1 mark for each objective  $1 \times 2 = 2m$

Part B

Unit - I

- a, 2 marks for definition of Economics  $1+2+2 = 5m$   
 2 marks for scope points  
 2 marks for importance points
- b, 1 mark for each name method of forecasting  $1 \times 5 = 5m$   
 ... ..

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3 a, 1 mark for each micro economics point  $1 \times 2 = 2$   
 1 mark for each macro economics point  $1 \times 3 = 3$   
 $2 + 3 = 5$  m

b, 1 mark for law of demand + 1  
 2 marks for diagram + 2 m  
 $\frac{1}{2}$  mark for each Assumption  $\frac{1}{2} \times 4 = 2$  m  
 $1 + 2 + 2 = 5$  m

Unit - II

4 a, 2 marks for definition of production function  
 3 marks for writing function equation and explanation of parameters  
 $2 + 3 = 5$  m

b, 2 marks for Break even analysis definition = + 2  
 2 marks for diagram = + 2  
 $\frac{1}{2}$  mark for each assumption  $\frac{1}{2} \times 2 = 1$   
 $2 + 2 + 1 = 5$  m

5 a, 2 marks for definition = 2 m  
 1 mark for each explanation point =  $1 \times 3 = 3$  m  
 $2 + 3 = 5$  m

b, 1 mark for each pricing strategy  
 1 mark for each strategy explanation  
 $1 \times 5 = 5$  m

Unit - III

6 a, 1 mark for definition sole trade 1 m  
 1 mark for each merit  $\frac{1}{2} \times 4 = 2$  m  
 $\frac{1}{2}$  mark for each demerit  $\frac{1}{2} \times 4 = 2$  m  
 $1 + 2 + 2 = 5$  m



6. 1 mark for public enterprise definition = 1m  
 b,  $\frac{1}{2}$  mark for each each advantage  $\frac{1}{2} \times 4 = +2m$   
 $\frac{1}{2}$  mark for each disadvantages  $\frac{1}{2} \times 4 = +2m$  = 5m

7. a, 1 mark for joint stock company definition = 1m  
 $\frac{1}{2}$  mark for each merit point =  $\frac{1}{2} \times 4 = +2m$   
 $\frac{1}{2}$  mark for each feature point =  $\frac{1}{2} \times 4 = +2m$  = 5m

b, 1 mark for each impact point =  $1 \times 5 = 5m$

Unit - IV

8. a, 1 mark for each function of financial management  $1 \times 5 = 5m$   
 b, 2 marks for date = 2m  
 1 mark for formula = +1m  
 2 marks for procedure & Answer = +2m = 5m

9. a, 1 mark for each concept point  $1 \times 5 = 5m$   
 b, 2 marks for date = 2m  
 1 mark for formula = +1m = 5m  
 2 marks for procedure & Answer = +2m

Unit - V

10. a, 1 mark for each type of technique &  
 1 mark for each type explanation = 5m

b, 2 marks for date = 2m  
 1 mark for formula = +1m = 5m  
 2 marks for procedure & Answer = +2m

11,

i. Pay Back :

$$\begin{array}{rcl} 2 \text{ marks for data} & & 2 \\ 1 \text{ mark for formula} & = & + 1 \\ 2 \text{ marks for procedure \&minus;} & & + 2 \\ \text{Answer} & & \end{array} = 5 \text{ marks}$$

ii. NPV :

$$\begin{array}{rcl} 3 \text{ marks for ~~data~~ Procedure} & = & 3 \\ 2 \text{ marks for Answer} & = & + 2 \\ & & \end{array} = 5 \text{ marks}$$

Part -A

Key

1.

a. **Importance of managerial economics:**

- a. Close to micro economics
- b. Operates against the backdrop of macroeconomics
- c. Focus on Decision-making
- d. Follows Interdisciplinary Approach

b. **Total outlay method** analyzes the relationship between price changes and the total amount spent by consumers to determine elasticity by observing whether total expenditure increases, decreases, or remains constant with a price change.

c. **Isocost:** An Isocost line is a graphical representation of various combinations of two factors (like labour and capital) which the firm can afford or purchase with a given amount of money.

**Isoquant:** Isoquant means equal quantity. Isoquants are the curves, which represent the different combinations of inputs producing a same quantity of output.

d. **Objectives of pricing:**

- a. Profit Maximization
- b. Sales Maximization
- c. Market Share Expansion
- d. Competitive Positioning

e. **Impact of unlimited liability on partners in partnership**

- a. Personal Financial Risk
- b. Joint and Several Liability
- c. Cautious Decision-Making
- d. Limits Expansion

f. **Two Strategies to improve in recession**

- a. focus on **controlling expenses** to survive lower demand.
- b. Cut unnecessary spending and avoid waste

g. Present value =  $PV_{An} = \text{Rs.}2,00,000/-$

Rate of interest =  $r = 5\% = 0.05$

$n = 5$

$A =$  **Each investment installment to be paid**

$$PV_{An} = A \left[ \frac{(1+r)^n - 1}{r(1+r)^n} \right] r = 200000 = A \left[ \frac{(1.05)^5 - 1}{0.05 \times (1.05)^5} \right]$$

$$A = \text{Rs.}46,189$$

h. **Objectives of accounting**

- a. Recording of Transactions
- b. Determining Profit or Loss
- c. Knowing Financial Position
- d. Providing Information to Users

- i. **Suitable assets can be considered in Sum of Years' Digits method**
  - a. Machinery and equipment.
  - b. Vehicles (cars, trucks, delivery vans)
  - c. Computers and electronic equipment
  - d. Industrial tools and plant equipment
  
- j. **Objectives of Capital Budgeting**
  - a. Maximization of Wealth.
  - b. Efficient Allocation of Resources
  - c. Long-Term Planning
  - d. Risk Assessment

## Part B

### 2. (a)

**Economics:** Economics is a study of man's actions in the ordinary business of life, it enquires how he gets his income and how he uses it.

Scope of Managerial Economics:

Managerial economics is primarily concerned with the application of economic principles and types of resource decisions made by all types of business organizations.

- a. The selection of product or service to be produced.
  - b. The choice of production methods and resource combinations.
  - c. The determination of the best price and quantity combination
  - d. Promotional strategy and activities.
  - e. The selection of the location from which to produce and sell goods or service to consumer
- The production department, marketing and sales department and the finance department usually handle these five types of decisions. The scope of managerial economics covers two areas of decision making

1. Operational or Internal issues :

- Theory of demand and Demand Forecasting
- Pricing and Competitive strategy
- Production cost analysis

2. Environmental or External issues:

- The type of economic system in the country.
- The general trends in production, employment, income, prices, saving and investment.
- Trends in the working of financial institutions like banks, financial corporations, insurance companies

### 2. (b)

#### **Methods of demand forecasting**

1. Survey Methods: Under this method, information about the desires of the consumer and opinion of exports are collected by interviewing them. Survey method can be divided into four type's:

- a. Option survey method
  - b. expert opinion
  - c. Delphi method
  - d. consumers interview methods

2. Statistical Methods: Statistical method is used for long run forecasting. In this method, statistical and mathematical techniques are used to forecast demand. a. Time series analysis or trend projection methods

b. Barometric Technique

### c. Regression and correlation method

3. a

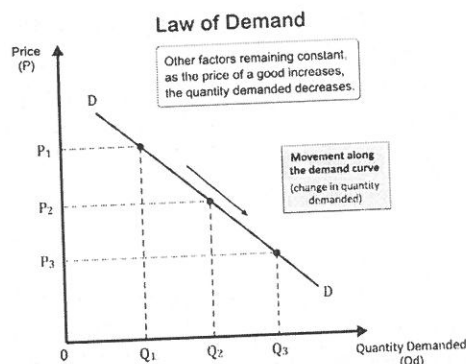
**Microeconomics:** The study of an individual consumer or a firm is called microeconomics. It is a branch of economics that studies the behavior of **individual economic units** such as consumers, firms, households, and markets. It focuses on how decisions are made regarding the allocation of limited resources

**Macroeconomics:** The study of 'aggregate' or total level of economics activity in a country is called macroeconomics. It studies the flow of economics resources or factors of production (such as land, labour, capital, organisation and technology) from the resource owner to the business firms and then from the business firms to the households. It deals with total aggregates, for instance, output and total investment.

3. b

**Law of demand** shows the relation between price and quantity demanded of a commodity in the market. In the words of Marshall, "the amount demand increases with a fall in price and diminishes with a rise in price.

A rise in the price of a commodity is followed by a reduction in demand and a fall in price is followed by an increase in demand, if a condition of demand remains constant. The law of demand may be explained with the help of the following demand schedule.



Law of demand is based on certain assumptions:

1. This is no change in consumers taste and preferences.
2. Income should remain constant.
3. Prices of other goods should not change.
4. There should be no substitute for the commodity
5. The commodity should not confer at any distinction
6. The demand for the commodity should be continuous
7. People should not expect any change in the price of the commodity

### Unit -II

4. a) **The production function** is a mathematical model that shows how the physical output of a production process is related to the physical inputs used in that process. It can be used to calculate the maximum amount of goods and services that can be produced with a given amount of inputs.

Production Function:

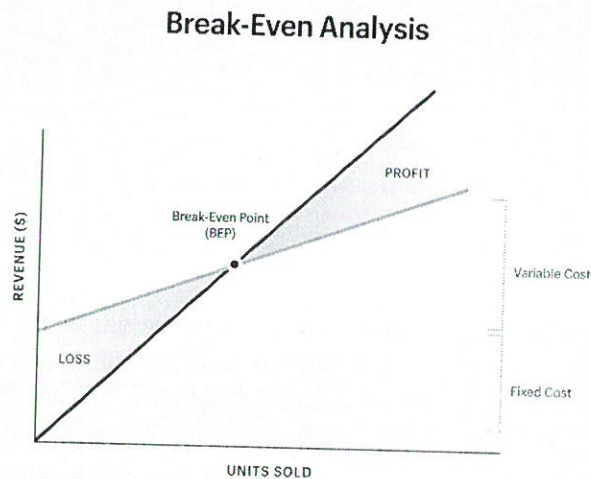
$$Q = f(L1, L2, C, O, T)$$

Where Q – Quantity of output, L1 – Land, L2 – Labour / Employees, C – Capital, O – Organization, T – Technology

1. When inputs are specified in physical units, production function helps to estimate the level of production.
2. It relates when different combinations of inputs yield the same level of output.
3. It indicates the manner in which the firm can substitute one input for another without altering the

total output. 4. When price is taken into consideration, the production function helps to select the least combination of inputs for the desired output.

4. b) **Breakeven Analysis:** It is the study of cost-volume-profit relationship is often referred as BEA. The term BEA is interpreted in two senses. In its narrow sense, it is concerned with finding out BEP. BEP is the point at which total revenue is equal to total cost. It is the point of no profit, no loss. In its broad determine the probable profit at any level of production. This is also a minimum point of production where total costs are recovered. If sales go up beyond the Break Even Point, organization makes a profit. If they come down, a loss is incurred.



Assumptions:

1. All costs are classified into two – fixed and variable.
2. Fixed costs remain constant at all levels of output.
3. Variable costs vary proportionally with the volume of output.
4. Selling price per unit remains constant in spite of competition or change in the volume of production
5. There will be no change in operating efficiency.
6. There will be no change in the general price level.
7. Volume of production is the only factor affecting the cost.
8. Volume of sales and volume of production are equal. Hence there is no unsold stock.
9. There is only one product or in the case of multiple products. Sales mix remains constant.

5 a)

**Law of returns of scale:** The law of returns to scale explains the behavior of the total output in response to change in the scale of the firm, i.e., in response to a simultaneous to changes in the scale of the firm, i.e., in response to a simultaneous and proportional increase in all the inputs. More precisely, the Law of returns to scale explains how a simultaneous and proportionate increase in all the inputs affects the total output at its various levels.

The term returns to scale refers to the changes in output as all factors change by the same proportion.” “Returns to scale relates to the behaviour of total output as all inputs are varied and is a long run concept”. The concept of variable proportions is a short-run phenomenon as in these period fixed factors can not be changed and all factors cannot be changed. On the other hand in the long-term all factors can be changed as made variable. When we study the changes in output when all factors or inputs are changed, we study returns to scale.

When a firm expands, its scale increases all its inputs proportionally, then technically there are three possibilities. (i) The total output may increase proportionately (ii) The total output may increase more than proportionately (iii) The total output may increase less than proportionately.

5 b)

### Different pricing strategies:

1. Cost Based Pricing
  - Full – cost or break-even pricing: price just equals the average (total) cost
  - Cost plus pricing: some mark-up is added to the average cost in arriving at the price.
  - Marginal cost pricing: price is set equal to the marginal cost.
2. Competition Based Pricing
  - Going rate method of price: Firm prices its new product according to the prevailing prices of comparable products in the market.
  - The sealed bid pricing method • It is quite popular in the case of construction activities and in the disposition of used produces.
3. Demand Based Pricing
  - Perceived value pricing: Perceived value pricing considers the buyer's perception of the value of the product and the basis of pricing.
  - Differential pricing is nothing but price discrimination. It involves selling a product or service for different prices in different market segments.

### Unit –III

6. a

**The sole trader** is the simplest, oldest and natural form of business organization. It is also called sole proprietorship. 'Sole' means one. 'Sole trader' implies that there is only one trader who is the owner of the business. It is a one-man form of organization wherein the trader assumes all the risk of ownership carrying out the business with his own capital, skill and intelligence. He is the boss for himself and has total operational freedom.

Merits:

- It is easy to start a business under this form and also easy to close.
- He introduces his own capital. Sometimes, he may borrow, if necessary
- He enjoys all the profits and in case of loss, he lone suffers.
- He has unlimited liability which implies that his liability extends to his personal properties in case of loss.
- He has a high degree of flexibility to shift from one business to the other.
- Business secretes can be guarded well

Demerits:

Unlimited liability: The liability of the sole trader is unlimited. It means that the sole trader has to bring his personal property to clear off the loans of his business. From the legal point of view, he is not different from his business.

- Limited amounts of capital: The resources a sole trader can mobilize cannot be very large and hence this naturally sets a limit for the scale of operations.
- No division of labour: All the work related to different functions such as marketing, production, finance, labour and so on has to be taken care of by the sole trader himself. There is nobody else to take his burden. Family members and relatives cannot show as much interest as the trader takes.

6. b

### Advantages of public enterprises

- Generating considerably large employment opportunities in skilled, unskilled, supervisory and managerial cadres.
- Creating internal resources and contributing towards national exchequer for funds for development and welfare.
- Bringing about development activities in backward regions, through locations in different areas of the country.

- Assisting in the field of export promotion and conservation of foreign exchange.

Demerits:

### 1. Lack of efficiency

Since profit is not the main motive, there is often less pressure to perform efficiently compared to private firms.

### 2. Political interference

Decisions may be influenced by political factors rather than economic or business considerations.

### 3. Bureaucratic delays

Too many rules and procedures can slow down decision-making and operations.

### 4. Low motivation of employees

Employees may lack incentives to work hard due to fixed salaries and job security.

7. a)

**The joint stock company** emerges from the limitations of partnership such as joint and several liability, unlimited liability, limited resources and uncertain duration.

**Features:**

**Artificial person:** The Company has no form or shape. It is an artificial person created by law. It is intangible, invisible and existing only, in the eyes of law.

**Separate legal existence:** it has an independence existence, it separate from its members. It can acquire the assets. It can borrow for the company. It can sue other if they are in default in payment of dues, breach of contract with it, if any. Similarly, outsiders for any claim can sue it.

**Voluntary association of persons:** The Company is an association of voluntary association of persons who want to carry on business for profit. To carry on business, they need capital. So they invest in the share capital of the company.

**Limited Liability:** The shareholders have limited liability i.e., liability limited to the face value of the shares held by him. In other words, the liability of a shareholder is restricted to the extent of his contribution to the share capital of the company.

**Merits:**

**Mobilization of larger resources:** A joint stock company provides opportunity for the investors to invest, even small sums, in the capital of large companies. The facilities rising of larger resources.

**Separate legal entity:** The Company has separate legal entity. It is registered under Indian Companies Act, 1956.

**Limited liability:** The shareholder has limited liability in respect of the shares held by him. In no case, does his liability exceed more than the face value of the shares allotted to him.

7. b)

**Liberalization** is the process or means of the elimination of control of the state over economic activities. It provides a greater autonomy to the business enterprises in decision-making interference.

**Key Aspects of Liberalization:**

- Privatization: Reduced government control over industries
- Globalization: Increased foreign trade and investments
- Deregulation: Encouraged competition
- FDI and FII Inflows: Boosted various sectors.

**Impact on the Business Environment :**

- Growth of the Private Sector: IT, telecom, and services
- Entry of MNCs: Amazon, Walmart, Google
- Technology & Innovation: Startups and digital transformation
- Banking & Finance Reforms: Privatization of banks
- Employment & Skill Development: Shift to skilled workforce

## Unit-IV

8.a

The main object of any Business is to make profit. Every trader generally starts business for the purpose of earning profit. While establishing Business, he brings his own capital, borrows money from relatives, friends, outsiders or financial institutions, then purchases machinery, plant, furniture, raw materials and other assets. He starts buying and selling of goods, paying for salaries, rent and other expenses, depositing and withdrawing cash from Bank. Like this he undertakes innumerable transactions in Business.

### Functions of financial management

a) Investment Decisions

- Concerned with deciding where to invest funds to maximize returns.
- Involves capital budgeting (long-term investment) and working capital management (short-term investment).

b) Financing Decisions

- Determines the sources of funds (equity, debt, loans, retained earnings).
- Balances debt and equity to maintain financial stability and growth.

c) Dividend Decisions

- Decides how much profit should be distributed as dividends and how much should be retained for reinvestment.
- Affects shareholder satisfaction and future business expansion.

d) Liquidity Management

- Ensures that the firm has enough cash flow to meet short-term obligations.
- Involves maintaining an optimal level of working capital

8. b)

$$\text{Present Value} = PV_{An} = \text{Rs.}80,000/-$$

$$\text{Interest rate} = r = 1.5 \% = 0.015$$

$$\text{Total number of months} = n = 12 \text{ months}$$

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

$$80000 = A \left[ \frac{(1.015)^{12} - 1}{0.015 \cdot (1.015)^{12}} \right]$$

$$\text{Monthly installment } A = \text{Rs.}7,339.45$$

9. a) **Concepts of financial accounting**

In financial accounting double entry accounting system is an important concept because it ensures proper and accurate recording of business transactions.

In the double-entry accounting system, transactions are recorded in terms of debits and credits. Since a debit in one account offsets a credit in another, the sum of all debits must equal the sum of all credits.

- A double-entry system provides a check and balance for each transaction, which helps ensure accuracy and prevent fraud.

- This accounting system also allows you to track business finances more effectively and make better decisions about where to allocate your resources.

#### Account types

- **Asset accounts:** Represent the resources of a business, such as cash, inventory, and equipment
- **Liability accounts:** Represent the debts of a business, such as loans and accounts payable
- **Income accounts:** Represent the revenue of a business, such as sales and interest income
  - **Expense accounts:** Represent the costs of a business, such as rent and utilities
- **Equity accounts:** Represent the funds invested in a business and the amount of profit left after operation costs, also known as retained income

9. b)

Future value =  $FV = \text{Rs.} 2,00,000$

Interest rate =  $i = 15\% = 0.15$

Total time period =  $n = 15$  years

Present Value =  $PV = ?$

$$PV = \frac{FV}{(1+i)^n} = PV = \frac{200000}{(1.15)^{15}}$$

$PV = \text{Rs.} 24,578.90/-$

#### Unit - V

10. a) **The capital budgeting** is the process of evaluating the relative worth of long-term investment proposals based on their respective profitability.

Capital budgeting techniques are grouped under two categories.

1. Traditional methods

**A. Pay-back period method:** It is an accounting method, which uses the accounting information repeated by the financial statements to measure the probability of an investment proposal.

**B. Accounting (or) Average rate of return method (ARR):** It is an accounting method, which uses the accounting information repeated by the financial statements to measure the probability of an investment proposal.

2. Discounted Cash flow methods

**A. Net present value method (NPV):** The Net Present Value (NPV) method considers the time value of money by discounting future cash flows to their present values using a predetermined required rate of return

10. b)

The formulae for depreciation and book value are as follows:

$P =$  first cost of the asset =  $\text{Rs.} 1,00,000$

$F =$  salvage value of the asset =  $\text{Rs.} 20,000$

$n =$  life of the asset = 5 years

$$k=0.2$$

$B_t$  = book value of the asset at the end of the period  $t$

$$B_1 = \text{Rs. } 10,000$$

$D_t$  = depreciation amount for the period  $t$

$$\bullet Dt = K * B_{t-1}$$

$$\bullet Bt = B_{t-1} - Dt = B_{t-1} - K * B_{t-1} = B_{t-1} (1 - K)$$

### Year-wise Calculation

#### Year 1

- Depreciation =  $0.2 \times 100000 = 20000$
- Book Value =  $100000 - 20000 = 80000$

#### Year 2

- Depreciation =  $0.2 \times 80000 = 16000$
- Book Value =  $80000 - 16000 = 64000$

#### Year 3

- Depreciation =  $0.2 \times 64000 = 12800$
- Book Value =  $64000 - 12800 = 51200$

#### Year 4

- Depreciation =  $0.2 \times 51200 = 10240$
- Book Value =  $51200 - 10240 = 40960$

#### Year 5

- Depreciation =  $0.2 \times 40960 = 8192$
- Book Value =  $40960 - 8192 = 32768$

Depreciation & Book value: In tabular form year wise



Year	Depreciation (₹)	Book Value (₹)
1	20,000	80,000
2	16,000	64,000
3	12,800	51,200
4	10,240	40,960
5	8,192	32,768

11.

**i. Payback Method:**

$$\bullet \text{ Pay back period} = \frac{\text{Cash outlay (or) original cost of project}}{\text{Annual cash inflow}}$$

Initial Outlay = Rs. 40,000

$$\begin{aligned} \text{Cashflow for 5 years} &= \text{Rs. } 70,000 + \text{Rs. } 70,000 + \text{Rs. } 70,000 + \text{Rs. } 70,000 \\ &\quad + \text{Rs. } 70,000 \\ &= \text{Rs. } 35,000 \end{aligned}$$

$$\begin{aligned} \text{Balance Outlay} &= \text{Rs. } 40,000 - \text{Rs. } 35,000 \\ &= \text{Rs. } 5,000 \end{aligned}$$

Cash Flow for 6th year = Rs. 8000

$$\text{Payback Period} = 5 \text{ years} + \frac{5000}{8000} = 5.62 \text{ years.}$$

**ii. Net Present Value: n = time period = 10: i = rate of interest = 10%**

$$PV \text{ Factor} = \frac{1}{(1+i)^n}$$

Discount each cash flow at 10%.

Year	Cash Flow	PV Factor (10%)	Present Value
1	7000	0.909	6363
2	7000	0.826	5782
3	7000	0.751	5257
4	7000	0.683	4781
5	7000	0.621	4347
6	8000	0.564	4512
7	10000	0.513	5130
8	15000	0.467	7005
9	10000	0.424	4240
10	4000	0.386	1544

**Total PV of inflows:**

$$= 48,961 \text{ (approx)}$$

**NPV:**

$$NPV = 48,961 - 40,000 = \text{₹} 8,961$$