U.S.N.										

B.M.S. College of Engineering, Bengaluru-560019

Autonomous Institute Affiliated to VTU

June 2025 Semester End Main Examinations

Programme: B.E. **Semester: VI**

Branch: Chemical Engineering **Duration: 3 hrs.**

Course Code: 23CH6PCEIE **Max Marks: 100**

Course: Economics in Engineering

Instructions: 1. Answer any FIVE full questions, choosing one full question from each unit.
2. Missing data, if any, may be suitably assumed.

		UNIT - I	CO	PO	Marks
1	a)	What are the various challenges faced by an Engineer from economics perspective?	CO4	PO 11	**06**
	b)	Discuss about the general structure of a plant layout and factors to be considered for selecting a plant.	CO1	PO11	**14**
		OR			
2	a)	Identify various factors that should be considered in selecting a plant site and explain them in detail.	CO4	PO11	**12**
	b)	Discuss about engineering economics emphasizing on its significance.	CO4	PO11	**08**
		UNIT - II			
3	a)	Explain in detail about components of cost.	CO1	PO10	**12**
	b)	Ascertain the prime cost, work cost, cost of production, total cost and profit from the following data	CO1	PO10	**08**

Sl No	Particulars	Amount (Rs)
1	Direct Material	7,000
2	Direct Labor	2,800
3	Factory Expenses	2,600
4	Administration Expenses	1,000
5	Selling Expenses	900
6	Sales	20,000

		OR			
4	a)	Explain the following. i. Marginal cost ii. Marginal Revenue iii. Sunk cost iv. Opportunity Cost	CO1	PO10	**10**
	b)	Ascertain the prime cost, work cost, cost of production and total cost and profit from the following information:	CO1	PO10	**10**

			• Direct material = 7000 • Direct labour =2800 • Factory expenses = 2600 • Administrative expenses =1000 • Selling expenses =900 • Sales = 20,000			
			UNIT - III			
	5	a)	Discuss about interest, simple and compound interest	*CO2*	*PO3*	06
		b)	Alpha Industry is planning to expand its production operation. It has identified three different technologies for meeting the goal. The initial outlay and annual revenues with respect to each of the technologies are Summarized in Table. Suggest the best technology which is to be Implemented based on the present worth method of comparison assuming 20% interest rate, compounded annually. *Initial outlay* (Rs.) / *Annual revenue* (Rs.) / *Life* (years) Technology 1: 12,00,000 / 4,00,000 / 10 Technology 2: 20,00,000 / 6,00,000 / 10 Technology 3: 18,00,000 / 5,00,000 / 10	*CO2*	*PO3*	14
			OR			
	6	a)	What is time value of money? Explain with an example.	*CO2*	*PO3*	**04**
		b)	A person deposits a sum of Rs. 20,000 at the interest rate of 18% compounded annually for 10 years. Find the maturity value after 10 years.	*CO2*	*PO3*	**06**
		c)	A bank gives a loan to a company to purchase an equipment worth Rs. 10,00,000 at an interest rate of 18% compounded annually. This amount should be repaid in 15 yearly equal installments. Find the installment amount that the company has to pay to the bank.	*CO2*	*PO3*	**10**
			UNIT - IV			
	7	a)	Provide a detailed note on depreciation, emphasizing on its causes	*CO3*	*PO2*	**10**
		b)	A company has purchased an equipment whose first cost is Rs. 1,00,000 with an estimated life of eight years. The estimated salvage value of the equipment at the end of its lifetime is Rs. 20,000. Determine the depreciation charge and book value at the end of various years using the straight line method of depreciation.	*CO3*	*PO2*	**10**
			OR			
	8	a)	Define the following, service life, salvage value, present value and its components.	*CO3*	*PO2*	**12**
		b)	A company has purchased an equipment whose first cost is Rs. 1,00,000 with an estimated life of eight years. The estimated salvage value of the equipment at the end of its lifetime is Rs. 20,000. Determine the depreciation charge and book value at the end of various years using declining balance method of depreciation by assuming 0.2 for *K*.	*CO3*	*PO2*	**08**

			UNIT - V			
	9	a)	Describe in detail about break even analysis with help of neat diagram.	*CO4*	*PO11*	**8**
		b)	Draw a break-even chart with the help of data given below at different production levels of 0, 80,000, 90,000, 1,00,000 1,10,000, and 1,20,000 units. Calculate the breakeven point and the margin of safety. Data: • Sale Price = Rs. 3 per unit • Variable Cost = Rs. 2 per unit • Fixed Cost = Rs. 90,000	*CO4*	*PO11*	**12**
			OR			
	10	a)	What are financial statements? Discuss on its significance.	*CO4*	*PO11*	**10**
		b)	Alpha Associates has the following details: • Fixed cost = Rs. 20,00,000/- • Variable cost per unit = Rs. 100/- • Selling price per unit = Rs. 200/- Find i) The break-even sales quantity, ii) The break-even sales iii) If the actual production quantity is 60,000, estimate the contribution and margin of safety.	*CO4*	*PO11*	**10**

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