U.S.N.										

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

Autonomous Institute Affiliated to VTU

July 2024 Semester End Main Examinations

Programme: B.E. **Semester: V**
Branch: Chemical Engineering **Duration: 3 hrs.**
Course Code: 22CH5HSEIE **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.

Important Note: Completing your answers, compulsorily draw diagonal cross lines on the remaining blank pages. Revealing of identification, appeal to evaluator will be treated as malpractice.

			CO	PO	Marks
		UNIT - I			
1	a)	Draw neat chart indicating flow of goods, services, resources and money payments in a simple economy.	*CO4*	*PO11*	**05**
	b)	Discuss the significance of decision making in engineering economics.	*CO4*	*PO11*	**05**
	c)	Explain the significance of feasibility analysis and discuss various points to be considered to start a process industry.	*CO4*	*PO11*	**10**
		UNIT - II			
2	a)	List the components of product cost and explain its significance.	*CO1*	*PO10*	**8**
	b)	A reactor was purchased in the year 1995 for Rs.5 Lakh and cost index is 150 in the year 1995. Estimate the cost of the reactor in the year 2020. Cost index in the year 2020 is 290	*CO1*	*PO10*	**4**
	c)	A factory is producing 1000 perfumery samples per hour on a machine. Its material cost is Rs.375/-, labor cost is Rs.245/-and the direct expenses is Rs.80/-. The factory on cost is 150% of total labor cost and office on cost is 30% of the total factory cost. If the selling price of each sample is Rs.1.30. Estimate the amount of profit/loss.	*CO1*	*PO10*	**8**
		UNIT - III			
3	a)	Define the following terms: i. Simple and compound interest ii. Nominal and effective interest	*CO2*	*PO2*	**8**
	b)	Manufacturing Industry is planning to expand its production operation. It has identified three different technologies with equal service life of 10 years for meeting the goal. The initial outlay and annual revenues with respect to each of the technologies are summarized in Table below. Suggest the best technology which is to be implemented based on the present	*CO2*	*PO2*	**12**

			worth method of comparison assuming 20% interest rate, compounded annually.			
			<table><tr><td></td><td>Initial outlay (Rs)</td><td>Annual revenue(Rs)</td></tr><tr><td>Technology -1</td><td>12,00,000</td><td>4,00,000</td></tr><tr><td>Technology -2</td><td>20,00,000</td><td>6,00,000</td></tr><tr><td>Technology -3</td><td>18,00,000</td><td>5,00,000</td></tr></table>			
			OR			
4	a)		Discuss revenue-dominated cash flow diagram for present worth analysis.	***CO2***	***PO2***	**08**
	b)		It is desired to borrow Rs.1,00,000/- to meet financial obligation, this money can borrowed from loan agency at a monthly interest rate of 2%. Determine the following i. The total amount of principal + simple interest due after two years. ii. The total amount of principal + compound interest due after two years. iii. The nominal interest rate when the interest is compounded monthly. iv. The effective interest rate when the interest is compounded monthly.	***CO2***	***PO2***	**12**
			UNIT - IV			
5	a)		Define depreciation and discuss the causes for depreciation.	***CO3***	***PO2***	**4**
	b)		A piece of equipment having a salvage value of Rs.6000/- and having a service life of 10 years. The original value of the equipment is Rs. 40000/-. Determine the depreciation charges by straight line method and declining balance method, also find the total depreciable amount at the end of the sixth year by both the methods.	***CO3***	***PO2***	**8**
	c)		A company has purchased an equipment whose first cost is Rs. 1,00,000 with an estimated life of eight years. Determine the depreciation charge and book value at the end of various years using the declining balance method. Assume fixed percentage of 0.2.	***CO3***	***PO2***	**8**
			OR			
6	a)		Mention various methods used to estimate depreciation. Discuss any two methods in detail.	***CO3***	***PO2***	**8**
	b)		Discuss various types of taxes with suitable example.	***CO3***	***PO2***	**6**
	c)		There are three alternatives available to meet the demand of a particular product. They are as follows: (a) Manufacturing the product by using process A (b) Manufacturing the product by	***CO3***	***PO2***	**6**

			using process B (c) Buying the product The details are as given in the following table: *Cost elements* / *Manufacturing the product by process A* / *Manufacturing the product by process B* / *Buy* Fixed cost/year (Rs.) / 5,00,000 / 6,00,000 / Variable/unit (Rs.) / 175 / 150 / Purchase price/unit (Rs.) / / / 125 The annual demand of the product is 8,000 units. Should the company make the product using process A or process B or buy it?			
			UNIT - V			
	7	a)	Discuss break even analysis with neat sketch.	***CO3***	***PO2***	**7**
		b)	Discuss types of financial statements used in Engineering economics.	***CO1***	***PO10***	**6**
		c)	Small scale chemical Industry has the following details: Fixed cost = Rs.20,00,000/- Variable cost per unit = Rs. 100/- Selling price per unit = Rs. 200/- Estimate i. The break-even sales quantity ii. The break-even sales.	***CO1***	***PO10***	**7**

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