Seat No.: _____ Enrolment No._____

GUJARAT TECHNOLOGICAL UNIVERSITY

B. E. - SEMESTER – VII • EXAMINATION – WINTER 2012

Subject code: 170503 Date: 01/01/2013

Subject Name: Plant Design and Project Engineering

Time: 10.30 am - 01.00 pm Total Marks: 70

Instructions:

1. **Attempt any five questions.**
2. **Make suitable assumptions wherever necessary.**
3. **Figures to the right indicate full marks.**

Q.1	**(a)**	Justify the various factors to be considered in location of soda ash manufacturing unit in Gujarat on sound physico- chemical principles?	**07**
	(b)	Explain the cash flow diagram for an industrial plant.	**07**
Q.2	**(a)**	Write in brief on factors to be considered in efficient plant layout.	**07**
	(b)	XYZ company sells a chemical for Rs.100 per kg and it cost Rs. 75 per kg to produce it, and has fixed cost of Rs. 10 lakh per year. How much kg of product will the company need to sell to break-even?	**07**
		OR	
	(b)	Enlist the various methods of Profitability Analysis. Explain any two methods in detail?	**07**
Q.3	**(a)**	Enlist the factors to be considered on total product cost estimation?	**07**
	(b)	Enlist the various cost indices and explain the importance of any two in detail?	**07**
		OR	
Q.3	**(a)**	Why is Pilot plant studies in chemical industries important?	**07**
	(b)	The capitalized cost for equipment has been determined to be Rs. 25 lakh based on an annual interest rate of 12%. The salvage value of the equipment was assumed to be zero and the service life was estimated to be 10 years with replacement cost assumed to be same as original purchase cost. Determine the original cost of the equipment.	**07**
Q.4	**(a)**	List the various methods used for calculating depreciation in chemical industry and explain any three methods in detail?	**07**
	(b)	Explain the selection criteria for Standard versus special equipment for process equipments	**07**
		OR	
Q.4	**(a)**	Write in brief on PERT and CPM techniques used for inventory control	**07**
	(b)	Write in brief on importance of utilities in chemical industry	**07**
Q.5	**(a)**	Discuss on piping design and its layout used in chemical industry	**07**
	(b)	Write in brief on types of flow diagrams	**07**
		OR	
Q.5	**(a)**	How is preliminary and techno-economic feasibility of any project carried out?	**07**
	(b)	How is a specification sheet for a distillation column prepared?	**07**

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