Seat No.: _____ Enrolment No._____

GUJARAT TECHNOLOGICAL UNIVERSITY

BE - SEMESTER–VII • EXAMINATION – WINTER 2013

Subject Code: 170503 Date: 07/12/2013

Subject Name: Plant Design and Project Engineering

Time: 10:30 TO 01:00 Total Marks: 70

Instructions:

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

Q.1	**(a)**	List out and discuss various factors needs to be considered in the selection of chemical plant.	**07**
	(b)	Discuss objective and contents of techno-economic feasibility survey.	**07**
Q.2	**(a)**	A laboratory piece of equipment was purchased for $ 35,000 and is estimated to be used for 5 years with a salvage value of $ 5000. Tabulate the annual depreciation allowances and year-end book values for the 5 years using (i) the straight-line depreciation method (ii) the sum-of-the-digits depreciation method.	**07**
	(b)	Explain fault tree analysis technique for hazard assessment.	**07**
		OR	
	(b)	Discuss in detail, various factors affecting selection of process in chemical industries.	**07**
Q.3	**(a)**	List out various method for boiler feed water treatment and explain deaeration in brief.	**07**
	(b)	List out most commonly used methods for profitability evaluation and discuss any one in detail.	**07**
		OR	
Q.3	**(a)**	Discuss various factors involved in project cost estimation	**07**
	(b)	Write short note on pipe fittings, types of valves and selection of valves	**07**
Q.4	**(a)**	Discuss advantages of standard equipment over special equipment.	**07**
	(b)	Explain principles of plant layout and discuss various factors in planning of layouts.	**07**
		OR	
Q.4	**(a)**	Define: auto ignition temperature, book value, lower flammability limit, discount factor, functional depreciation. Limiting oxygen index, economic life of asset.	**07**
	(b)	Write short note on evaluation of different depreciation methods.	**07**
	(a)	Name different methods for estimation of capital investment and discuss any one in detail.	**07**

(b) The following activities are apart of a project to be scheduled using CPM **07**

Activity	Predecessor	Time(weeks)
A	-	1
B	A	4
C	A	3
D	B	2
E	C,D	5
F	D	2
G	F	2
H	E,G	3

(i) Draw the network diagram
(ii) Find out the critical path.

OR

Q.5 **(a)** Define cost index with example. Explain the estimation of equipment cost by scaling. **07**

(b) With example explain practical factors in alternative investment and replacement studies. **07**

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