

B.Tech. Eighth Semester (Chemical Tech. (Food, Pulp & Paper, Oil & Paint and Petro. Tech.)) (CGS)

11082 : Plant Design & Project Engineering : 8 CT 03

P. Pages : 2

Time : Three Hours



AU - 3071

Max. Marks : 80

- Notes :
1. Answer **three** question From Section A and **three** question from Section B.
 2. Due credit will be given to neatness and adequate dimensions.
 3. Assume suitable data wherever necessary.
 4. Diagrams and Chemicals equations should be given wherever necessary.
 5. Illustrate your answer necessary with the help of neat sketches.
 6. Discuss the reaction, mechanism wherever necessary.
 7. Use of pen Blue/Black ink/refill only for writing the answer book.

SECTION - A

1. a) What are the basic ideas for process design development? 7
b) Explain design-project procedure. 7

OR

2. a) How we can develop pilot plant for chemical process industry? Give with suitable example. 7
b) Discuss scale up method for plant design. 7
3. a) What are steps in detection of process for standard equipment? 7
b) Explain specification sheet for equipment with suitable example. 6

OR

4. a) Discuss detection of process for special equipment. 6
b) What is criteria for selection of material for process equipment? 7
5. a) Explain ion exchange method for boiler feed water. 7
b) What are the characteristics of waste water? Explain it. 6

OR

6. a) What is role instrumentation control system in process design? 7
b) Discuss importance of piping in process design. 6

SECTION - B

7. a) Discuss capital investment in details 7
b) What are different types of methods for depreciation? Explain it. 7

OR

8. a) How to estimate equipment cost production factors? 6
- b) Original value of a piece of equipment is Rs. 44,000, completely installed & ready for use. It's salvage value is estimated to be Rs 4, 000 at the end of a service life estimated to be 10 years. Determine the asset value of the equipment at the end of 5 years using.
- i) Straight - Line method.
- ii) Text book declining - balance method.
9. a) Explain graphical description of various profitability measure. 7
- b) How to calculate capitalized costs? 6
- OR**
10. a) What is difference between investment and replacement? 6
- b) Explain replacement policy with typical example. 7
11. How to determine optimum value with two independent variables? The following equation show the effect of the variable 'm' and 'n' on the total cost for a particular operation. 13
- $$C_T = 2.33_m + \frac{11900}{mn} + 1.86 n + 10$$
- Determine the values of m & n which will give the least total cost.
- OR**
12. a) Explain optimum production rate in plant operation. With suitable example. 7
- b) Discuss optimum conditions in Cyclic operations. 6

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