

Total No. of Questions : 6]

SEAT No. :

P428

[Total No. of Pages : 2

B.E./Insem/APR-95

B.E. (Chemical)

PROCESS ENGINEERING COSTING AND PLANT DESIGN

(2012 Pattern) (Semester - II)

Time : 1 Hour]

[Max. Marks : 30

Instructions to the candidates:

- 1) Answer Q. 1 or Q.2, Q3 or Q.4, and Q5 or Q.6.
- 2) Neat diagrams must be drawn wherever necessary.
- 3) Figures to the right indicate full marks.
- 4) Use of logarithmic tables slide rule, mollier charts, electronic pocket calculator and steam tables is allowed.
- 5) Assume suitable data, if necessary.

Q1) Which items should be considered in a comparison of different processes. **[10]**

OR

Q2) a) Prepare the specification sheet for Sieve-tray distillation column. **[6]**

b) Write a short note on : HAZOP study. **[4]**

Q3) a) A heat exchanger has been designed to use in a chemical process. A standard type of heat exchanger with a negligible scrap value and of cost Rs.28,000 and will have useful life of 8 years. Another proposed heat exchanger of equivalent design capacity costs Rs.39,000 but will have a useful life of 12 years and a scrap value of Rs. 4,000.

Assuming an effective compound interest rate of 8% per year determine which heat exchanger is cheaper by comparing the capitalized costs. **[8]**

b) Define the term : Insurance. **[2]**

OR

Q4) a) A Batch reactor was procured at Rs. 2,50,000. With a service life of 09 years. Its salvage value is estimated to be Rs.25,000. Calculate asset value or book value of the reactor at the end of its service life of 5 years using. **[8]**

i) Straight line method

ii) Text book declining-balance method

iii) Double declining method (200%)

Declining balances method using a fixed% factor giving a depreciation take equivalent to twice the minimum rate with the straight line method.

b) Define terms: present worth and discount. **[2]**

P.T.O.

- Q5)** a) Draw the Tree diagram showing cash flow for industrial operations. [6]
b) Explain why working capital is required for an industrial plant. [4]

OR

- Q6)** a) Explain Break-even chart for a chemical processing plant. [5]
b) State the names of various methods for estimating capital investment. [3]
c) Explain : "Turnover ratio" method [2]

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