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B.E./INSEM/APR-609

B.E. (Chemical Engineering) (Semester - II)

409350 : PROCESS ENGINEERING COSTING & PLANT DESIGN

(2015 Pattern)

Time : 1 Hour]

Instructions to the candidates:

- 1) Write Q.1 or Q.2, Q.3 or Q.4, Q.5 or Q.6.
- 2) Figures to right indicate full marks.
- 3) Draw suitable diagrams wherever necessary.
- 4) Use of scientific calculators is allowed.
- 5) Assume suitable data if necessary.

[Max. Marks : 30

Q1) Draw and explain site and plant layout (without scale) considering all factors necessary for a chemical plant. **[10]**

OR

Q2) Show a model specification sheet in one page for the following cases: **[10]**

- a) Heat Exchanger.
- b) Sieve - tray Column.

Q3) Write a note on following depreciation methods with appropriate derivations. **[10]**

- a) Straight Line Method.
- b) Sinking Fund Method.

OR

Q4) For a corrosive liquids a reactor has to be designed. The two alternatives are as follows: **[10]**

Specification	Reactor-A	Reactor-B
Material	Mild Steel	Stainless Steel
Installation Cost	Rs.5,000	Rs.15,000
Service Life	3 years	Negligible
Scrap Value	0	0

On the basis of equal capitalized cost for both types of reactors, what should be the useful life period for the stainless steel reactor if money is worth 6% compounded annually?

P.T.O.

Q5) Draw and explain the tree diagram showing the cash flow for an industrial operations. **[10]**

OR

Q6) A factory is producing 1000 perfumery samples per hour on a machine. Its material cost is Rs. 375, labour cost is Rs. 245 and the direct expense is Rs. 80. The factory overhead is 150% of total labour cost and administrative cost is 30% of manufacturing cost. If the selling price of each sample is Rs. 1.30, calculate to what amount the management is going in gain or loss? **[10]**



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