

Total No. of Questions : 10]

SEAT No. :

P3553

[5560]-206

[Total No. of Pages : 2

T.E. (Chemical Engineering)
CHEMICAL REACTION ENGINEERING - I
(2012 Pattern) (309348)

Time : 2½ Hours]

[Max. Marks : 70

Instructions to the candidates:

- 1) Answer Q.1 or Q.2, Q.3 or Q.4, Q.5 or Q.6, Q.7 or Q.8, Q.9 or Q.10.
- 2) Neat diagrams must be drawn wherever necessary.
- 3) Figures to the right indicate full marks.
- 4) Assume suitable data if necessary.

Q1) a) Differentiate constant volume and variable volume methods of analysis of reactor. [6]

b) Distinguish between homogeneous and heterogeneous reactions? [4]

OR

Q2) a) Give the basis on which chemical reactions and reactors are classified with suitable examples. [6]

b) What are single and multiple reactions. [4]

Q3) a) Define the term Rate of Reaction and what are the variables affect the rate of reaction. [6]

b) Define molecularity and order of reaction. [4]

OR

Q4) Derive the performance equation for ideal Batch reactor. [10]

Q5) a) Discuss optimum temperature progression needed for optimum reactor performance. [10]

b) Explain in detail Instantaneous yield and Overall yield for multiple reactions. [6]

OR

Q6) a) Write note on the product distribution in Quantitative and Qualitative methods. [10]

b) Write advantage and Disadvantages of a batch reactor. [6]

P.T.O.

Q7) a) Explain contacting patterns for various combinations of high and low concentration of reactants in non-continuous and continuous flow operations. [8]

b) Explain E, F and C curve and find the relationship between them. [8]

OR

Q8) a) Explain in detail the effect of temperature on equilibrium conversion of reactant at constant pressure. [8]

b) Discuss Micro and Macro Mixing of fluids. [8]

Q9) Write short notes:

a) Segregation model [5]

b) Models for non-ideal reactions [5]

c) Dispersion model [4]

d) Tanks in series model [4]

OR

Q10) Explain in detail effect of temperature on rate of reaction by following theories

a) Arrhenius law [5]

b) Thermodynamics Approach [5]

c) Collision theory [4]

d) Transition state theory [4]

