

- Q.27 Compare MFR and PFR.
- Q.28 Difference between the simple and multiple reaction with example.
- Q.29 Define rate of reaction. Give rate of reaction in terms of concentration of reactants.
- Q.30 Write about Non-elementary reaction.
- Q.31 What is catalyst poisoning.
- Q.32 Write of bubble phase reactor.
- Q.33 Write important properties of catalyst.
- Q.34 Difference between the reversible and irreversible reaction with the help of example.
- Q.35 Liquid 'A' decomposes by first order kinetics and in a batch reactor. 50% of A is converted in 5 minutes. How long will it take to reach 75% conversion?

SECTION-D

Note: Long answer type questions. Attempt any two questions out of three questions. (2x10=20)

- Q.36 Write about Plug flow reactor with help of neat diagram.
- Q.37 Write performance equation for Batch reactor.
- Q.38 Write notes on:

- a) Exothermic Reaction
- b) Rate constant
- c) Order of reaction

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**5th Sem./ Chem, Chem Engg. (Spl. Paint Tech.),
Chem Engg. (Spl. Polymer Engg.)
Subject:- Chemical Reaction Engineering**

Time : 3Hrs. M.M. : 100

SECTION-A

Note: Multiple choice questions. All questions are compulsory (10x1=10)

- Q.1 With increase in temperature, the equilibrium conversion of a reversible exothermic reaction.
- a) Decrease
 - b) Increase
 - c) Remain Unaffected
 - d) None
- Q.2 Participation of _____ is involved in the occurrence of a chemical reaction.
- a) Protons
 - b) Neutrons
 - c) Electrons
 - d) None
- Q.3 A photochemical reaction is _____ light
- a) Initiated By
 - b) Accompanied with emission of
 - c) catalyzed by
 - d) None
- Q.4 A first order reaction is to be treated in a series of two mixed reactors. The total volume of the two reactors is minimum, when the reactors are
- a) Equal in size
 - b) of Different Size

- c) of such size that the ratio of their volume is
d) None
- Q.5 If a solid-gas non-catalytic reaction occurs at very high temperature, the rate controlling step is the _____ diffusion.
- a) Film b) Ash Layer
c) Pore d) None
- Q.6 The equilibrium constant of chemical reaction _____ in the presence of catalyst.
- a) Increase b) Decrease
c) Remain unaffected d) None
- Q.7 A chemical reaction occurs, when the energy of the reacting molecules is _____ the activation energy of reaction.
- a) Less than b) equal to
c) Equal to or more than d) None
- Q.8 The heat of reaction
- a) Depends on the pressure only
b) Independent of the mechanism of reaction
c) Depends on the mechanism only
d) None
- Q.9 Photo-chemical reactions occur in presence of
- a) Sunlight b) Darkness
c) Solid Catalyst d) None
- Q.10 For a _____ order reaction, the units of rate constant and rate of reaction are the same.
- a) Zero b) First
c) Second d) None

SECTION-B

Note: Objective type questions. All questions are compulsory. (10x1=10)

- Q.11 Write one example of non-catalytic reaction.
Q.12 What is limiting reagent.
Q.13 Write advantage of plug flow reactor.
Q.14 Expand the MFR.
Q.15 Write unit of reaction constant for zero order reaction.
Q.16 What is selectivity.
Q.17 Write Arrhenius equation.
Q.18 Write example of autocatalytic reactions.
Q.19 Write zero order reaction.
Q.20 Expand the PFR.

SECTION-C

Note: Short answer type questions. Attempt any twelve questions out of fifteen questions. (12x5=60)

- Q.21 What is heterogenous reaction.
Q.22 Write difference between the batch and plug flow reactor.
Q.23 What is elementary reaction.
Q.24 Write note on molecularity and order of reaction.
Q.25 Write different type of agitator.
Q.26 Draw a neat diagram of plug flow reactor connected in series and parallel combination.