Q.29 Differenciate between simple and multiple reactions.

Q.30 Discuss in brief the factors affecting the rate of reaction.

Q.31 Draw the graphical representations of first order Irreversible reaction taking Place in CSTR and PFR.

Q.32 Discuss in brief about catalyst accelerators.

Q.33 Derive the Expression for half life time of Zero order reaction.

Q.34 Describe bimolecular Second order reaction in brief.

Q.35 Explain in brief the working of CSTR with the help of neat diagram.

Section-D

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

Q.36 Explain in detail the integral methods to determine the order or reaction. Apply integral method to determine order of irreversible unimolecular type first order reaction.

Q.37 Describe the construction and working of PFR in detail with neat and clean diagram. Write the advantages and disadvantages and the performance equation of PFR.

Q.38 Write short notes on any two of the following

a) Space time and space velocity

b) Activation energy

c) Arrhenius theory

d) Rate of reaction

No. of Printed Pages : 4
Roll No. .....

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

Time : 3 Hrs. M.M. : 100

SECTION-A

Note: Multiple type Questions. All Questions are compulsory. (10x1=10)

Q.1 Half-Life $T^{1}/_{2}$ for 1st order reaction is

a) 0.693 K b) 0.693/K

c) K/ .0693 d) None of these

Q.2 PFR is also Knows as

a) Tubular reactor b) Mixed reactor

c) Stirred tank reactor d) Batch reactor

Q.3 Reversible reaction takes place in

a) Forward direction b) Backward direction

c) Both A & B d) None of these

Q.4 Number of reactants present in bimolecular reaction.

a) One b) Two

c) Three d) Four

Q.5 A catalyst in chemical reaction

a) Increase collision rate

b) Alter reaction speed

c) Both A & B

d) None of these

Q.6 In which of the following stoichiometric equation and rate equation are same

a) Elementary reaction
b) Reversible reaction
c) Non elementary reaction
d) Irreversible reaction

Q.7 Time of process one reactor volume of feed

a) Space velocity b) Batch time
c) Space time d) Batch velocity

Q.8 Catalyst poisoning _____ catalytic activity

a) Lowers b) Raises
c) Unaffected d) None of these

Q.9 Number of phase present in heterogeneous reaction

a) One
b) More than one
c) Depends on reactions rate
d) None of these

Q.10 Molecularity of a chemical reaction can never be

a) Integer b) Whole number
c) Fraction d) None of these

Section-B

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

Q.11 Define Reversible reaction.

Q.12 Write the unit space velocity.

Q.13 Give one Example of Endothermic reaction

Q.14 Write any two methods for determining order of reaction.

Q.15 Expand CSTR.

Q.16 Write one Example of Catalyst Inhibitor.

Q.17 Write the unit of Reaction rate.

Q.18 Write one example of Bimolecular reaction.

Q.19 Define Activation Energy.

Q.20 Define holding time.

Section-C

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

Q.21 Differenciate between order of reaction and Molecularity of reaction.

Q.22 Explain in brief the effect of temperature and pressure on the chemical equilibrium of reversible reaction.

Q.23 Explain in brief the reaction collision theory of reaction rate constant.

Q.24 Describe batch reactor and write the Expression for performance equation batch Reactor.

Q25 Liquid A decomposes by first orders Kinetics in batch reactor. 50% of A is converted in 10 minutes. Calculate the time required for 75% Conversion.

Q.26 Write short note on Catalyst Promoters.

Q.27 Explain the working of fixed Bed reactor with the help of neat diagram.

Q.28 Define fractional conversion. Write the expression for fractional conversion of first order unimolecular constant volume batch reactor.