Question bank (I scheme)

**Name of Subject: Chemical Reaction Engineering**

**Subject code: 22512**

**Semester: Fifth Course: CH**

**Unit test -1**

**Chapter 1:Catalysis(08marks)**

**2 marks question**

1. Give the function of accelerators in catalysis.

2. Define activity and specificity with respect to catalyst.

3. Give the role of inhibitors in catalysis.

4. Define catalyst poison and catalyst regeneration.

5. State two methods of regenerating the catalyst.

6. State nature of catalytic reactions (any two)

**4 marks question:**

7. Explain the method of catalyst preparation in which the catalyst is supported on a

carrier. Give   eg.

8. Explain the precipitation method for the preparation of catalyst with eg.

9. Describe the hot spot formation in a fixed bed reactor? Explain how it can be prevented?

**Chapter 2:Kineticsof homogeneous reactions(10 marks)**

**2 marks question**

10. Define rate of reaction and rate constant.

11. Define chain reaction and non-chain reaction.

12. Draw the graph showing the activation energy for endothermic and exothermic reaction.

13. Give the statement of Arrhenius law.

14. Define molecularity and order of reaction

15. Define elementary and non- elementary reaction

**4 marks question:**

16. Explain multiple reactions with eg.

17. Explain the types of intermediates formed in a non chain reaction.

18. Rate constant at 27oC is 0.001min-1 and at 37oC is 0.002min-1. Calculate the activation

energy of reaction.

**Chapter 3: Interpretation of batch reactor data (17 marks)**

**2 marks question**

19. The half-life period of a reaction of first order is 240 seconds. Calculate its rate constant in

seconds.   
20. Define zero order reaction. Give its mathematical expression.

21. Define half-life? Give the mathematical expression.

22. Give the unit of rate constant for zero order, first order and second order reaction.

**4 marks question:**

23. On doubling the concentration of reactant, the rate of reaction triples. Calculate the reaction

order.

24. Explain the steps in the integral method of analysis of data.

25. For Zero order reaction, Show that t ½ = CA0/ 2k

26. Derive the relation for constant volume irreversible second order reaction

2A P in terms of conversion using integral method of analysis

27. Show that for first order reaction the time required for 75% conversion is double the time   
 required for 50% conversion.

28. Derive the kinetic equation in terms of concentration for constant volume unimolecular first

order reaction.