



PAI-003-010415

Seat No. _____

M. Sc. (Semester - IV) Examination

August - 2020

Physical and Material Chemistry : C(PM) - 404

(Reaction Kinetics & Mechanism) (Elective-I)

(Old Course)

Time : $2\frac{1}{2}$ Hours]

[Total Marks : 70

- Instructions :** (1) All questions are compulsory.
(2) All question carry equal marks.

1 Answer the following : (Any Seven)

- Define: Collision number, Actinometer, Enzyme, Autooxidation.
- Discuss photolysis of acetone.
- Differentiate between photochemical and thermal reactions.
- What is catalysis? Give different types of catalysis with suitable examples.
- Explain reaction in gas phase.
- Give an account of different types of acid-base catalysis.
- Explain metallic mirror method for the detection of free radicals in chain reactions.
- Discuss the reaction mechanism of reaction between CO and Cl_2 .
- Differentiate between enzyme catalysis and general catalysts.
- Discuss quenched flow method.

2 Write notes on : (Any Three)

- Mechanism of acid catalyzed hydrolysis of methyl acetate.
- Bronsted-Bjerrum equation
- Types of actinometers
- Characteristics of chain reactions.

- 3** Answer the following : (Any Two)
- (a) Discuss thermodynamical formulation of reaction rate.
 - (b) Explain kinetics of heterogeneous catalyzed reaction.

OR

- (c) Deduce an expression for the determination of rate of enzyme catalyzed reactions.
 - (d) Give an account of (i) Flash photolysis and (ii) laws of photochemistry.
- 4** Answer the following : (Any Three)
- (a) Prove that decomposition of acetaldehyde is three-halves order.
 - (b) Discuss upper and lower explosion limits of a reaction between hydrogen and oxygen.
 - (c) Give the reaction mechanism of (i) decomposition of ozone and (ii) ammonium cyanate and urea reaction.
 - (d) Explain secondary salt effect.
- 5** Answer the following : (Any Two)
- (a) Describe the various factors affecting the rate of an enzyme reaction.
 - (b) Describe theory of homogeneous reactions.
 - (c) Explain classical collision theory in detail.
 - (d) Discuss Relaxation method for the determination of fast reactions.
