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BBD-003-010415

Seat No. _____

M. Sc. (Sem. IV) Examination

July - 2021

C(PM)-404 : Physical Chemistry

(Reaction Kinetics & Mechanism) (Old Course)

Faculty Code : 003

Subject Code : 010415

Time : $2\frac{1}{2}$ Hours] [Total Marks : **70**

Instructions : (1) All questions are compulsory.

(2) All questions carry equal marks.

1 Answer the following : (any **seven**)

(a) Define : Chain reaction, Actinometers, Homogeneous catalysis, Promotors.

(b) Give atleast four examples of ionic reaction.

(c) Differentiate between photochemical and thermal reaction.

(d) Explain catalytic co-efficient.

(e) What are the advantages of flash photolysis.

(f) Give the photolysis of acetone.

(g) Explain the mechanism for the reaction between NO_2 and F_2.

(h) Discuss the metallic mirror method for the detection of free redicals.

(i) Discuss quenched flow method.

(j) What is acid-base catalysis ? State the different types of acid-base catalysis.

2 Answer the following : (any **three**)

(a) Discuss Bronsted - Bierrum equation.

(b) Mechanism of acid catalyzed hydrolysis of methyl acetate.

(c) Explain relaxation method.

(d) Laws of photochemistry and quantum yield.

3 Answer the following :

(a) Explain classical collision theory.

(b) Explain the mechanism of hypochlorite iodide reaction.

OR

3 (a) Explain the theory of hetrogeneous catalysis.

(b) Discuss mechanisum of acid-base catalysis.

4 Answer the following : (any **three**)

(a) Discuss characteristics of catalysis in detail.

(b) Give an account of secondary salt effect.

(c) Write in detail the distinguishing feactures of chain reactions.

(d) Discuss the kinetics of enzyme catalysis.

5 Answer the following : (any **two**)

(a) Explain primary salt effect in detail.

(b) Discuss thermo dynamical formulation of reaction rate.

(c) Explain :

(i) Auto-Oxidation

(ii) Upper and lower explosion limit

(d) Discuss :

(i) The decomposition of Ozone.

(ii) Decomposition of N_2O_5.