NBX-003-010415

NBX-003-010415 Seat No. _____

M. Sc. (Chemistry) (Sem. IV) (CBCS) Examination

April / May - 2017

Physical & Material Chemistry : C (PM) - 404

(Reaction Kinetics & Mechanism) (Ele. I) (New 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 : Actinometer, Autooxidation, Enzyme, Collision number.

(b) Give quenched flow method.

(c) Give an account of different types of acid-base catalysis.

(d) Explain metallic mirror method for the detection of free radicals in chain reactions.

(e) Discuss the reaction mechanism of reaction between CO and Cl_2.

(f) What is catalysis:' Give different types of catalysis with suitable examples.

(g) Differentiate between photochemical and thermal reactions.

(h) Explain reaction in gas phase.

(i) Discuss photolysis of acetone.

(j) Differehtiate between enzyme catalysis and general catalysts.

2 Write notes on : (Any Three)

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

(b) Bronsted-Bjerrum equation

(c) Types of actinometers

(d) 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) Discuss Relaxation method for the determination of fast reactions.

4 Answer the following :

(a) Discuss the reaction mechanism of :

(i) nit'rogen dioxide and fluorine reaction and

(ii) ammonium cyanate and urea reaction.

(b) Discuss upper and lower explosion limits of a reaction between hydrogen and oxygen.

(c) Explain secondary salt effect.

(d) Prove that decomposition of acetaldehyde is three-halves order.

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) Give an account of

(i) Flash photoly'sis and

(ii) Laws of photochemistry.
