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MBV-003-010415 Seat No. _____

M. Sc. (Sem. IV) Examination

April / May - 2018

Physical & Material Chemistry : C(PM) - 404

(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: Collision number, Autooxidation, Enzymes, Quenching.

(b) What is actinometer ? State different types of actinometers.

(c) What do you mean by fast reactions ? State the methods for studying fast reactions.

(d) Discuss photolysis of aldehyde.

(e) What is the effect of solvent on reaction rates in solution.

(f) Enlist the methods of detecting free radicals.

(g) Give an account of general acid-base catalysis.

(h) Discuss catalytic poison.

(i) Give an account of reaction rate of unimolecular reactions.

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

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

(a) Kinetics of decomposition of ozone.

(b) Reaction between hydrogen and oxygen.

(c) Relaxation method.

(d) Laws of photochemistry.

3 Answer the following :

(a) Show that the decomposition of acetaldehyde follows one half and three halves order kinetics.

(b) Discuss general characteristics of chain reactions.

OR

3 Answer the following :

(a) Far a homogeneous catalysis., show that the rate of reaction is directly proportional to catalyst concentration.

(b) Discuss the primary salt effect in detail.

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

(a) Discuss the factors affecting enzyme catalyzed reaction.

(b) Discuss the decomposition of N_2O_5.

(c) Explain the mechanism of acid catalyzed reaction with suitable example.

(e) Deduce Bronsted-Bjerrum equation.

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

(a) Discuss the kinetics of enzyme catalysis and also explain the determination of v_{max} and k_m.

(b) Give an account of collision theory.

(c) Explain the thermal reaction between hydrogen and bromine.

(d) Discuss the theory of heterogeneous catalysis.