Seat No. _____

HC-003-1104010

M. Sc. (Sem. IV) Examination

April - 2023

Physical Chemistry : CPM-404

(Reaction Dynamics and Mechanism)

(Elective-I) (New Course)

Faculty Code : 003

Subject Code : 1104010

Time : $2\frac{1}{2}$ / Total Marks : **70**

Instructions :

(1) All questions are compulsory.

(2) Total five questions.

(3) Each carry equal marks.

1 Answer the following : (any seven) **14**

(a) What are the advantage of Flash Photolysis ?

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

(c) Give an account of autocatalysis.

(d) Write notes on : Quantum yield.

(e) Explain catalytic promoters.

(f) Differentiate enzyme catalysis and general hetrogeneous catalysis.

(g) Discuss quenched flow method.

(h) Discuss the decomposition of ozone.

(i) Discuss catalytic coefficient.

(j) Define : Enzyme, photons, collision number, chain length.

2 Answer the following : (any two) **14**

(a) Explain classical collision theory.

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

(c) Explain primary salt effect in detail.

3 Answer the following : **14**

(a) Discuss thermodynamical formulation of reaction rate.

(b) Describe the mechanism of acid catalyzed hydrolysis of methyl acetate.

OR

(a) Describe the characteristics of catalysis.

(b) What is the actinometer ? State the different types of actinometer in detail.

4 Answer the following : **14**

(a) What are the factors governing enzyme catalyzed reaction ?

(b) Discuss the characteristics of chain reaction in detail.

5 Answer the following : (any two) **14**

(a) Explain :

(i) Auto oxidation

(ii) Effect of pH on reaction rate.

(b) Describe the theory of homogeneous catalysis.

(c) Describe Bronsted-Bierrum equation.

(d) Discuss :

(i) Reaction between NO_2 and F_2

(ii) Metallic Mirror method.
