



DP-003-1104010

Seat No. _____

M. Sc. (Sem. IV) Examination

March / April - 2022

Physical Chemistry : C(PM)-404

(Reaction Dynamics & Mechanism) (New Course)

Faculty Code : 003

Subject Code : 1104010

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) 14

- (1) Define : Enzyme, Collision number, Chain length, Inhibitors.
- (2) Discuss Quenched Flow method.
- (3) Give an account of different types of acid base catalysis.
- (4) Discuss Quantum yield.
- (5) Explain catalytic promoters.
- (6) Differentiate enzyme catalysis and general acid-base catalysis.
- (7) Explain mechanism of the reaction between NO_2 and F_2 .
- (8) Discuss briefly homogeneous and heterogeneous catalysis.
- (9) Define : Photosensitizer, Chain reaction, Photons, Catalyst.
- (10) What are the advantages of Flash Photolysis ?

- 2** Answer the following : (any **two**) **14**
- (1) Describe the characteristics of catalysts.
 - (2) Explain primary salt effect.
 - (3) Discuss the classical collision theory in detail.

- 3** Answer the following : **14**
- (1) What is the actinometer ? State the different types of actinometer in detail.
 - (2) Discuss :
 - (i) Stopped Flow method
 - (ii) Effect of pH on the reaction rate.

OR

- 3** Answer the following : **14**
- (1) Explain the thermodynamical formulation on reaction rate.
 - (2) Discuss :
 - (i) Bronsted-Bjerrum equation.
 - (ii) Catalytic coefficient.

- 4** Answer the following : **14**
- (1) What are the factors affected enzyme catalyzed reactions ?
 - (2) Discuss the law of photochemistry.

- 5** Answer the following : **14**
- (1) Discuss the theory of homogeneous reactions.
 - (2) Discuss the characteristics of chain reactions.
 - (3) Discuss :
 - (i) Decomposition of Ozone.
 - (ii) Metallic mirror method.
 - (4) Discuss the relaxation method for the determination of fast reactions.