

Roll No.

(05/15-1)

5173

B. Sc. EXAMINATION

(Second Semester)

CHEMISTRY

CH-105 (Paper V)

Physical Chemistry

Time : Three Hours

Maximum Marks : 26

Note : Attempt Five questions in all. Question No. 1 is compulsory and attempt at least two questions from each Section.

1. Give short answers :

- (a) Why reactions of Higher order are not possible ?
- (b) What is half life period ? How is it related to initial concentration of reactant ?

- (c) Give an expression which gives dependance of rate of reaction with temperature.
- (d) What is importance of Ostwald's dilution law ?
- (e) Define ionic mobility and ionic conductance. How are they related ?
- (f) A first order reaction has half life period of 90 sec. Calculate rate constant for this reaction. 1×6=6

Section A

2. (a) Derive rate law expression for the reaction :



Calculate half life period for it also.

(b) From the following data obtained during kinetic studies of a reaction :



Experiment [A]/M [B]/M—Initial Rate
of formation
of D.M min⁻¹

I	0.1	0.1	6.0×10^{-3}
II	0.3	0.2	7.2×10^{-2}
III	0.3	0.4	2.88×10^{-1}
IV	0.4	0.1	2.4×10^{-2}

Calculate order of this reaction.

$$2\frac{1}{2} + 2\frac{1}{2} = 5$$

3. (a) Derive an expression which describes collision theory for unimolecular reactions proposed by Lindemann.

(b) Discuss advantages of Transition State Theory over Collision Molecular Theory.

$$3 + 2 = 5$$

4. (a) What is meant by order of a reaction ?
How can you determine order of a reaction with the help of half life period ?