PGC 5505   **PHYSICAL CHEMISTRY-III**   **Max: 75 mks**
Time: 3 hrs

SECTION A   **Answer ANY FIVE questions**   **(5 X 15 = 75)**

1. a) What are the assumptions of the collision theory of reaction rate?

    How does collision theory predict the rate of a reaction?   (10)

    b) Derive Eyring equation.   (5)

2. a) Derive Deby-Huckel-Onsager equation.   (6)

    b) Discuss about ion-ion interaction in solution.   (4)

    c) Explain Oscillatory reaction with a suitable example.   (5)

3. a) How will you employ conductivity measurements to find the solubility product of a

    sparingly soluble salt?   (5)

    b) Derive an expression for Zeta potential.   (6)

    c) How are hydrated electron generated? Mention its characteristics.   (4)

4. What are concentration cells? Derive and explain liquid junction potential.

5. Derive and discuss the various outcome of Butler-Volmer expression.

6. a) What is diffusion controlled reaction? Discuss the kinetics of different types of

    diffusion controlled reactions.   (10)

    b) Explain the determination of transport number using moving boundary method. (5)

7. a) Based on statistical mechanics, discuss the theory of absolute reaction rates.   (5)

    b) Derive a expression for excited state pKa of a molecule.   (5)

    c) Discuss the applications of emf measurements.   (5)