

UNIT – IV

Roll No.

22002

**M. Sc. Chemistry 2nd Semester
Examination – May, 2019**

PHYSICAL CHEMISTRY-II

Paper : CY(H)-202

Time : Three hours] [Maximum Marks : 80

Before answering the questions, candidates should ensure that they have been supplied the correct and complete question paper. No complaint in this regard, will be entertained after examination.

Note : Attempt any **five** questions, selecting at least **one** from each Unit. Question No. **1** is **compulsory**. All questions carry equal marks.

- (a) Explain the rate process approach to ionic migration and derive an equation for the equivalent conductivity on the basis of it. 8
- (b) Derive the Nernst Planck's Flux equation and Discuss its consequences. 8
- (a) Give an account of Debye-Huckel-Onsager theory of conductance of strong electrolytes. 8
- (b) Write a note on the Onsager Phenomenological equations. 8

1. (a) What is probability distribution function?
 (b) What are spherical harmonics?
 (c) What is competitive and non-competitive inhibition?
 (d) What is Walden rule?

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- (e) What are the characteristics of chain length?
- (f) What is meant by steady state approximation?
- (g) What is an explosion reaction? Give example.
- (h) Explain the factors effecting ionic mobility.

$$2 \times 8 = 16$$

UNIT - I

- 2. (a) Solve the Schrodinger wave equation for the energy of a particle in three. 12
- (b) Dimensional box. 4

- 3. Discuss the shape of p-orbital using the concept of quantum mechanics. Set up the Schrodinger wave equation for a Rigid Rotator and obtain equations for the energy eigen values and normalized eigen function. 16

UNIT - II

- 4. (a) Discuss the Third law of thermodynamics and its limitations. 8
- (2)

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- (b) Discuss Clausius-Clayperon's equation application.

- 5. (a) Discuss phase diagram of two completely miscible components system.

- (b) Discuss Phase Diagram of Eutectic systems congruent and incongruent melting point.

UNIT - III

- 6. (a) Discuss the general treatment of chain reaction and explain the concepts of apparent activation energy and chain length.

- (b) What are explosion reactions? Discuss by taking H_2-O_2 example.

- 7. Derive Michaelis-Menton equation of Linzy-Michaelis catalyzed equation. Evaluate Michaelis constant by Lineweaver - Burk and Eadie Hofstae methods. 16

(3)