

School of Basic Sciences**Bachelor of Science Honours in Chemistry
Semester End Examination - Jun 2024****Duration : 180 Minutes
Max Marks : 100****Sem IV - C1UB403B - Electrochemistry and Magnetism***General Instructions**Answer to the specific question asked**Draw neat, labelled diagrams wherever necessary**Approved data hand books are allowed subject to verification by the Invigilator*

- 1) Define how Arrhenius theory explain the conductivity of electrolyte solutions. K1(3)
- 2) Explain the first and second Faraday's laws of electrolysis. K2(4)
- 3) Explain the significance of the Debye-Hückel-Onsager equation in the study of electrolyte solutions. K2(6)
- 4) Illustrate the the key concepts underlying Kohlrausch's Law, including molar conductivity, limiting molar conductivity, and the independence of ion migration in dilute solutions. K3(6)
- 5) Illustrate the theory of redox titration. Titration. K3(6)
- 6) Illustrate acid-base titrations. K3(9)
- 7) Illustrate precipitation titrations. K3(9)
- 8) Analyze how a dipole moment is generated within a molecule. What factors contribute to the presence of a dipole moment? K4(8)
- 9) Analyze the fundamental principles of electrostatics in simple terms. What is electrostatics, and how does it relate to the study of stationary electric charges and their interactions. K4(12)
- 10) Examine the Clausius-Mosotti equation and the Lorenz-Lorentz equation in terms of their applications and limitations. K5(10)
- 11) Examine the significance of molar conductivity at infinite dilution in understanding the behavior of electrolyte solutions. How does it relate to the conductive properties of ions in solution? K5(15)

OR

Examine transference number in the context of electrolyte K5(15)

solutions. What does a transference number represent, and how is it calculated?

- 12) Discuss the concept of electromotive force (EMF) in a chemical cell and provide an example of a simple galvanic cell involving a metal electrode and its corresponding ion. K6(12)

OR

Discuss the fundamental principles of electrostatics in simple terms. What is electrostatics, and how does it relate to the study of stationary electric charges and their interactions. K6(12)