2023

M.Sc.

4th Semester Examination

CHEMISTRY

PAPER – CEM-403 (Inorganic Special)

Full Marks : 50

Time : 2 Hours

(CEM 403-Advanced Inorganic Chemistry-II)

1. Answer any ***four*** bits: 2×4 = 8

(a) What is the importance of Electroanalytical chemistry?
(b) What is substitution reaction?
(c) Define Fick's law.
(d) What is liquid junction potential?
(e) What is polarography?
(f) Write down the difference between DTA and DSC?

2. Answer any ***four*** bits: 4×4 = 16

(a)Discuss Transition state theory of inorganic reaction mechanism.
(b) Write down the difference between conductometric and potentiometric titration?
(c) Define Complementary and Non-Complementary Reactions.
(d) Write down advantages and disadvantages of DME?
(e) Explain the nature of thermogram (TGA) of Calcium oxalate and magnesium oxalate.
(f) Write down the difference between Electrolytic cell and Electrochemical cell.

3. Answer any ***two*** questions 2×8 = 16

(a)Discuss the associative and dissociative mechanism for octahedral complex and explain the Mechanism of Two Electron Transfer Reactions. 4+4
(b) Write the basic principle of Ilkovic-Heyrovsky equation. Explain the significance of this equation. 4+4

(c) Write down the types of electroanalytical method and the basic difference between the Thermal Analysis and Thermo Gravimetric Analysis. 3+5
(d) (ii) Write down the application of Cyclic Voltammetry (CV). (ii) Why Ferrocene is used as standard in CV? (iii) Draw the Cyclic Voltammogram of Reversible, Irreversible and Quasi-Reversible redox reaction. 3+2+3

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Internal Assessment-10

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