This question paper contains **2** printed pages]

SA—11—2025

FACULTY OF SCIENCE

B.Sc. (Third Year) (Fifth Semester) EXAMINATION

APRIL/MAY, 2025

CHEMISTRY

Paper–XIII

(Physical and Inorganic Chemistry)

(Wednesday, 9-4-2025)   **Time : 10.00 a.m. to 12.00 noon**

Time—2 Hours   *Maximum Marks—*40

N.B. :— (*i*)   *All* questions are compulsory.

(*ii*)   Figures to the right indicate full marks.

(*iii*) Use of logarithmic table and calculator is allowed.

1. Solve any *three* of the following :   15

(*i*)   Write a note on tetrahydral heteroatom polyanion.

(*ii*)   Give the structure of $O_5(CO)_4$ and CH_2 fragments.

(*iii*) Discuss important reaction of isopolyanions and heteropolyanions.

(*iv*)   Explain main group fragments and isolobility fragments.

(*v*)   Explain octahydral heteroatom polyanions.

P.T.O.

2. Attempt any *three* of the following : 15

(a) Explain activity of a component in ideal solution.

(b) What are the advantages and disadvantages of DME ?

(c) Discuss temperature dependence of vapour pressure of solution.

(d) Account application of polarography.

(e) What are the effects of temperature on magnetic substances ?

3. Answer any *two* of the following : 10

(a) Explain measurement of magnetic susceptibility using Gouy's method.

(b) Derive Ilkovic equation and give its significance.

(c) Derive Gibbs Duhem Margule's equation.

(d) Give chemical properties of ideal and non-ideal solutions..