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NA—11—2023

FACULTY OF SCIENCE

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

NOVEMBER/DECEMBER, 2023

(New/CBCS Course)

CHEMISTRY

Paper—XIII

(Physical and Inorganic Chemistry)

(Tuesday, 5-12-2023)

Time : 10.00 a.m. to 12.00 noon

Time—2 Hours

Maximum Marks—40

N.B. :— (i) Attempt *all* questions.

(ii) Figures to the right indicate full marks.

(iii) Use of logarithmic table and non-functional calculator is allowed.

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

(a) Explain anions and isopolyacids of W^{6+} ions.

(b) Write a short note on heteropolyanions.

(c) Discuss 1 : 12 (Tetrahedral Heteroatom) Polyanions with a suitable example.

P.T.O.

- (d) What are isolobal fragments ? Explain isolobal organometallic and main group fragments with suitable example.
- (e) Explain $\text{Mn}(\text{CO})_4$ organometallic fragment is isolobal with 'CH' fragment and 'P' atom.

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

- (a) Give construction and working of dropping mercury electrode.
- (b) What is half-wave potential ? Give its method of determination.
- (c) Explain types of magnetic substances
- (d) Explain temperature dependence of vapour pressure of solution
- (e) Discuss the activities of a component in ideal solutions.

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

- (a) Write a note on chemical potential of an ideal and non-ideal solution.
- (b) Explain free energy change of mixing and enthalpy change of mixing.
- (c) Give the applications of Polarography.
- (d) What is the effect of temperature on diamagnetic, paramagnetic and ferromagnetic substances ?