

MJD Govt. College Taranagar (Churu)

Department of Chemistry

B.Sc.-II (Syllabus)

INORGANIC CHEMISTRY

PAPER-I

Unit-I

Chemistry of Elements of First Transition Series:

(a) Characteristic properties of d-block elements.

Properties of the elements of first transition series, their binary compounds and complexes , illustrating the relative stabilities of oxidation states, coordination number and geometry.

(b) Chemistry of elements belonging to II and III transition series comparative study of post lanthanide transition metals with the members of 4d series with special emphasis on ionic radii, oxidation states, magnetic & spectral properties. Stereochemistry of their compounds.

Unit-II

(a) Oxidation and reduction :

Use of redox potential data-Analysis of redox cycle. Redox stability in water. Frost, Latimer and Pourbaix diagram . Principles involving in the extraction of elements.

(b) Chromatography – Definition, classification, R_f-value , law of differential migration eluant and elution, Paper, TLC, Chromatographies and their applications.

Unit-III

Coordination Compounds:

Werner's coordination theory and its experimental verification, effective atomic number concept, chelates, nomenclature of coordination compounds, isomerism in coordination compounds, valence bond theory of transition metal complexes.

Unit-IV

(a) Chemistry of Lanthanide Elements :

Electronic structure, oxidation states and ionic radii and lanthanide contraction, complex

formation, occurrence and isolation of lanthanide compounds.

(b) Chemistry of Actinides :

General features and chemistry of actinides, chemistry of separation of Np, Pu and Am from

U, similarities between the later actinides and the later lanthanides.

Unit-V

(a) Acids and Bases

Lux-Flood concept of acid base and its limitation. Lewis concept and its limitation
Usanovich
concept. A generalized acid –base concept.

(b) Non-aqueous Solvents:

Physical properties of a solvent, types of solvent and their general characteristics
reactions in
non-aqueous solvents with reference to liquid NH₃ and liquid SO₂.