

Course Code:

Basics of Inorganic Chemistry –II

Course Code: BEB306

Credit: 04 (L-3, T-1, P-0)

Contact Hours: 60

MM: 100

After going through the course the teacher trainee will be able to –

- apply the knowledge of inorganic chemistry in explanation of different properties exhibited by coordination compounds.
- describe the theories of bonding and non-aqueous solution

Course Outline:

Unit I: Chemistry of d-block elements

- General Chemistry of 1st row d-block elements,
- Electronic configuration, ionization potential, oxidation states,
- Chemistry of Ti and V complexes, Chemistry of Cr and Mn complexes,
- Types of magnetic behaviour shown by transition elements

Unit II: Coordination Compounds

- Various definitions, types of ligands: classical ligands, non-classical ligands, The Chelate and Macrocyclic effects, Multidentate ligands,
- stereochemistry and various coordination numbers, isomerism in coordination compounds,
- nomenclature, stability of coordination compounds,
- Valence bond theory for bonding in coordination compounds, strength and weaknesses of valence bond approach.

Unit III: Crystal field theory

- The splitting of d-orbitals in different fields (octahedral, tetrahedral, tetragonally distorted octahedral, square planar, trigonal bipyramidal)
- Jahn Teller effect in octahedral and tetrahedral complexes.

Unit IV: Radioactivity

- Nuclear Fission & Nuclear Fusion
- Radioactivity, Nature of radiations from Radioactive elements,
- Radioactive tracers, Carbon Dating,
- Artificial Radio activity,

Unit V: Acids & Bases

- Concepts of Acids and Bases: Arrhenius concept; Bronsted – Lowry concept;
- Basicity or basic strength of a Bronsted base; Acidity or acid strength of a Bronsted acid m;
- Lewis acid – base concept; Super acids
- HSAB principle and its applications


Suggested Reading:

- Advanced Inorganic Chemistry Vol. I & II By Satya Prakash, G. D. Tuli, S. K. Basu & R. D. Madan S Chand & Sons
- Advanced Inorganic Chemistry by Cotton F. Albert John - Wiley.
- Concise Inorganic Chemistry by J. D. Lee Blackwell.
- Inorganic Chemistry: Principles of Structure & Reactivity By Huheey, E. A. Keiter, R. Keiter, O. K. Medhi, Pearson Publications.


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