

Code: 102101		Title : Inorganic Chemistry	Credits : 4
Objectives : -			
I) To understand the basic concepts of inorganic chemistry.			
II) To develop expertise in collection, preparation & preservation of samples.			
III) To prepare any standard solution.			
IV) To acquire knowledge of theoretical concepts of volumetric techniques.			
Paper -I			60 Hours
Unit I	Inorganic chemistry in biological systems : - Essential and trace elements in biological systems and their functions , structure and function of metalloporphyrins, Hemoglobin, cytochrome and hemocyanine. Electron transfer, Respiration and photosynthesis reaction, Metal deficient diseases of Fe, Zn, Cu and Mn and their therapy.		15 Lectures
Unit II	Chemical Bonding:- Recapitulation of hybridization Derivation of wave functions for sp, sp ² , sp ³ orbital hybridization types considering only sigma bonding , Discussion of involvement of d orbitals in various types of hybridizations. Concept of resonance, resonance energy derivation expected, Formal charge with examples, Critical analysis of VBT, Molecular Orbital Theory for diatomic species of First transition Series, Molecular Orbital Theory for Polyatomic species considering σ bonding for SF ₆ , CO ₂ , B ₂ H ₆ , I ₃ - molecular species, Weak forces of attraction: Hydrogen bonding – concept, types, properties, methods of detection and importance. Van der Waal's forces, ion-dipole, dipole-dipole, London forces		15 Lectures
Unit III	Molecular symmetry and symmetry groups: – symmetry elements and operations. Symmetry planes, reflections, inversion centre, proper/ improper axes of rotation, products of symmetry operations, equivalent symmetry elements and atoms, symmetry elements and optical isomerism, symmetry point groups, classes of symmetry operations, classification of molecular point groups.		15 Lectures
Unit IV	Metal ligand equilibria in solution :- Definition of stability constant, step wise and overall formation constant, factors affecting the stability of metal complexes with reference to the nature of metal ion and ligand, Determination of formation constant for binary complexes using pH-metric technique.		15 Lectures

Reference Books :

1. Symmetry and Group theory in Chemistry , R Ameta
2. Symmetry and Spectroscopy of Molecules, K.Veera Reddy.
3. Concise Inorganic Chemistry, J.D.Lee.
4. A Textbook of bioinorganic chemistry, A. K. Das.
5. Selected Topic in Inorganic Chemistry, Wahid U. Malik, G.D.Tuli and R.D.Madan.
6. Advanced Inorganic Chemistry, Volume I and II Gurdeep Raj.
7. Advanced Inorganic Chemistry, F.A.Cotton and Wilkinson.
8. Symmetry in Chemistry: H. Jaffe' and M. Orchin (2002).