

**Inorganic Chemistry Course – I (CHE-501)**

**BLOCK I: SYMMETRY OF MOLECULES**

Unit 1: Symmetry Operations and Symmetry Elements

Unit 2: Mathematical Rules of Groups – Abelian and Non-Abelian

Unit 3: Molecular Point Groups

Unit 4: Group Multiplication Tables

Unit 5: Symmetry and Properties of Molecules – Molecular Polarity, Chirality and Optical Activity

**BLOCK II: THEORIES OF BONDING AND ELECTRONIC SPECTRA OF METAL COMPLEXES**

Unit 6: Crystal Field Theory – Splitting of Metal d-Orbitals in Different Geometries

Unit 7: Ligand Field Parameters

Unit 8: Molecular Orbital Theory

Unit 9: Free Ion Terms and Energy Levels

Unit 10: Orgel Diagrams

**BLOCK III: REACTION MECHANISMS OF TRANSITION METAL COMPLEXES**

Unit 11: Labile and Inert Complexes

Unit 12: Substitution Reaction Mechanisms of Octahedral complexes

Unit 13: Substitution Reaction Mechanisms of Square Planar complexes

Unit 14: Electron Transfer Reaction Mechanisms

Unit 15: Reaction Mechanisms of Organometallic Compounds

**BLOCK IV:**

Unit 16: Stability constants of Metal Complexes and Factors Influencing Stability

Unit 17: Methods of Determination of Stability Constants

Unit 18: Ligational aspects of Diatomic Molecules

Unit 19: Metal Clusters

Unit 20: Coordination Chemistry of Metal Ions in Biomolecules