M.PHIL (CHEMISTRY : SEM -I) Paper III – [Elective] INORGANIC CHEMISTRY {50 MARKS}

1.Co- ordination Chemistry { 25 marks }

 Chemistry of Transition Elements – Co-ordinations chemistry of transition metal ions – stability constants of complexes and their determinations – stereochemistry of co-ordination compounds – ligands field theory – splitting of d-orbitals in low symmetry environment – John – teller effect – Metal clusters. Spin crossover in co-ordination compounds – Interpretation of electronic spectra including charge transfer spectra, spectro- chemical series – nephelaxelic series – Taube sugano diagram.

References:

1. Advanced Inorganic Chemistry-

-By Cotton & Wilkinson

2. Inorganic Chemistry – Principle, Structure and reactions

-By James Huheey

3. Introduction to Ligand field theory

-By B.N.Figgis

2. Group Theory {25 marks}

- Molecular symmetry and the symmetry groups symmetry clements and operations – symmetry planes and Reflections proper axes and proper rotations – Equivalent symmetry elements and equivalent atoms – the symmetry point groups – symmetry classification of molecules – classes of symmetry operations.
- Representation of groups the great orthogonality Theorem and its consequences

 representation of cyclic groups group theory and quantum mechanics wave functions as bases for irreducible representations. The direct product projection operators.

References:

1. Group theory and Chemistry

-By David and Bishop

2. Introduction to Ligand field Theory

-By Carl J. Ballhausen

3. Chemical Applications of Group Theory

-By F.A. Cotton

4. Group Theory for chemists

-By George Davidsen