Paper 502103 Inorganic Chemistry 3 Credits,75 Marks(45hrs)

3 Hrs/Week

I. Solid state chemistry 10hrs

Classification of solids on the basis of bonding
Explanation of terms : crystal lattice, lattice points, unit cell, lattice constants, Closest packing of rigid spheres (hcp, ccp) Packing density in simple cubic,bcc,fcc andhcplattices (numerical problems expected)Tetrahedral and octahedral voids, radius ratio, limiting radius ratios and their significance . Calculation of limiting radius ratio for coordination number 3 and 4Structure of sodium chloride , cesium chloride and zinc sulphide

II. Superconductivity 5hrs

Introduction, critical temperature, Meissner effect
Different types of superconducting materials : conventional, organic, alkali metal fullerides and high temperature superconductors, applications.

III. Chemistry of Lanthanides 10hrs

Chemistry of Lanthanides with reference to I) oxidation states, ii) magnetic properties, iii) colour and absorption spectra,iv) complex formation, v) lanthanide contraction
Occurrence, extraction and separation of lanthanides by i) ion exchange ii) solvent extraction method.Applications of lanthanides

IV. Chemistry of Actinides 5hrs

Chemistry of Uranium and Plutonium with reference to occurrence, extraction (solvent extraction method) properties and applications.
Comparative chemistry of Lanthanides and Actinides.

V. Organometallic Chemistry 10hrs

Introduction, definition, classification on the basis of Hapticity and Nature of metal carbon bond.Preparation, properties and applications of alkyls and aryls of Li, Al, Hg, Sn
Classification, preparation, properties and bonding in Metal carbonyls.
Eighteen electron rule applicationsand exceptions.

VI. Chemistry of Non aqueous solvents 05hrs

Classification of solvents and importance of Non aqueous solvents.
Reactions in Non aqueous solvents with reference to liquid ammonia and liquid SO_2 as solvents.