1. **Atomic Structure**

Bohr’s atomic model - Sommerfeld’s extension of atomic structure; Electronic configuration and Quantum numbers; Shapes of s,p,d,f orbitals - Pauli’s exclusion principle - Hund’s Rule of maximum multiplicity- Aufbau principle. Emission and absorption spectra, line and band spectra; Hydrogen spectrum - Lyman, Balmer, Paschen, Brackett and Pfund series; deBroglie’s theory; Heisenberg’s uncertainty principle – wave nature of electron – Schrodinger wave equation (No derivation). Eigen values and eigen functions. Hybridization of atomic orbitals involving s,p and d orbitals.

2. **p,d and f – Block Elements**


Lanthanides – Introduction, electronic configuration, general characteristics, oxidation state – lanthanide contraction, uses, brief comparison of Lanthanides and Actinides.

3. **Coordination Chemistry and Solid State Chemistry**


4. **Thermodynamics, Chemical Equilibrium and Chemical Kinetics**

I and II law of thermodynamics – spontaneous and non spontaneous processes, entropy, Gibb’s free energy – Free energy change and chemical equilibrium – significance of entropy. Law of mass action – Le Chatlier’s principle, applications of chemical equilibrium. Rate expression, order and molecularity of reactions, zero order, first order and pseudo first order reaction – half life period. Determination of rate constant and order of reaction. Temperature dependence of rate constant – Arrhenius equation and activation energy.

5. **Electrochemistry**

6. Isomerism in Organic Compounds


7. Alcohols and Ethers


8. Carbonyl Compounds


9. Carboxylic Acids and their derivatives


10. Organic Nitrogen Compounds and Biomolecules


Carbohydrates – Distinction between sugars and non sugars, structural formulae of glucose, fructose and sucrose, with their linkages, invert sugar – definition, examples of oligo and polysaccharides,

Amino acids – Classification with examples, Peptides-properties of peptide bond,

Lipids - Definition, classification with examples, difference between fats, oils and waxes.