Important chapters and topics from Chemistry for IAT and NEST 2023

Inorganic Chemistry

1. **Chemical Bonding**

- Hybridization, Geometry and shape of molecules
- Bond angle (VSEPR)
- Molecular Orbital Theory (MOT)

2. **Coordination Chemistry**

- Werner's Theory
- Valence Bond Theory (Geometry, Hybridization)
- Crystal Field Theory (Magnetic properties)
- Coordination Isomerism

3. **Periodic properties**

- Trends for atomic radius, ionization enthalpy, electronegativity, electron affinity.
- A good understanding of this chapter will help while studying and tackling different problems in coordination chemistry as well as block chemistry (s, p, d, f block).

Physical Chemistry

1. **Thermodynamics/Gaseous state**

- Work
- Heat
- Thermodynamic Equilibrium constant
- Gibb's Free energy
- Entropy

2. **Chemical Kinetics**

- Order and rate of reaction
- Graphs for different orders
- Arrhenius equation

3. **Electrochemistry**

- Faraday's law of electrolysis
- Kohlrausch's law of independent migration of ions
- Nernst Equation
- Thermodynamics of electrochemical cells

4. **Atomic structure**

- Bohr's Atomic model
- Debroglie Hypothesis
- Heisenberg's uncertainty principle
- Quantum numbers

Organic Chemistry

1. **GOC (General Organic Chemistry)**

- Electronic effects (Inductive, Resonance, Hyperconjugation)
- Acidity, Basicity
- Nucleophilicity, Electrophilicity, Reaction Mechanism
- Intermediates (Carbocation, Carbanion, Free radical)
- IUPAC Nomenclature
- Stereochemistry
- This chapter is the basic foundation of organic chapter. Almost every chapter of organic chemistry builds upon the concepts of GOC.

2. **Carbonyl Chemistry (Aldehydes and ketones)**

- Oxidizing reagents
- Reducing reagents
- Interconversion of different functional groups
- Nucleophilic addition to carbonyl compounds
- Amines

3. **Biomolecules**

- Carbohydrates (Structure (Haworth projection), Preparation and reactions)
- Amino acids (Structures, Preparation, Reactions, Denaturation)

MOST IMPORTANT CHAPTERS	**TOPICS**
Coordination chemistry	Werner's Theory, VBT, CFT, Isomerism
Thermodynamics	Work, Gibbs free energy, Entropy
Chemical Kinetics	Order, Graphs, Arrhenius theory
Carbonyl chemistry	Reagents, Interconversion
Chemical Bonding	Hybridization, Geometry, MOT