

## **INDICATIVE SYLLABUS: Asst. Chemist Trainee (ACT)**

### ***PART A (APTITUDE) (50 Questions)***

This part will consist of 50 objective type questions on:

01. Verbal Ability/General English
02. Quantitative Aptitude
03. Reasoning Ability

### ***PART B (TECHNICAL) (70 questions)***

#### **A. Physical Chemistry (25)**

- Atomic Structure
- States of Matter
- Chemical Thermodynamics
- Chemical and ionic Equilibrium
- Redox Reactions
- Phase equilibria & Solutions
- Electrochemistry
- Chemical Kinetics
- Surface Chemistry
- Nuclear Chemistry

#### **B. Organic Chemistry (20)**

- Basic Concepts in Organic Chemistry and Stereochemistry
- Qualitative and quantitative analysis and purification of organic compounds.
- Preparation, Properties and reactions of Alkanes, Alkenes, Alkynes
- Organic compounds with functional group containing halogens
- Organic compounds with functional group containing oxygen
- Organic compounds with functional group containing nitrogen
- Reactions of  $\alpha$ ,  $\beta$  unsaturated carbonyl and acids
- Polymers
- Reactions of Benzene and heterocyclic compounds
- Urea and malonic ester
- Spectroscopy measurements including IR, UV, NMR (proton and carbon 13)
- Biomolecules – Carbohydrates, Protein, Vitamins, Nucleic Acid, Lipids, Hormones
- Environmental Chemistry
- Chemistry in everyday life

### **C. Inorganic Chemistry (25)**

- Mole Concept and stoichiometry
- Periodic Table
- Chemical Bonding
- Main Group Elements (S & P)
- Transition Elements and lanthanides
- Coordination compound
- Metallurgy including Ellingham diagram (basic)
- Analytical Chemistry
- B-inorganic Chemistry