

# Syllabus for Chemistry Bachelor's

## Section 1: Subject Knowledge

Please Note: A Total of 40 Questions will be asked, combining the following topics, with the difficulty level commensurate to a Bachelor's Candidate.

### Unit I: Physical Chemistry

Gaseous and liquid states, ionic equilibria, solid states, and thermodynamics. Thermochemistry, free energy, partial molar quantities, spectroscopy, photochemistry, chemical kinetics, catalysis, surface chemistry, phase equilibria, quantum chemistry, conductance, and electrochemistry.

### Unit II: Inorganic Chemistry

Atomic structure, element periodicity, and chemical bonding. Oxidation-reduction, metallurgy, s and p block chemistry, noble gases, inorganic polymers, and coordination chemistry. Transition elements, lanthanoids, actinides, bioinorganic chemistry, and organometallic compounds.

### Unit III: Organic Chemistry

Basics of organic chemistry, stereochemistry, and aliphatic/aromatic hydrocarbons. Chemistry of halogenated hydrocarbons, alcohols, phenols, ethers, epoxides, carbonyl compounds, carboxylic acids, sulfur- and nitrogen-containing compounds. Polynuclear hydrocarbons, heterocyclic compounds, alkaloids, terpenes, and organic spectroscopy (UV, IR, NMR, MS).

## Section 2: Fundamental Skills

Please Note: A Total of 28 Questions will be asked, combining the following topics, with the difficulty level commensurate to a Bachelor's Candidate.

### Unit I: Data Analysis

### Unit II: Math and Statistics

### Unit III: Lab skills

### Unit IV: Reading and Writing

## Section 3: Specific Skill Proficiency

This section has more than 30 skills. You can select the ones you are proficient in from the enrollment form. You can choose a maximum of 2 skills. Each skill contains 10 questions.