

Assistant Scientific Officer / Junior Scientific Officer

Section-I: Analytical Ability, Computer Skills and Communication Skills (30 Marks)

Communication skills; Logical, quantitative and visual-spatial reasoning; Computer skills, computer applications and proficiency in using windows, MS office etc.; General knowledge/current affairs.

Section – II: Professional (70 Marks)

Basic Science: Redox and Complexometric, acid base titrations, Calibrations of volumetric kits, Preparation/standardization of solutions. Basic knowledge of Electro Chemistry; Electro Chemical reactions, non equilibrium electro chemistry; Ions in Solution; Handling of chemical and analysis involving safety and hygiene in the Lab; Determination of errors in Chemical analysis. Knowledge of titrimetric method of analysis involving types of titration, concentration system (Molarity, molality normality, mole fraction etc.) Basic knowledge of gravimetric & thermal methods of analysis; Knowledge of Bio-monitoring. Green chemistry, nanomaterials, photochemistry, thermodynamics, chemical kinetics, synthetic and natural polymers.

General Micro-Biology involving Microscopy and observations of microbes, characteristics and cultivation of Micro-organisms, Microbial growth, control of micro-organisms. Microbial ecology and Water Microbiology etc.; toxicity testing, toxicity of pesticide/metals.

Pollution and its types: (Water, Air and Soil) Basic concept of Water and wastewater treatment, Environment Concept, Atmosphere, Hydrosphere, Lithosphere, Forests, Conservation of Environment, Management of Solid waste, Indoor Environment, Global Environmental issues, Indian Laws on Environment, Biodiversity, Noise and Microbial Pollution, Human Population and Environment, Social Issues, Local Environmental Issues etc.,

Mathematical Science: Measures of central tendency: Mean, Median and Mode, Statistical methods; mean deviation; standard deviations, type of errors, uncertainty, precision and knowledge of statistically evaluation of data.

Number System, fractions, exponents, surds, squares, square root, cube. Introduction to algebra; algebraic identities, polynomials. Mensuration; triangles, circles, sphere, cone, cylinder

Instrumentation and Chemical Analysis: pH, conductivity, turbidity, dissolved oxygen, measurements technique, Spectroscopy (UV-Visible, infrared, NMR and

mass), Ion chromatography & Ion selective electrode measurement technique, Emission and Atomic Absorption spectroscopy, Solid Phase extraction techniques, chromatographic analysis (Gas Chromatography and HPLC), Industrial Process Analyzers, Air Pollution control and emission measurement techniques.