MEN-C 203 : Environmental Chemistry M.M. 70

UNIT – I

Fundamentals of environmental chemistry: Stoichiometry, Gibbs' energy, Henry's law, chemical potential, chemical equilibria, acid base reactions, carbonate system, solubility product, solubility of gases in water, carbonate system, unsaturated and saturated hydrocarbons, radionuclides in environment.

UNIT – II

Chemical composition of Air: Classification of elements, chemical speciation, particles, ions and radical in the atmosphere, transport of pollutants in air. chemical processes for formation of inorganic and organic particulate matter. Thermo-chemical and photochemical reactions in atmosphere. Oxygen and ozone chemistry of air pollutants, Air Quality index.

UNIT – III

Water chemistry: Chemistry of water, concept of DO, BOD, COD, coagulation, filtration, physical transport in surface water, dispersion of pollutants in ground water, biochemical processes in water involving microorganisms. Oxygen demanding wastes, Water quality index, synthetic organic compounds, inorganic chemicals and minerals, sediments, impact of oil on water pollution and environment, radioactive pollutants in water.

UNIT – IV

Inorganic and organic components of soil, Nitrogen pathways, NPK in soil and their interaction. Physico-chemical analysis of soil, SAR, Soil pollution control, Soil health index. Industrial waste/ effluents and heavy metals in soil and their interactions. Reactions of different types of insecticides, fungicides and weedicides in soil systems.

UNIT – V

Toxic chemicals in the environment: Metals, inorganic contaminants and organic contaminants; pesticides in water, Biochemical aspects of Arsenic, Cadmium, Lead, Mercury, Carbon-monoxide, O_3 and PAN, pesticides, insecticides, Radioactive substances, MIC, carcinogens in the air.

NOTE: The question paper shall consist of two sections (A & B). Section A shall contain ten short answer type questions of six marks each and student has to attempt any five questions in about 150 words each. Section B shall consist eight long answer type questions of ten marks each and student shall be required to attempt any four questions in detail. Questions shall be uniformly distributed from the entire syllabus. The previous year paper can be used as a guideline and the following syllabus should be strictly followed while setting the question paper.