MEN-C 202 : Environmental Microbiology and Toxicology M.M.: 70

UNIT – I

Soil microbiology: Introduction, microorganisms in soil, role of microbes in biogeochemical cycles (Oxygen, carbon-dioxide, Nitrogen, Sulphur and phosphorous). Role of microbes in humus formation, Role of microbes in Carbon, Nitrogen and Sulphur cycle, Air microbiology, Introduction, microorganisms in air, role of microbes in atmosphere. Aquatic microbiology; introduction, microorganisms in water, Role of microbes in aquatic system.

UNIT – II

Basics of microbiological analysis, laminar air flow, autoclaving, preparation of culture media, microorganisms and diseases: epidemiology (Introduction, factors affecting epidemiology, modes of transmission, controls of communicable diseases), air-borne diseases (tuberculosis, meningitis, chicken-pox), soil-borne diseases (tetanus and gas-gangrene). Anti-microbial agents and their significance.

UNIT – III

Water and food-borne diseases (Cholera, Typhoid, Amoebiasis, Giardiasis and Hepatitis), Disease causing agents, Contamination of food, microbial spoilage of food, Role of microbes in oil-pollution control and chemical pollution control, Ecological and public health impacts of raw sewage and domestic liquid discharge.

UNIT – IV

Toxicology – Definitions, Classification, Origin and nature of toxicants in Environment. concepts, Toxicity, Acute, sub-acute, chronic, dose effect, LD 50, LC 50 and response safe limits. Dose response relationship, concentration and response relationship, Safe Limits. Biological, chemical factors their influence. Influence of route of administration, abnormal response to chemicals; basis of selective toxicity, Detoxification.

UNIT – V

Xenobiotics in the environment. Pesticides – Classification of pesticides – Pest surveillance, resistance, residual effects, Bioaccumulation, Biotransformation, toxic effects of insecticides on man, fishes and mammals. Mutagenesis and carcinogenesis - selective important case studies. Environmental health risk assessment.

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.