

PAPER-II
ENVIRONMENTAL BIOTECHNOLOGY

Duration: 3 hrs

M.M.: 100

UNIT – I

Global environmental problems: Ozone depletion, UV-B, green house effect and acid rain, their impact and biotechnological approaches for management.

Air, noise and thermal pollution, their causes, harmful effects and control.

UNIT – II

Water pollution and its control. Water as scarce natural resource, need for water management, sources of water pollution, measurement of water pollution, water supply treatment, waste water collection, waste water treatment – physical, chemical and biological treatment processes.

Water purification methods – desalination, reverse osmosis etc.

UNIT – III

Aerobic processes – activated sludge, oxidation ditches, trickling filter, towers, rotating discs, rotating drums, oxidation ponds, anaerobic processes – anaerobic digestion, anaerobic filters.

Treatment schemes for waste waters of dairy, distillery, sugar and antibiotic industries.

UNIT – IV

Environmental biotechnology : Scope and application. Concept of Cleaner Technology.

Solid wastes: Sources and management (composting and methane production) general hazardous wastes, radioactive and other hazardous wastes and their management. Sources and safety.

Application of microbes as biofertilizers and bioinsecticides for productivity improvement and crop protection.

UNIT – V

Principles of biomonitoring and applications of biosensors for detection of environmental pollutants.

Biomining: Use of microbes in biohydrometallurgy and biomineralization.

Bioremediation: Degradation of pesticides, oil spills and other xenobiotics. Phytoremediation of disturbed ecosystems.

Microbes and their genetic engineering for degradation of environmental pollutants.

Note:

The paper setter is required to set questions of 3 types contained in 3 Sections (**Section A-** 10 questions, **Section B-** 10 questions and **Section C-** 4 questions)



