

APPLIED PAPER – I – ENVIRONMENTAL MICROBIOLOGY

UNIT – I

Concepts of microbial ecology: Relationship between microorganism and different environments land, water and air. Microorganism inhabiting extreme environments. Microbiology of air – organisms in air, distribution and sources. Droplet nucle, aerosol, assessment of air quality, solid – liquid – impingement methods. Brief account of air borne transmission of harmful microbes.

UNIT – II

Types of aquatic ecosystems: fresh water – ponds, lakes, streams. Marine habitats – estuaries, mangroves, deepsea, hydrothermal vents, salt pans, coral reefs. Zonations – upwelling – eutrophication – food chain. Potability of water – microbial assessment of water quality – water purification – brief account of water – borne diseases.

UNIT – III

Types of wastes – characterization of solid and liquid wastes. Solid waste treatment – saccharification – gasification – composting, Utilization of solid wastes – food (SCP, mushroom, yeast); fuel (ethanol, methane, hydrogen); fertilizers (composting).

UNIT – IV

Liquid waste treatment. Treatment methods – primary –secondary (anaerobic – methanogenesis; aerobic- tricking activated sludge – oxidation pond – tertiary treatment. Utilization of liquid wastes – food (SCP, Yeast) – fuel (methane), fertilizers (Cyanobacteria).

UNIT – V

Biodeterioration: Deterioration of paper, leather, wood, textiles, metal corrosion, mode of deterioration, organisms involved, its disadvantages and mode of prevention.

Text Book Recommended:

1. Ec Eldowney, S., Hardman, D.J. and Waite, S. 1993. Pollution : Ecology and Biotreatment – Longman Scientific Technical
2. Baker, W.C. and Herson, D.S.1994. Bioremediations – McGraw Hill Inc., New York
3. Ernest, W.C.1982. The Environment of the Deep sea, VolIII, J.G.Morin Rubey.
4. Rheinmer, G.1977. Microbial Ecology of Brackish Water environment: Ecological Studies – Vol-25, Springer – Verlag Nerlin – Heidelberg New York.
5. William M., Lewis Jr.James. F.Saunders. David W.Crumpacker. Sr. and Charles Brebdecke., 1994. Ecologica Studies – Vol 46.
6. Bernt Zeitzschel, Sebastian A.Gerlach 1973. The Biology of Indian Ocean. Ecological studies. Vol.III
7. W.Nybakken, 1982. Marine Biology – An Ecological Approach. Ames Harper and Row Publisher, New York.
8. K.C.Marshall, 1985. Advances in Microbial Ecology. Vol-8. Plenum press.
9. Burns, R.C. and Slater, J.H. 1982. Experimental Microbial Ecology – Blackwell Scientific Publications, Oxford, London.