

2125

B.A./B.Sc. (General) Fifth Semester  
Industrial Microbiology  
IMB-501: Biodegradation of Wastes and Pollutants

Time allowed: 3 Hours

Max. Marks: 33

*NOTE: Attempt five questions in all, including Question No. 1 which is compulsory and selecting one question from each Unit.*

*x-x-x*

I. Answer the following:-

- (a) Define 'Leachate' in the context of sanitary landfills.
- (b) Name two bacterial genera used as indicators of faecal contamination in water.
- (c) What is the main environmental concern associated with Alkyl-Benzyl Sulphonates (ABS)?
- (d) Differentiate between composting and incineration in one point.
- (e) What role do hydrocarbon-degrading bacteria play in oil spill remediation? (5x1)

**UNIT - I**

II. Describe the process of composting. Discuss the role of different microbial consortia involved in the aerobic and anaerobic methods of composting. (7)

III. Write a detailed note on the design, operation, and environmental safeguards of a modern sanitary landfill. (7)

**UNIT - II**

IV. Describe the various stages involved in the primary treatment of sewage. How does it prepare the wastewater for secondary treatment? (7)

V. Explain the trickling filter and activated sludge processes as methods of secondary treatment in sewage treatment plants. (7)

**UNIT - III**

VI. Discuss the various methods used for the disinfection of potable water. Compare and contrast chlorination and ozonation. (7)

VII. Why are coliform bacteria used as indicators of water safety? Explain the standards for tolerable levels of faecal contamination in drinking water as per WHO guidelines. (7)

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**UNIT - IV**

- VIII. What is meant by the biodegradation of environmental pollutants? Discuss the microbial degradation pathway of Alkyl-Benzyl Sulphonates (ABS). (7)
- IX. Explain the causes and consequences of oil pollution in marine ecosystems. Elaborate on the bioremediation strategies used for cleaning up oil spills. (7)

x-x-x