

2025

**M.S.c 3rd Semester Examination**

**PAPER : M250304 (MOOCS)**

**ENVIRONMENTAL BIOTECHNOLOGY**

**Full Marks : 100**

**Time : Three Hours**

*The figures in the margin indicate full marks.  
Candidates are required to give their answers  
in their own words as far as practicable.*

**Group - A**

Answer any *nine* questions :  $2 \times 9 = 18$

1. Name two major contaminants of the environment.
2. Define bioremediation and give one example.
3. What is meant by edible mushroom?
4. What is the role of biofertilizers in agriculture?
5. What are the major microorganisms involved in the activated sludge process?
6. Define *bulking* in the activated sludge process.
7. Name any two biological wastewater treatment methods besides activated sludge.
8. What is the primary function of the aeration tank in an activated sludge system?

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9. What are the main end products formed during the oxidation of organic matter in the activated sludge process?
10. What are the major types of biodegradable polymers?
11. What is renewable energy?
12. What are the various types of xenobiotic compounds commonly found in the environment?
13. What is meant by industrial waste?
14. Name one cellulase-producing fungi and bacteria.

**Group - B**

Answer any *five* questions : 4×5=20

15. Explain the importance of environmental biotechnology in pollution control and environmental clean-up.
16. Describe the different types of wastewater treatment processes used in environmental biotechnology.
17. Write the advantages and disadvantages of the trickling filter and the membrane bioreactors.
18. Explain the working principle of the activated sludge process with a neat description.
19. Write a short note on Sequential Batch Reactors (SBR) or Oxidation Ditches used in wastewater treatment.
20. Write a brief note on biopesticides.

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21. What are the different modes of action and toxicity of xenobiotics?
22. Write in brief the different types of solid waste treatment processes used in environmental biotechnology.

**Group - C**

Answer any *four* questions :  $8 \times 4 = 32$

23. Describe in detail the activated sludge process with suitable diagrams.
24. What are xenobiotics? Explain the mechanism involved in the biodegradation of xenobiotics.  $3+5$
25. What are the different types of biofuels? State the reasons for the adoption of biofuels as a sustainable strategy to replace fossil fuels.  $4+4$
26. What is biofertilizer? Clarify biofertilizers. State the differences between manure and fertilizers.  $2+3+3$
27. What do you mean by vermitechnology? Elaborate on the process of vermicomposting with a suitable flow diagram.  $2+6$
28. Explain the mechanism involved in microbial degradation in the rhizosphere and its implications for bioremediation with the help of a suitable diagram.

**Internal Assessment : 30 marks**

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