

M.Sc.(Env.) Semester - 3 (CBCS) Examination**OCT/NOV-2025****Biotechnology and Research Methodology (Core)****Time: 2:30 Hours****Marks:70****Instructions:**

1. All questions are compulsory.
2. Figures to the right indicate marks.

SECTION-I

- Que.1 Answer the following (Two short Questions)
- A) Discuss the process of biodegradation. (07)
- B) Explain bioleaching and its application. (07)
- OR
- Que.1 Describe the types of bioremediation: in situ and ex situ, with examples. (14)
- Que.2 Answer the following (Two short Questions)
- A) Explain the concept of biodegradable and eco-friendly products and their environmental importance. (07)
- B) Explain biosurfactants, their microbial origin, and applications in industry and environment. (07)
- OR
- Que.2 Discuss trickling filters, bioscrubbers, and biobeds as eco-friendly waste management systems. (14)
- Que.3 Do as direct (any seven out of eight questions each of one mark) (07)
- 1) What is biodeterioration?
 - 2) Enlist the factors affecting bioremediation.
 - 3) Define Intrinsic Bioremediation.
 - 4) What is the Biodeterioration?
 - 5) Give an example of a biodegradable plastic.
 - 6) What is bioenergy?
 - 7) What microbes are used in biogas production?
 - 8) Define bio-scrubber.

SECTION-II

- Que.1 Explain the different types of scientific research and discuss the objectives, methodology, and examples of each type. (14)
- OR
- Que.1 Answer the following (Two short Questions)
- A) Explain the structure of a research paper and a review article. (07)
- B) Discuss the components of a research proposal and its significance. (07)
- Que.2 Describe the different biosafety levels and their laboratory requirements. (14)
- OR
- Que.2 Answer the following (Two short Questions)
- A) Discuss the roles of Institutional Biosafety Committees. (07)
- B) Explain Genetically Modified Organisms (GMOs). (07)
- Que.3 Do as direct (any seven out of eight questions each of one mark) (07)
- 1) Name a national research funding agency in India.
 - 2) How can plagiarism be avoided?
 - 3) Why is peer review important?
 - 4) Name a step in manuscript submission.
 - 5) Give the full form of GEAC and its role.
 - 6) What is risk management?
 - 7) What is a Biological Safety Cabinet?
 - 8) Write the full form of RCGM.
