

M.Sc.(Env.) Semester - 3 (CBCS) Examination**Oct/Nov-2022 (NEW COURSE)****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

- Q.1 Answer the followings (Two short Questions)**
- A. What is bioremediation? Explain its principle and mechanism of phytoremediation. **07**
- B. Explain the *in situ* and *ex situ* bioremediation. **07**
- OR**
- Q.1** Write a note on bioremediation process of biodegradation and bioleaching. **14**
- Q.2 Answer the followings (Two short Questions)**
- A. Describe the Bioscrubbers and Biobeds. **07**
- B. Write a note on biosurfactants. **07**
- OR**
- Q.2** Give a detail account on production of bioenergy. **14**
- Q.3 Do as direct (any seven out of eight questions each of one mark)** **07**
- A. What are the scope of bioremediation?
- B. Define biodeterioration.
- C. Explain bio-stimulation.
- D. Which microbes are used in bioleaching?
- E. Explain trickling filters.
- F. What are the importance of biodegradable plastics.
- G. Give some example of waste materials for energy.
- H. Write down application of biogas production.

SECTION-II

- Q.1** Write a note research scheme and research proposal writing. **14**
- OR**
- Q.1 Answer the followings (Two short Questions)**
- A. Explain in detail about types of scientific research. **07**
- B. Discuss the international funding agencies and their role. **07**
- Q.2 Write a note on biosafety regulation and role of International biosafety regulation.** **14**
- OR**
- Q.2 Answer the followings (Two short Questions)**
- A. Discuss the GMO's and LMO's in detail. **07**
- B. Explain various biosafety levels. **07**
- Q.3 Do as direct (any seven out of eight questions each of one mark)** **07**
- A. What are objectives of scientific research?
- B. Define plagiarism.
- C. Write down any four of national funding agencies.
- D. What is a Research problem?
- E. Give full form of GEAC.
- F. Enlist organisms handle under the biosafety level 2.
- G. State the application of GMO's in food.
- H. Write a full name of RCGM.
