

**M.Sc.(Env.) Semester - 3 (CBCS) Examination****OCT/NOV-2024****Biotechnology and Research Methodology (Core)****Time: 2:30 Hours****Marks: 70****Instructions:**

1. All questions are compulsory.
  2. Figures to the right indicate marks.
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**SECTION- I****Q. 1 Answer the followings (Two short Questions)**

(A) Define the bioleaching and explain the process of it. (07)

(B) Describe the principle and mechanism of phytoremediation. (07)

**OR**

**Q. 1** Write a detail note on bio-hydrometallurgy and biodeterioration. (14)

**Q. 2 Answer the followings (Two short Questions)**

(A) Describe the biosurfactants process. (07)

(B) Write a detail note on trickling filters with its applications. (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 is the in-situ and ex-situ bioremediation?

(B) What is the scope of bioremediation in addressing environmental pollution?

(C) Explain biodegradation process.

(D) State the advantages of bioremediation.

(E) Explain the bio-scrubber.

(F) Write down the applications of bio-scrubber.

(G) Define biobeds process.

(H) What are eco-friendly products?

**SECTION- II**

**Q. 1** Write a detail note on types of scientific research and explain about research scheme. (14)

**OR**

**Q. 1 Answer the followings (Two short Questions)**

(A) Discuss about international funding agencies and its role. (07)

(B) What is plagiarism and explain its importance in research. (07)

**Q. 2** Discuss various role of RCGM and Institutional Biosafety Committee in biosafety regulation. (14)

**OR**

**Q. 2 Answer the followings (Two short Questions)**

(A) Write a full form of GEAC and explain about it. (07)

(B) Explain about the biosafety cabinets. (07)

**Q. 3 Do as direct (any seven out of eight questions each of one mark) (07)**

(A) Explain hypothesis in research proposal.

(B) State the name of content in full length research papers.

(C) Write down names of national funding agencies.

(D) What are the types of research funding in India?

(E) Give the names of organisms handle under biosafety level-2.

(F) What are the applications of GMOs in food?

(G) Define risk assessment.

(H) Explain LMOs

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