

B.Sc. Semester - 4 (NEP-2020) Examination**March/April-2025****BIT: Environmental Biotechnology (Major-9)****Time: 2:00 Hours****Marks: 50****Instructions:**

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

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| Que-1 | 1. Explain how widespread firewood use contributes to deforestation and its environmental consequences. (05) |
| | 2. State environmental advantage and environmental disadvantage of using these biomass fuels. (05) |
| OR | |
| Que-1 | 1. How can microbes be used to produce hydrogen as a fuel? Discuss its potential as an eco-friendly alternative to fossil fuels? (05) |
| | 2. What is gasohol, and how is it produced? Explain its advantages and environmental impact compared to conventional gasoline. (05) |
| Que-2 | 1. What is bioremediation? How is it used to clean up oil spills in soil and water? (05) |
| | 2. How do microbes degrade lignin and cellulose in the environment? (05) |
| OR | |
| Que-2 | 1. What is phytoremediation? Give an example of a plant used in this process. (05) |
| | 2. How do microorganisms help in the degradation of pesticides in contaminated soil? (05) |
| Que-3 | 1. What are biofertilizers? Explain in detailed microbial biofertilizer. (05) |
| | 2. Differentiate between symbiotic and asymbiotic nitrogen-fixing bacteria with example. (05) |
| OR | |
| Que-3 | 1. What are VAM fungi, and how do they benefit plant growth? (05) |
| | 2. How do symbiotic nitrogen-fixing bacteria help in soil enrichment? (05) |
| Que-4 | 1. What is bioleaching? Explain how microorganisms help in the extraction of metals from ores. (05) |
| | 2. Describe the role of microorganisms in the bioleaching of gold. Which microbes are commonly used in this process? (05) |
| OR | |
| Que-4 | 1. How do bacteria contribute to the bioleaching of copper? Explain the process briefly. (05) |
| | 2. What are genetically modified microbes (GMMs)? Discuss their environmental applications and risks. (05) |
| Que-5 | 1. Mention two significant environmental impacts of large-scale hydroelectric dams on river ecosystems. (05) |
| | 2. Name two microorganisms involved in the bioremediation of heavy metals and explain their role. (05) |
| OR | |
| Que-5 | 1. What are the main steps involved in the treatment of municipal waste? (05) |
| | 2. How do genetically modified plants benefit the environment? Give an example of a genetically modified crop and its impact. (05) |
