

B.Sc. Semester - 4 (NEP-2020) Examination**March/April-2025****MIC: Environmental Microbiology and Microbial Ecology (Minor-3)****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. Describe about the soil profile and horizons. (05) |
| | 2. Explain the microbial flora observed in fresh water. (05) |
| | OR |
| | 1. Discuss the concept of microbiomics in the human body. |
| | 2. What are extremophiles? Explain their adaptations. |
| Que-2 | 1. Explain the sources and types of solid waste. (05) |
| | 2. Describe the methods of solid waste disposal. (05) |
| | OR |
| | 1. Define BOD and COD. Explain their significance in waste management. |
| | 2. Discuss about oxidation ponds and trickling filter process for sewage water treatment. |
| Que-3 | 1. Explain the principles and degradation of common pesticides. (05) |
| | 2. Describe the role of biosurfactants in bioremediation. (05) |
| | OR |
| | 1. Discuss the MPN test and its significance. |
| | 2. Explain the membrane filter technique for water testing. |
| Que-4 | 1. Describe microbial degradation of cellulose and hemicellulose. (05) |
| | 2. Explain the nitrogen cycle and its different steps. (05) |
| | OR |
| | 1. What is phosphate immobilization? Explain its significance. |
| | 2. Discuss the role of microbes in the sulfur cycle and its steps |
| Que-5 | 1. Discuss the Mendelian Laws of Inheritance and their role in genetic inheritance. (05) |
| | 2. Discuss the tertiary treatment of sewage. (05) |
| | OR |
| | 1. Describe confirmed and completed tests for fecal coliforms. |
| | 2. Explain the role of microbes in iron and manganese cycle. |
