

Seat No. : \_\_\_\_\_

**NF-124**

**November-2021**

**B.Sc., Sem.-V**

**305 : Microbiology**  
**(Environmental Microbiology)**

**Time : 2 Hours]**

**[Max. Marks : 50**

- Instructions :**
- (1) **All** questions in Section – I carry equal marks.
  - (2) Attempt any **three** questions in Section – I.
  - (3) Section – II is Compulsory.

**Section – I**

- 1. (A) Explain movement of micro-organisms between ecosystems. 7
- (B) Give an overview on Extreme environments. 7
- 2. (A) Write a detailed note on microbial adaptations to marine water environments. 7
- (B) Explain the concept of microbial consortia and development of biofilms. 7
- 3. (A) Describe the role of symbiotic nitrogen fixing micro-organisms in soil fertility. 7
- (B) Write a note on Methane based mutualism. 7
- 4. (A) Explain the role of micro-organisms in production and utilization of greenhouse gases. 7
- (B) Discuss symbiosis between micro-organisms and ruminant animal. 7
- 5. (A) Explain various biological indicators of water pollution. 7
- (B) Discuss biomagnification of DDT. 7
- 6. (A) Briefly describe Anaerobic sludge digestion. 7
- (B) What are environmental pollutants ? Explain bio-degradation of Alkyl Benzyl Sulfonates. 7

7. (A) Explain mechanisms of microbially enhanced oil recovery process. 7  
(B) Describe biodegradable polymers as ecofriendly microbial products. 7
8. (A) Discuss the role of micro-organisms in recovery of copper from low-grade ores. 7  
(B) Give an overview on role of microorganisms in biofuel production. 7

### Section – II

9. Answers the following in 1 – 2 lines : (any 8) 8
- (1) Differentiate the terms : Population and Community.
  - (2) What is ecological niche ?
  - (3) What is microbial loop ?
  - (4) Define thermophiles and give one example.
  - (5) Give an example of lignin degrading micro-organisms.
  - (6) Define nodulins.
  - (7) Enlist important bacteria causing acid mine drainage.
  - (8) Write two names of free-living nitrogen fixing bacteria.
  - (9) Give two examples of recalcitrant compounds.
  - (10) What is biodisc system ?
  - (11) What is Zoogloal film ?
  - (12) Define harmful algal blooms.
  - (13) Enlist any two names of biopesticide.
  - (14) Define xenobiotics.
  - (15) Write the two advantages of in-situ bioremediation.
  - (16) Give two examples of ethanol producing micro-organisms.
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