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 Zoogloeal 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
