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B.A./B.Sc. (General) Third Semester
Industrial Microbiology
IMB-301: Environmental Microbiology

Time allowed: 3 Hours

Max. Marks: 33

NOTE: Attempt five questions in all, including Question No. 1 which is compulsory and selecting one question from each Unit.

X-X-X

1. Answer the following briefly:

- a) What is neutralism?
- b) What are the applications of Anabaena in nature?
- c) Name the microbes commonly present in air.
- d) Define the biogeochemical cycle.
- e) What is bioaugmentation?
- f) What is ammonification?
- g) Which microbes play a role in aerobic degradation of complex compounds?
- h) What is humus? How is it formed?
- i) What are aerosols?

(1×9=9)

UNIT-I

2. a) Give a comparison of microbial flora of water and soil.
b) What kind of physiological adaptations are induced in the microbes due to climatic changes in the environment? (3+3=6)
3. a) Write about the microbial diversity in soil and their benefits.
b) What kind of genetic adaptations sustain the microbes in the environment? (3+3=6)

UNIT-II

4. Explain the following:
i) Recycling of Oxygen ii) Nitrogen fixation in soil by non-symbiotic microbes. (3+3=6)
5. a) Explain the process of carbon mobilization and immobilization in nature.
b) What do you know about the Sulphur cycle? Which microbes play significant role in the process. (3+3=6)

UNIT-III

6. a) Describe the positive interactions among the plants and bacteria.
b) Discuss with suitable examples very common parasitic and commensalism interactions among animals and microorganisms. (3+3=6)
7. Explain the following:
i) Positive Microbe – microbe interactions (any two)
ii) Amensalism, Neutralism and Synergism. (3+3=6)

UNIT-IV

8. a) What are the methods used for bioremediation of contaminated soil? Discuss any two.
b) Write about the anaerobic biodegradation of pesticides. (3+3=6)
9. a) What are degradative plasmids? How are they helpful in the improvement of environment.
b) What do you know about the xenobiotic compounds? Why are they a threat to the environment. (3+3=6)

X-X-X