

Date
23/11/2024 (Evening)

Exam.Code:0003

Sub. Code: 17278

2124

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

- Q1. a) Name one microbial population found in soil.
b) What is ammonification in the nitrogen cycle?
c) Define commensalism.
d) What is a degradative plasmid?
e) Mention one method of bioremediation.

5×1=5

(Unit I)

- Q2. a) Discuss the microbial population of air and water.
b) Explain genetic adaptations in microbes due to environmental changes. $3\frac{1}{2}+3\frac{1}{2}=7$
- Q3. a) Describe the soil environment and its significance in microbiology.
b) Explain the physiological adaptations of microbes to environmental stress. $3\frac{1}{2}+3\frac{1}{2}=7$

(Unit II)

- Q4. a) Describe the process of nitrogen fixation and its importance in the nitrogen cycle.
b) Explain the role of microbes in the sulphur cycle. $3\frac{1}{2}+3\frac{1}{2}=7$
- Q5. a) Explain microbial mobilization and immobilization of carbon in the biosphere.
b) Discuss the hydrogen and oxygen cycles in the environment. $3\frac{1}{2}+3\frac{1}{2}=7$

(Unit III)

- Q6. a) Define mutualism and give an example of plant-microbe interaction.
b) Discuss the concept of competition and predation in microbial populations. $3\frac{1}{2}+3\frac{1}{2}=7$
- Q7. a) Describe the types of microbe-microbe interactions.
b) Explain animal-microbe interactions with suitable examples. $3\frac{1}{2}+3\frac{1}{2}=7$

(Unit IV)

- Q8. a) What are xenobiotics, and how are they degraded in the environment?
b) Explain the role of ecological considerations in the biodegradation of pollutants. $3\frac{1}{2}+3\frac{1}{2}=7$
- Q9. a) Discuss the biodegradation of pesticides and its environmental impact.
b) Explain bioremediation techniques for contaminated soil. $3\frac{1}{2}+3\frac{1}{2}=7$

x-x-x