

M.Sc. MICROBIOLOGY
SECOND SEMESTER
SOIL AND ENVIRONMENTAL MICROBIOLOGY
MMB-204

**SET
A**

[USE OMR SHEET FOR OBJECTIVE PART]

Duration: 1hr. 30 mins.

Full Marks: 35

(Objective)

Time: 15 mins.

Marks: 10

Choose the correct answer from the following:

1 × 10 = 10

- Example of the sedimentary cycle:
 - N Cycle
 - P Cycle
 - C Cycle
 - O Cycle
- Which of the following fixes nitrogen along with carbon dioxide?
 - Rhodospirillum*
 - Beijerinckia*
 - Bacillus*
 - Clostridium*
- Example of aerobic free living nitrogen fixing bacteria:
 - Rhodospirillum*
 - Bacillus*
 - Beijerinckia*
 - Clostridium*
- The source of carbon to the plants according to the carbon cycle is:
 - Fossil fuel
 - Carbonated rocks
 - C sequestration
 - Atmospheric CO₂
- The bioremediation process involving the usage of plants to degrade pollutants is:
 - Composting
 - Phytoremediation
 - Biopile
 - Land farming
- Which of the following is not a biofertilizer?
 - Mycorrhiza*
 - Agrobacterium*
 - Rhizobium*
 - Nostoc*
- Leghaemoglobin is present in the root nodules of legumes. What is the function of leghaemoglobin?
 - Oxygen removal
 - Expression of nif gene
 - Inhibition of nitrogenase activity
 - Nodule differentiation
- What is the reason behind Red soils developing a reddish color?
 - Overgrazing
 - Due to the presence of iron
 - The presence of potash and magnesia
 - None of these
- Eutrophication causes aquatic species to die by:
 - Building up carbon dioxide in water
 - Causing lack of oxygen in water
 - Causing lack of nitrogen in water
 - Causing lack of CO₂ in water

10. BOD is an important measure of.....
- a. Oxygen content of water and waste water
 - b. An organism's natural level of oxygen requirements
 - c. The oxygen using potential of water and waste water
 - d. A measure of the biological activity of water and waste water

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(Descriptive)

Time : 1 hr. 15 mins.

Marks : 25

[Answer question no.1 & any two (2) from the rest]

1. Write a short note on biological characteristic of soil. 5
2. What is petroleum hydrocarbon? How it is hazardous to living beings? 1+2+7=10
How the microbiological advancements can be utilized in degradation of hazardous hydrocarbons and xenobiotics?
3. What is Nitrogen cycle and what significant role it plays in the environment? Explain with diagram. 10
4. Write a detailed note on the following: *(any two)* 5+5=10
 - a) "Soil as a habitat for various microbes"
 - b) Leghemoglobin
 - c) Physico-chemical characteristic of soil
5. Write notes mentioning salient points on the following: *(any two)* 5+5=10
 - a) Biopolymers for improvement of soil and agriculture.
 - b) Eutrophication
 - c) Phyllosphere microflora

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