

G-3/383/22

Roll No.

III Semester Examination, January 2022

M.Sc.

MICROBIOLOGY

Paper III

(Environmental Microbiology)

Time : 3 Hours]

[Max. Marks : 80

Note : *All questions are compulsory. Question Paper comprises of 3 Sections. Section A is objective type/multiple choice questions with no internal choice. Section B is short answer type with internal choice. Section C is long answer type with internal choice.*

SECTION A

1×8=8

(Objective Type/Multiple Choice Questions)

Choose the correct answer :

- 1.** The primary energy source of Thiobacillus thiooxidans is :
(a) Iron (b) Sulphur
(c) Aluminium (d) Pyrites
- 2.** Which of the following compounds are required for the growth of saprophytic bacteria and fungi :
(a) Organic compounds

P.T.O.

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- (b) Nitrates
(c) Phosphates
(d) Mercury
- 3.** Type of extremophile that lives in very salty environment :
(a) Halophile (b) Thermophile
(c) Xerophile (d) Radiophile
- 4.** Agrobacterium is involved in which of the following process :
(a) Ammonification
(b) Nitrification
(c) Reduction of nitrate to ammonia
(d) Denitrification
- 5.** Which of the following is the main source for eutrophication of surface water ?
(a) Nitrogen (b) Calcium
(c) Magnesium (d) Potassium
- 6.** Which of the following bacterium is called as the superbug that could clean up oil spills :
(a) Bacillus subtilis
(b) Pseudomonas putida
(c) Pseudomonas denitrificans
(d) Bacillus denitrificans

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7. Which of the following protein cause the inhibition of transcription of *niF* gene in nitrogen fixing bacteria ?

- (a) NiF A (b) NiF B
(c) NiF C (d) NiF L

8. Soil micro-organisms are most active at :

- (a) 15-20°C (b) 20-25°C
(c) 34-36°C (d) 40-45°C

SECTION B

6×4=24

(Short Answer Type Questions)

Note : Answer the following questions in **250** words.

Unit-I

1. What are Aeroallergens ? Explain with examples.

Or

Explain various trophic levels of the ecosystem.

Unit-II

2. Explain the microbiology of pond ecosystem with well labelled diagram.

Or

Describe Eutrophication and its consequences.

Unit-III

3. Describe the microflora of rhizosphere.

Or

Write a detailed note on symbiotic fungi.

Unit-IV

4. Write note on Bioaccumulation of metals.

Or

Explain the biodeterioration of paints.

SECTION C

12×4=48

(Long Answer Type Questions)

Note : Answer the following questions in **500** words.

Unit-I

1. Describe the environmental factors influencing the growth and survival of micro-organism.

Or

Write notes on any two of the following :

- (a) Thermophiles
(b) Halophiles
(c) Aerospora

Unit-II

2. Write a detailed note on water borne diseases and their control measures.

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Or

Write notes on any two of the following :

- (a) Microbiology of marine ecosystem
- (b) Ecology of polluted water
- (c) Microbial treatment of water

Unit-III

- 3.** Explain the ecology of litter decomposition.

Or

Write notes on any *two* of the following :

- (a) Competition
- (b) Mutualism
- (c) Predation

Unit-IV

- 4.** Write detailed note on GMO and their impact.

Or

Write notes on any *two* of the following :

- (a) Biopesticides
- (b) Treatment of solid wastes
- (c) Biodegradation of hydrocarbons

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