

[4]

Or

Describe the relationship between heterotrophic potential decomposers and utilizers.

4. Describe bioaccumulation of metals and detoxification process.

Or

Describe the process of biodeterioration.

✱ ✱ ✱ ✱ ✱ c ✱ ✱ ✱ ✱ ✱

G-3/337/21

Roll No.....

III Semester Examination, April-2021

M.Sc.

MICROBIOLOGY

Paper III

(Environmental Microbiology)

Time : 3 Hours]

[Maximum 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'

(Objective Type Questions)

Choose the correct answer :

1 × 8 = 8

1. Bacteria that grow in mine drainage at pH 1-2 are probably :

(a) alkaliphiles (b) acidophiles
(c) neutrophiles (d) obligate anaerobes

2. Where would you expect to find chemosynthetic organisms :

(a) Deep sea thermal vents
(b) Hypersaline lakes, like dead sea
(c) Streams polluted with domestic sewage
(d) Polar ice caps

3. Primary producers are found growing in which of the following layers of water :

(a) upper layer (b) middle layer
(c) intermediate layer (d) bottom layer

[2]

4. Microorganisms from lakes and rivers can grow at a salt concentration of:

- (a) 2.5 to 4% (b) 5%
(c) below 1% (d) above 1%

5. Common nitrogen fixing microorganism in paddy field is :

- (a) Rhizobium (b) Azospirillum
(c) Oscillatoria (d) Frankia

6. Which of the following comes under the category of positive association ?

- (a) neutralism (b) parasitism
(c) commensalism (d) ammensalism

7. Most common cellulose fermenter of nature are the members of :

- (a) clostridium (b) azotobacter
(c) Frankia (d) Fusarium

8. Ananda Chakraborty received first US patent for :

- (a) The Glofish
(b) a transgenic mouse expressing growth hormone gene
(c) cloned *E. coli*
(d) Pseudomonas engineered to degrade petroleum

SECTION 'B'

6 × 4 = 24

(Short Answer Type Questions)

Note : Answer the following questions in 250 words.

1. Explain the types of indoor and outdoor aerospora.

G-3/337/21

[3]

Or

Explain the effect of physical factors on growth of microorganism.

2. Describe ecology of polluted water.

Or

Describe waste water disposal and reclamation.

3. Describe biological N₂ fixation.

Or

Explain extracellular enzymes and their importance.

4. Explain biodegradation of cellulose lignins.

Or

Explain GMO and their impact.

SECTION 'C'

12 × 4 = 48

(Long Answer Type Questions)

Note : Answer the following questions in 500 words.

1. Give a detailed account of microorganisms of extreme environment.

Or

Describe the mechanism of energy transfer efficiencies between trophic levels.

2. Describe microbiology of fresh water ecosystem.

Or

Describe microbiological treatment processes of waste water.

3. Describe phosphate solubilizing organisms and their importance.

G-3/337/21

P.T.O.