

Roll No. : .....

Total No. of Questions : 11 ]

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# **BPF-2209**

**M.Sc. (Final) Examination, 2022**

**MICROBIOLOGY**

Paper - VI

**(Microbial Ecology and Environmental Biotechnology)**

*Time : 3 Hours ]*

*[ Maximum Marks : 75*

**Section-A**

**(Marks : 2 × 10 = 20)**

*Note :-* Answer all *ten* questions (Answer limit **50** words). Each question carries **2** marks.

**Section-B**

**(Marks : 5 × 5 = 25)**

*Note :-* Answer all *five* questions. Each question has internal choice (Answer limit **200** words). Each question carries **5** marks.

**Section-C**

**(Marks : 10 × 3 = 30)**

*Note :-* Answer any *three* questions out of five (Answer limit **500** words). Each question carries **10** marks.

**Section-A**

2 each

1. (i) Define aerosol.

(ii) What do you mean by Eutrophication ? Enlist *two* consequences of eutrophication.

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- (iii) Define Synergism. Give suitable examples.
- (iv) Which association is normally shown by Bacteroides ? Enlist *one* application of bacteroides.
- (v) What do you mean by anoxygenic photosynthetic microbes ? Give *two* examples.
- (vi) What do you mean by Iron Oxidizing Bacteria ?
- (vii) What do you mean by Solids retention time ? Why is it important ?
- (viii) What is Saccharification fermentation ?
- (ix) What is the difference between biodeterioration and biodegradation ?
- (x) What are Xenobiotics ? Write examples.

**Section-B**

2. Discuss methods used to assess the microbiological quality of air. 5

*Or*

What is Freshwater microbial habitat ? Discuss. 5

3. Explain competitive exclusion principle. 5

*Or*

Write short notes on the following :

(a) Symbiosis of roaches and bacterioids

(b) Commensalism in microbial world 2½+2½=5

4. Discuss microbiological oxidative transformation of Iron. 5

*Or*

Discuss the various environmental stresses that can affect the microbial ecology. 5

5. Write a note on types of wastes and their characterization. 5

*Or*

What is Anaerobic Wastewater Treatment ? Explain. 5

6. Explain microbial degradation of Leather and Paper. 2½+2½=5

*Or*

Discuss microbes and processes involved in degradation of xenobiotics. 2½+2½=5

**Section-C**

7. Give an account of major water borne diseases. Add a note on their control measures. 7+3=10
8. Discuss Rumen Microbiology. 10
9. Discuss oxygenic and anoxygenic photosynthetic microbes. 5+5=10
10. Explain the following :
- (a) Use of oxidation pond-oxidation ditch in wastewater treatment
  - (b) Utilization for solid wastes 5+5=10
11. Differentiate between biodegradation and bioremediation. Discuss the process of petroleum bioremediation. 5+5=10