



Progressive Education Society's
Modern College of Arts, Science & Commerce Ganeshkhind, Pune – 16
End Semester Examination
Faculty: Science and Technology

Program: BScGen03

Semester: 4

SET: B

Program (Specific): S.Y.B.Sc. Microbiology

Course Type: Core

Class: S.Y.B.Sc.

Max.Marks: 35

Name of the Course: Air, Water and Soil Microbiology.

Course Code: 23-MB-242

Time: 2Hr

Paper: II

Instructions to the candidate:

- 1) *There are 4 sections in the question paper. Write each section on separate page.*
- 2) *All Sections are compulsory.*
- 3) *Figures to the right indicate full marks.*
- 4) *Draw a well labelled diagram wherever necessary.*

SECTION: A

Q1) Answer the following questions

5 Marks

1. Define rhizosphere.
2. State true or false: Poliomyelitis is airborne infection.
3. Compare between fecal indicators *E. coli* and *Clostridium perfringens*.
4. Disinfection of drinking water using U. V. rays can be classified as (Choose correct option)
 - a) Chemical method
 - b) Physical method
 - c) Biological method
 - d) Biochemical method
5. In BGLB medium BGLB stands for (Choose correct option)
 - a) Bright Green Lactose Bile
 - b) Brilliant Green Lactose broth
 - c) Brilliant Green Lactose Bile
 - d) Bright Green Lactose Broth

Q2) Answer the following questions (Attempt any 4)

4Marks

1. Explain role of bacterial population in composting of organic matter.
2. Describe how you will determine positive result in MPN test.
3. Delineate air borne viral infections.
4. Distinguish between sedimentation and flocculation.
5. Relate insect viruses with biopesticide.
6. Order the steps in carbon cycle- cellulose degradation, combustion, photosynthesis.

SECTION: B

Q3) Answer the following questions (Attempt any 4)

8 Marks

1. Explain with suitable example the sanitation of air using chemicals.
2. Summarise Eijkman's test.
3. Justify: presence of *Bifidobacterium* in water sample indicates fecal pollution.
4. Delineate the process of humus formation.
5. Discuss merits and demerits of membrane filter technique
6. A paddy (rice) farmer is interested in practicing organic farming. Suggest with reasoning a biofertilizer which can be used by him.

SECTION: C

Q4) Answer the following questions (Attempt any 4)

8 Marks

1. State functions of CPCB.
2. Summarise working of rapid sand filter.
3. Compare bacterial decomposition of organic carbon in presence and absence of oxygen.
4. Infer the potability of water sample showing presence of 5 coliforms per 100 ml. Advice whether the water should be used for drinking purpose.
5. Discuss microbial interactions with special reference to commensalism.
6. Draw a diagram for any air sampler which uses impingement in liquid.

SECTION: D

Q5) Answer the following questions (Attempt any two)

10 Marks

1. Explain the sampling of air using impaction on solids.
2. Compare and contrast between biopesticide and biofertilizers.
3. Discuss the chemical sanitation of water.
4. Illustrate nitrogen cycle with the help of diagram.