



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

Program: BScGen03
Program (Specific): Microbiology
Class: T. Y. B.Sc.
Name of the Course: Agricultural Microbiology
Course Code: 24-MB-356
Paper: VI

SET: A
Course Type: DSC
Max. Marks: 35
Time: 2Hr

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

5 Marks

- i. Define micronutrients.
- ii. Quote two examples of viral diseases of plants.
- iii. The host plants synthesize chito-oligosaccharides in response to rhizobial infection. (State true or false).
- iv. Siderophores are organic molecules produced by microorganisms when they are exposed to **(Choose the correct option)**
 - a. Nitrogen deficiency
 - b. Iron deficiency
 - c. Carbon deficiency
 - d. Phosphorous deficiency
- v. Order the events as they occur during formation of microbial biofilms- 1. Maturation, 2. Dispersal, 3. Microcolony formation, 4. Attachment.

Q2) Attempt any four of the following (4/6)

4 Marks

- i. Explain the concept of edible vaccines.
- ii. Define monocyclic disease and cite one example.
- iii. Describe colonization stage in plant disease development.
- iv. Devise a protocol for isolation of viruses from rhizosphere soil.
- v. Comment on the disadvantages of Bt crops.
- vi. Give diagram for polymerase chain reaction for amplification of 16S rRNA gene.

SECTION: B

Q3) Attempt any four of the following (4/6)

8 Marks

- i. Explain the use of *Agrobacterium tumefaciens* in genetic engineering.
- ii. Diagrammatically illustrate the disease triangle.
- iii. Relate- GM crops, RNAi technology and disease resistance.
- iv. Compare and contrast between chemical and biological control of plant diseases.
- v. Discuss microbial phosphate solubilization.
- vi. Illustrate the concept of polyetic diseases.

SECTION: C

Q4) Attempt any four of the following (4/6)

8 Marks

- i. Describe new varieties of GM crops.
- ii. Summarize the methods used for forecasting of plant diseases.
- iii. Discuss the properties of healthy soil.
- iv. Predict the name of the disease which is generally caused by a fungus involving general and extremely rapid browning and death of leaves, branches, twigs, and floral organs.
- v. Draw flow sheet for community sampling.
- vi. Explain the terms PTI and ETI in plants.

SECTION: D

Q5) Attempt any two of the following (2/4)

10 Marks

- i. Draw and describe the disease cycle of downy mildew of grapes.
- ii. Describe dissemination stage in plant disease development.
- iii. Elaborate on the functions of soil microbiome.
- iv. Explain in brief the role of microbes in zinc and iron solubilization in soil.
