

MAHARASHTRA AGRICULTURAL UNIVERSITIES EXAMINATION BOARD, PUNE
SEMESTER END THEORY EXAMINATION

B.Sc.(Hons.) Agriculture

Semester	: IV (New)	Term	: Second	Academic Year	: 2021-22
Course No.	: ELE-PATH 243	Title	: Biofertilizers, Biocontrol agents and Biopesticides		
Credits	: 3 (2+1)				
Day & Date	: Thursday, 22.09.2022	Time	: 14:00 to 17:00 hrs	Total Marks	: 80

- Note :**
1. Solve ANY EIGHT questions from SECTION 'A'.
 2. All questions from SECTION 'B' are compulsory.
 3. All questions carry equal marks.
 4. Draw neat diagram wherever necessary.

SECTION 'A'

- Q.1 a) Define Biofertilizers. Give different types of biofertilizers with suitable examples.
b) Explain the importance of biofertilizers in agriculture.
- Q.2 a) Describe the growth characteristics of *Azotobacter* and *Rhizobium*.
b) Explain in detail any two methods used for studying selection of efficient strain of *Rhizobium*.
- Q.3 Define Nitrogen cycle. Explain biochemical processes involved in nitrogen cycle with figure.
- Q.4 Explain in detail different methods of application of biofertilizers.
- Q.5 Explain in detail strategies of mass multiplication of biofertilizers.
- Q.6 Explain in detail importance of the following (Any Four):
a) *Trichoderma* b) *Bacillus* c) *Trichogramma*
d) *Chrysoperla* e) NPV (Nuclear Polyhedrosis Virus)
- Q.7 Explain in detail various mechanisms involved in disease control by bioagents.
- Q.8 What are the factors responsible for effectiveness of biocontrol agent on seed borne and soil borne pathogen?
- Q.9 Write in brief contribution made by the following Scientists (Any Four):
a) J.B. Boussingault b) Leeuwenhoek c) M.W. Beijerinck
d) Dobereiner e) S.N. Winogradsky
- Q.10 a) Write in short the mode of action and plant disease controlled by *Trichoderma*.
b) Describe importance of *Verticillium* and *Metarhizium* biopesticides.

(P.T.O.)

SECTION 'B'

Q.11 Do as directed:

- 1) Give one example of nitrogen fixing bacterium.
- 2) Blue green algae is also called as Cyanobacteria (State True or False).
- 3) Which aquatic fern is used to increase the yield in paddy crop?
- 4) Cyanobacteria secretes _____.
- 5) _____ discovered the actinomycetes "*Frankia*".
- 6) _____ actinomycetes is responsible for nitrogen fixation.
- 7) Algal biofertilizers containing special thick-walled cells are called _____.
- 8) _____ is a thick-walled, reproductive spore formed by transformation of a vegetative cell.

Q.12 Match the pairs:

'A'

- 1) *Beauveria*
- 2) NPV
- 3) Fogg's medium
- 4) Ashby's medium
- 5) *Aspergillus*
- 6) *Cryptolaemus*
- 7) *Metarhizium*
- 8) *Pseudomonas*

'B'

- a) *Fusarium*
- b) White muscardine disease
- c) Nuclear Polyhedrosis Virus
- d) Cyanobacteria
- e) *Azotobacter*
- f) Mealy bugs
- g) Aflatoxins
- h) White grubs

