

2020

MICROBIOLOGY — HONOURS

Paper : SEC-A-2

(Bio-Fertilizers and Biopesticides)

Full Marks : 80

*The figures in the margin indicate full marks.*

*Candidates are required to give their answers in their own words as far as practicable.*

[Unit : 1-5]

**Question no. 1** is compulsory and answer **any six** questions from the rest.

1. Answer **any ten** questions : 2×10
- (a) What are mycopesticides? Give one example.
  - (b) Name two nitrogen fixing non-leguminous plants.
  - (c) Name two viruses used as bioinsecticide.
  - (d) State two advantages of cultivating Bt-Cotton.
  - (e) What is meant by algalization?
  - (f) Write the composition of YEMA media.
  - (g) State two limitations of organic manure.
  - (h) Name two phosphate compounds that are solubilized by phosphate solubilizing microbes.
  - (i) What is the use of spreader in bioinsecticide formulation?
  - (j) What are 'nod' factors?
  - (k) Enlist two characteristics of *Azolla* sp.
    - (l) Differentiate between associative symbiotic and symbiotic N<sub>2</sub> fixers.
  - (m) State with suitable example what do you mean by mycoheterotrophy.
  - (n) What is leghemoglobin and how it could be detected?
  - (o) 'Soil pH governs the distribution of *Azospirillum* spp.'— Justify the statement.
2. (a) State the isolation and mass culture preparation procedure of *Azotobacter* from soil.  
(b) Discuss on field application of *Azotobacter* inoculants. 5+5
3. (a) What is carallorhiza? State its importance.  
(b) Give a neat flowsheet to depict the method of production of VAM inoculum for application in fields.  
(c) State why *Azotobacter* spp forms an insoluble black-brown pigment. 3+5+2

**Please Turn Over**

4. (a) Name two viral pesticides and their uses.  
(b) Leaf based sprays of biopesticides may modify the rhizosphere.— Why?  
(c) Distinguish between arbutoid and ericoid mycorrhiza. 4+3+3
5. (a) State the characteristic of microbes used as bioinsecticide.  
(b) Name the different groups of microbes which may be used as bio-insecticide.  
(c) Name the mode of action of *Bacillus thuringensis*.  
(d) Give example of stickers in biopesticide formulation. 3+2+3+2
6. (a) Mycorrhizae may help in the preparation of soil bed.— Explain.  
(b) Why is composting inadequate for crop plants?  
(c) Composting is an exergonic process.— Why? 3+4+3
7. (a) Orchids are preferred to be propagated vegetatively.— Why?  
(b) Distinguish between epiphytes and endophytes with suitable examples.  
(c) Explain the role of ammensalism in agriculture. 3+4+3
8. (a) Discuss on the importance of CPV as viral pesticide.  
(b) Most of the plant viruses spread with insect vectors.— Explain.  
(c) Name any two infectious organ for soil borne plant pathogenic fungi. 3+3+4
9. (a) What are 'entomopathogenic fungi'? Give one example of such fungi. Discuss on their mode of action.  
(b) How is *Pseudomonas* used in biological control? Muscardine is a harmful disease of silkworm, yet it is used in agriculture.— Why? (1+1+3)+(2+3)
10. Write short notes on : 2½×4  
(a) Limitations of Biopesticides  
(b) Mycoremediation in organic farming  
(c) Mycobeads  
(d) ISR.
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