

Roll No. :

Total No. of Questions : 16]

[Total No. of Printed Pages : 3

SEM-3021

M.Sc. (IIIrd Semester) Examination, 2022

MICROBIOLOGY

Paper - MBCC-302

(Soil and Agricultural Microbiology)

Time : 3 Hours]

[Maximum Marks : 40

Section-A

(Marks : 1 × 10 = 10)

Note :- Answer all *ten* questions (Answer limit **50** words). Each question carries 1 mark.

Section-B

(Marks : 3 × 5 = 15)

Note :- Answer any *five* questions by selecting at least *one* question from each Unit (Answer limit **200** words). Each question carries **3** marks.

Section-C

(Marks : 5 × 3 = 15)

Note :- Answer any *three* questions by selecting *one* question from each Unit (Answer limit **500** words). Each question carries **5** marks.

Section-A

1. (i) Write two non-biological factors responsible for soil formation.
- (ii) Give examples of two plant based carbon materials which are recycled through carbon cycle.

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- (iii) Give examples of two microbes which are responsible for mediation of Iron cycle.
- (iv) Define spermosphere.
- (v) Explain passive immunity in plants.
- (vi) Give examples of two plant compounds associated with active plant immunity.
- (vii) Which is the causal organism of the Stripe disease of sugarcane ?
- (viii) Give examples of two free living nitrogen fixing bacteria.
- (ix) Which of the following can encode nitrogenase enzyme :
 - (a) Prokaryotes
 - (b) Eukaryotes
 - (c) Plants
 - (d) All of these
- (x) Give examples of two carrier materials used in biofertilizer formulations.

Section-B

Unit-I

2. Give a brief account of various biological factors responsible for the formation of soil.
3. Write a note on sulphur cycle.
4. Write a note on silage production and its usage.

Unit-II

5. Write a note on control of TMV.
6. Write a note on Citrus canker.
7. Write a note on Wheat rust.

Unit-III

8. Describe any method used for lab scale production of *Rhizobium*.
9. Write a note on the importance of Azolla as biofertilizer.
10. Write a note on PGPR.

Section-C

Unit-I

11. Give a comprehensive account on Nitrogen cycle.
12. Give an illustrative account on Biogas plants.

Unit-II

13. Write notes on the following :
 - (a) Green ear disease
 - (b) Witches broom of potato
14. Write in detail about various mechanisms of disease resistance exhibited by plants against different pathogens.

Unit-III

15. Write notes on the following :
 - (a) Role of *Frankia* in nitrogen fixation.
 - (b) Cellulolytic microbes and their importance in agriculture.
16. Give a comprehensive account on the mass production process of any microbial insecticide of your interest.