

2023

BOTANY

Paper : BOTSE3012

(Biofertilizers)

Full Marks : 50

Pass Marks : 20

Time : 2 hours

*The figures in the margin indicate full marks
for the questions*

- 1. Choose the correct option from the following
(any five) :** 1×5=5

(a) Which of the following is not a
biofertilizer?

- (i) Mycorrhiza
- (ii) Rhizobium
- (iii) Agrobacterium
- (iv) Nostoc

(b) Which of the following is commonly used
as a nitrogen fixer in paddy fields?

- (i) Frankia
- (ii) Oscillatoria
- (iii) Azospirillum
- (iv) Rhizobium

(c) Which one is not used in organic farming?

- (i) *Ganoderma* spp.
- (ii) *Anabaena* spp.
- (iii) *Oscillatoria* spp.
- (iv) *Nostoc* spp.

(d) Which of the following is a pair of biofertilizers?

- (i) *Salmonella* and *E. coli*
- (ii) *Rhizobium* and grasses
- (iii) *Nostoc* and legume
- (iv) *Azolla* and BGA

(e) Which one of the following is associated with the atmospheric nitrogen fixation?

- (i) *Anabaena azollae*
- (ii) *Nostoc*
- (iii) *Oscillatoria*
- (iv) All of the above

(f) An important biofertilizer in paddy fields is

- (i) *Azospirillum*
- (ii) *Azotobacter*
- (iii) *Anabaena*
- (iv) *Rhizobium*

(g) Blue-green algae are included in

- (i) prokaryotes
- (ii) Protista
- (iii) fungi
- (iv) bryophytes

(h) VAM (Vesicular Arbuscular Mycorrhizae) is found in

- (i) plant roots
- (ii) tooth lichens
- (iii) AIDs and other immunodeficiency conditions
- (iv) Phylloplane

(i) What are the importance and benefits of organic farming?

- (i) No chemical used
- (ii) Environment friendly
- (iii) Increase the soil health
- (iv) All of the above

(j) Which of the following plants has mycorrhizal association?

- (i) Pinus
- (ii) Cycas
- (iii) Mango
- (iv) Pea

2. Answer any five of the following : $2 \times 5 = 10$

- (a) Write the different scopes of biofertilizer.
- (b) What do you mean by vermicompost? Which kind of worm is used for the production of vermicompost?
- (c) What are the differences between Ectomycorrhiza and Endomycorrhiza?
- (d) What are the importance of algal biofertilizer in agriculture?
- (e) Write why Azospirillum is considered for biofertilizer preparation.
- (f) Why are biofertilizers preferred over chemical fertilizers?
- (g) What is green manure? Give an example of green manure.

3. Answer any five of the following questions : $5 \times 5 = 25$

- (a) Write the difference between Azotobacter and Azospirillum.
- (b) What are the basic differences between the traditional compost and vermicompost?
- (c) What is mycorrhiza? Write how mycorrhiza promotes plant growth.
- (d) Write about the role of Cyanobacteria in agriculture.
- (e) What are the basic differences between the N-fixation by Azospirillum and Azotobacter?
- (f) Write some important morphological as well as biochemical properties of Azospirillum which make it different from other bacteria.
- (g) Briefly discuss about the various types of biofertilizers.
- (h) Briefly describe the role of organic farming in modern agriculture.
- (i) How do you like to give importance in the Azotobacter spp. as the biofertilizer candidate?

4. Answer any *one* of the following questions : 10

- (a) What are blue-green alga (BGA)? Write the method of mass multiplication of BGA and their application in the field as a biofertilizer.
- (b) What is VAM? How do mycorrhizal fungi get nutrients? Discuss about the inoculum production of VAM and its influence in growth and yield of crop plants.
- (c) How does compost affect in improvement of overall soil health? What are the points to be considered carefully during compost making?

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