

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?
