

# **KAMARAJ COLLEGE (Autonomous)**

Accredited with A+ Grade by NAAC

(Affiliated to Manonmaniam Sundaranar University, Tirunelveli)

THOOTHUKUDI – 628 003

**(6 Pages)**

**Reg. No: .....**

**Question Code No : 25001609**

**Course Code : 24PSMB31**

**PG Degree - End Semester Examinations, November 2025**

**Third Semester**

**M.Sc. MICROBIOLOGY**

**Organic Farming and Biofertilizer Technology**

**(For those who joined in July 2024 onwards)**

**Time : 3Hours**

**Maximum : 75 Marks**

**PART – A (10 × 1 = 10 Marks)**

**Answer ALL Questions**

**Choose the correct answer:**

1. What is the primary goal of organic farming?
  - (a) To maximize crop yield at all costs
  - (b) To eliminate the use of natural fertilizers
  - (c) To work with natural processes to promote sustainable agriculture.
  - (d) To rely exclusively on synthetic chemicals

2. Which of the following is a biofertilizer that fixes atmospheric nitrogen in association with leguminous plants?
- (a) *Azotobacter*                      (b) *Rhizobium*  
(c) *Anabaena*                          (d) *Mycorrhiza*
3. What is the primary goal of an Integrated Farming System?
- (a) To exclusively use chemical fertilizers for higher yields.  
(b) To combine multiple farming techniques for sustainability and optimal resource utilization.  
(c) To focus on growing a single crop for economic profit.  
(d) To minimize the involvement of livestock in the farming process.
4. Which of the following is NOT a typical component of an Integrated Farming System?
- (a) Crop farming                      (b) Aquaculture (fish farming)  
(c) Dairy farming                      (d) Mono-cropping
5. Which of the following is an algal biofertilizer?
- (a) *Glomus*                              (b) *Nostoc*  
(c) *Agaricus*                          (d) *Azotobacter*
6. Mark the Biofertilizers work by:
- (a) Directly providing large amounts of nitrogen and phosphorus to plants.

- (b) Enhancing the nutrient availability and uptake by plants through microorganisms.
  - (c) Synthesizing essential plant growth hormones in large quantities.
  - (d) Increasing the soil's temperature for better plant growth.
7. Which of the following is the primary function of cyanobacteria as a biofertilizer in paddy (rice) fields?
- (a) Phosphorus absorption      (b) Nitrogen fixation
  - (c) Potassium provision      (d) Carbon source
8. Select the fungal biofertilizers, such as mycorrhizal fungi, primarily help plants by:
- (a) Fixing atmospheric nitrogen into the soil
  - (b) Solubilizing phosphorus and aiding in nutrient uptake
  - (c) Producing enzymes for compost production
  - (d) Both b and c
9. What is the crucial primary step in the mass production of both carrier-based and liquid biofertilizers?
- (a) Drying and grinding the carrier material
  - (b) Culturing the beneficial microorganisms
  - (c) Compacting the mixed culture with the carrier
  - (d) Sterilizing the final liquid formulation

10. Choose the minimum viable cell count (CFU) for a biofertilizer according to FCO specifications?

(a)  $10^3$  CFU/g

(b)  $10^5$  CFU/g

(c)  $10^7-10^9$  CFU/g

(d)  $10^9-10^{11}$  CFU/g

**PART - B (5 X 5 = 25 Marks)**

**Answer ALL Questions choosing either (a) or (b).**

**Answer should not exceed 250 words.**

11. (a) Analyze the biological nutrient management and its impact in plant growth?

**(OR)**

(b) Compare the organic manures and green manure with examples.

12. (a) Explain the organic certification methods and its importance.

**(OR)**

(b) Evaluate the factors affecting ecological balance.

13. (a) Illustrate the advantages and future perspective of biofertilizers.

**(OR)**

(b) Write a detail procedure for the preparation of *Azospirillum* biofertilizers.

14. (a) Infer the important features of *Anabaena* biofertilizers.

**(OR)**

(b) Distinguish the endo mycorrhiza and ectomycorrhiza.

15. (a) Write about FCO specifications and quality control of Biofertilizers.

**(OR)**

(b) Infer the factors influencing the efficacy of Biofertilizers.

**PART - C (5 X 8 = 40 Marks)**

**Answer ALL Questions choosing either (a) or (b).**

**Answer should not exceed 600 words.**

16. (a) Analyze the integrated pest and weed management with suitable examples.

**(OR)**

(b) Compare the organic and conventional farming.

17. (a) Discuss the importance of integrated farming system, goal and its components.

**(OR)**

(b) Analyze the significance land degradation and evaluate the soil health management.

18. (a) Evaluate the structure and characteristic features of *Azotobacter* and *Bacillus* biofertilizers.

**(OR)**

(b) Compare the role, advantage and significance of *Rhizobium* and *Frankial* biofertilizer.

19. (a) Discuss briefly about free living and symbiotic nitrogen fixation.

**(OR)**

(b) Describe the mechanism of phosphate solubilization and phosphate mobilization.

20. (a) Discuss the storage, shelf life, quality control and marketing of biofertilizers.

**(OR)**

(b) Explain the mass production of carrier based and liquid biofertilizers.