(6 pages) Reg. No. : .....

Code No. : 10893 E **Sub. Code : ESMI 31**

B.Sc. (CBCS) DEGREE EXAMINATION, NOVEMBER 2024.

Third Semester

Microbiology

Skill Enhancement Course IV – ORGANIC FARMING AND BIOFERTILISER TECHNOLOGY

(For those who joined in July 2023 onwards)

Time : Three hours Maximum : 75 marks

PART A — (10 × 1 = 10 marks)

Answer ALL questions.

Choose the correct answer :

1. List the primary concern of organic farming
   (a) To keep the plant alive
   (b) To keep soil microbes alive
   (c) To keep the soil alive
   (d) All of the above

2. The best practice to maintain soil health in organic farming is _____.
   (a) Crop rotation (b) Synthetic fertilizer
   (c) Black soil (d) Monoculture

3. Select the importance and benefits in organic farming
   (a) No chemicals
   (b) Environment friendly
   (c) Increase the soil health
   (d) All of the above

4. Identify the following worm is most commonly used in vermicompositing
   (a) Earthworms
   (b) Red wigglers (*Eisenia fetida*)
   (c) Tapeworms
   (d) Mealworms

5. *Rhizobium* is present in _____.
   (a) Soil
   (b) Root nodules of legumes
   (c) Stem nodules
   (d) None of these

6. Select the characters of Frankia in biofertilizers

(a) N_2 fixing bacteria

(b) Initiate the root nodules with actinirhizal plants

(c) Non-symbiotic bacteria

(d) Both (a) and (b)

7. The nitrogen symbiotic organism present in *Azolla* is _____.

(a) *Nostoc* (b) *Anabaena*

(c) *Azospirillum* (d) *Azotobacter*

8. In Mycorrhizal association, the fungi symbiont helpful in _____.

(a) phosphorus nutrition

(b) resistance to rootborne pathogen

(c) tolerance to salinity

(d) all of these

9. State the characters of an ideal carrier for biofertilizer production

(a) Cheaper in cost (b) Locally available

(c) Non toxic (d) All of these

10. Identify the broth medium is used for production of rhizobial inoculants

(a) Yeast extract mannitol (YEM) broth

(b) Nitrogen-free semi-solid media

(c) Burks liquid medium

(d) Both (a) and (b)

PART B — ($5 \times 5 = 25$ marks)

Answer ALL the questions, choosing either (a) or (b). Each answer should not exceed 250 words.

11. (a) Describe the role of biological control in pest management.

Or

(b) List the characteristic of soil.

12. (a) Interpret the principle of organic gardening.

Or

(b) Select the scope and economic importance of composting.

13. (a) Choose the characteristic features of *Bacillus* and advantages.

Or

(b) Collect the characteristic features of *Pseudomonas* and advantages.

14. (a) Interpret the *Anabaena* as biofertilizer.

Or

(b) Differentiate between endomycorrhizal and ectomycorrhizal fungi.

15. (a) Predict the minimum shelf life of *Rhizobium* and *Anabena* biofertilizer.

Or

(b) Evaluate the quality control measures of biofertilizers.

PART C — (5 × 8 = 40 marks)

Answer ALL the questions, choosing either (a) or (b)
Each answer should not exceed 600 words.

16. (a) Select the types of crop rotation and its advantages.

Or

(b) Examine the process of nutrient cycling with reference to nitrogen and carbon cycle.

17. (a) Discuss the salient features of square root gardening and its benefits.

Or

(b) Explain the process of vermicomposting and its benefits.

18. (a) Illustrate the structural characteristics of *Azospirillum* and *Frankia* and its advantages.

Or

(b) Choose the structural characteristics of *Azotobacter* and *Rhizobium* and its advantages.

19. (a) Select the structural characteristics of *Nostoc* biofertilizers and its application.

Or

(b) Appraise the structural characteristics of endomycorrhizal biofertilizers and its importance.

20. (a) Assess the procedure for mass production of *Rhizobium* and its application.

Or

(b) Recommend the storage conditions, transportation and marketing strategies of biofertilizer products.

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