

(6 Pages)

Reg. No. : \_\_\_\_\_

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Sub. Code : ZMBM 33

M.Sc. (CBCS) DEGREE EXAMINATION, APRIL, 2024.

Third Semester

Microbiology – Core

ENVIRONMENTAL AND AGRICULTURAL  
MICROBIOLOGY

(For those who joined in July 2021-2022 onwards)

Time : Three hours Maximum : 75 marks

PART A — (10 × 1 = 10 marks)

Answer ALL questions.

Choose the correct answer :

1. The relative proportion of soil particles viz sand, silt and clay is known as  
(a) Soil structure (b) Soil classification  
(c) Soil texture (d) Soil series
2. How many soil types are there in India according to ICAR?  
(a) 5 (b) 6  
(c) 7 (d) 8

8. The rhizosphere effect can be quantitatively represented by \_\_\_\_\_.  
(a) C:N ratio (b) C:P ratio  
(c) R:S ratio (d) S:S ratio
9. A bio control agent to be a part of integrated pest management should be  
(a) Species-specific and symbiotic  
(b) Free living and broad spectrum  
(c) Narrow spectrum and symbiotic  
(d) Species-specific and inactive on non-targeted organisms
10. Which of the following is the first developed bio-insecticide?  
(a) Sporeine (b) Rotenone  
(c) Pyrethrin (d) Nicotine sulphate

PART B — (5 × 5 = 25 marks)

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

11. (a) Classify soil bacteria and Add note on its characteristics  
Or  
(b) Give a neat chart on nitrogen cycle.

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3. The common air sampling technique(s) is/are  
(a) Impaction (b) Filtration  
(c) Impingement (d) All of the above
4. The predominant air borne fungal disease is \_\_\_\_\_.  
(a) Aspergillosis (b) Cryptococcosis  
(c) Blastomycosis (d) Coccidioidomycosis
5. \_\_\_\_\_ represents the bacterial density that is most likely to be present in water.  
(a) BOD (b) COD  
(c) MPN (d) Coli form index
6. The number of bacterial colonies by agar plate count test should not exceed per ml for potable water.  
(a) 1 (b) 10  
(c) 100 (d) 1000
7. Which is the main source of biofertilizer?  
(a) Cyanobacteria (b) Bacillus  
(c) Streptococcus (d) None of the above

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12. (a) Write on  
(i) Aerosols  
(ii) Droplet nuclei  
(iii) Nature of bio aerosols  
Or  
(b) Explain the liquid impingement and impaction methods of air sample analysis.
13. (a) Explain the significance of mangroves.  
Or  
(b) Give an account on microbiological water quality indicators.
14. (a) Note on phosphate Solubilization.  
Or  
(b) Write about blue green algae as biofertilizer.
15. (a) Note on stem rust of wheat.  
Or  
(b) Write about bacterial and fungal biocontrol agents.

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[P.T.O.]

PART C — (5 × 8 = 40 marks)

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

16. (a) Briefly explain about the factors affecting microbial community in soil.

Or

- (b) With neat illustrations explain carbon cycle.

17. (a) Describe different sources of micro organisms in air.

Or

- (b) Discuss different airborne bacterial diseases and their preventive measures.

18. (a) Explain the characteristics of freshwater habitats.

Or

- (b) Describe in detail water borne diseases and control measures.

19. (a) Discuss different bio-fertilizers and note on their significance.

Or

- (b) Describe morphology, isolation and mass production of VMA fungi and their field applications and importance.

20. (a) Write the etiology, life cycle, symptoms and control of late blight of potato.

Or

- (b) Explain the role of transgenic plants for crop improvement.