

**M.Sc. 4th Semester Examination, 2025**

**MICROBIOLOGY**

**PAPER – MCB-401.1 & 401.2**

*Full Marks : 50*

*Time : 2 hours*

**Answer all questions**

*The figures in the right hand margin indicate marks*

*Candidates are required to give their answers in their own words as far as practicable*

*Illustrate the answers wherever necessary*

**MCB – 401.1**

**GROUP – A**

**Answer any two questions : 2×2**

- 1. What do you mean by cybernetic nature of ecosystem ?**

*( Turn Over )*

( 2 )

2. Differentiate r and k strategies. 1 + 1
3. Define resistance and resilience strategy. 1 + 1
4. What is edge species ? Give an example.

**GROUP – B**

Answer any **two** questions : 4 × 2

5. Distinguish between little omnivore and frequent omnivore food web.
6. Explain major and minor community with suitable example. 2 + 2
7. What is linkage density ? Mention its significance. 2 + 2
8. Explain different types of population growth curves.

( 3 )

**GROUP – C**

**Answer any one question :** 8 × 1

9. (a) Explain density dependent and density independent population growth. 5

(b) Explain ecological guild with suitable example. 3

10. Write short notes on : 4 + 4

(i) Biomes

(ii) Biosphere Reserve.

**MCB – 401.2**

*( Environmental Microbiology )*

**GROUP – A**

**Answer any two questions :** 2 × 2

11. Why aerobic microbes grow in presence of oxygen ?
12. Mention the effect of heavy metals of microbial growth.
13. What is bio-magnification ?
14. Mention the cause of eutrophication in a pond.

**GROUP – B**

Answer any two questions : 4 × 2

15. Discuss the environmental application of marine microbes.
16. Mention the steps in bio augmentation during bioremediation of heavy metals.
17. When bioventing require ? What is composting of bio-solids ?

( 5 )

18. Describe the process of copper bioleaching from ore.

**GROUP – C**

Answer any **one** question : 8 × 1

19. How can you bio-remediate petroleum oil waste ? Give two examples of disease of fish that caused by bacteria. 6 + 2

20. What is biological oxygen demand (BOD) ? Why is BOD reduction necessary in waste water treatment ? Briefly mention primary, secondary (anoxic and oxic), and tertiary waste water treatment methods. 1 + 1 + 6

**[ Internal Assessment – 10 Marks ]**

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