

**M.Sc. 3rd Semester Examination, 2023**

**MICROBIOLOGY**

*(Agricultural and Medical Microbiology)*

PAPER—MCB-302

*Full Marks : 50*

*Time : 2 hours*

*The figures in the right hand margin indicate marks*

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

**Unit : MCB-302.1 (Agricultural  
Microbiology)**

**GROUP – A**

Answer any **two** questions from the following :

2 × 2

1. What is liquid biofertilizer ?

2. What is PGPR ?
3. What is somatic embryogenesis ?
4. What is protoplast technology ?

GROUP – B

Answer any **two** questions from the following :

5. What is endophyte ? State their significance. 4 × 2  
1 + 3
6. What are the advantages of biopesticides over conventional chemical pesticides ? State the applications of *Trichoderma harzianum* as biopesticide. 2 + 2
7. Write short note on : 2 + 2
  - (i) Composting
  - (ii) Advantages of plant tissue culture.
8. What is phytoalexins ? State their role in plant defense. 1 + 3

GROUP – C

Answer any **one** question from the following :

- 8×1
9. Write down the process of mass production of carrier-based Azotobacter biofertilizer. What are the ideal property should a substance have to consider as carrier for biofertilizer production ? What is biogas ?  
5+2+1
10. Write the benefits of vermicompost. Write the scientific name of two earthworms which are used for vermicompost production ? State the role of different enzymes of pathogens in plant diseases. 3 + 2 + 3

Unit : MCB-302.2 (Medical and Diagnostic Microbiology)

GROUP – A

Answer any **two** questions : 2×2

11. Distinguish between primary vs. secondary immune response.
12. What are the advantages of live attenuated vaccine over killed viral vaccine ?
13. Which specific antigens of HIV are targeted for diagnosis and why they are selected ?
14. Write the principle of complement fixation test.

GROUP – B

Answer any two questions from the following :

- 4 × 2
15. State the characteristics of anti-idiotypic vaccine.
  16. Describe the sequential steps for monoclonal antibody production.
  17. Describe the antigens onto the RBC.
  18. Describe the hazards of immunization.

**GROUP – C**

Answer any **one** question from the following :

8×1

**19.** Discuss briefly the working principle of FACS.

**20.** Describe briefly about Covishield and Covaxine as COVID 19 preventive measure.

**[ Internal Assessment – 10 Marks ]**