

M.Sc. 1st Semester Examination, 2023

BOTANY

(Microbiology)

PAPER – BOT-101

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

GROUP – A

Answer any **four** of the following questions : 2×4

1. Mention the site of occurrence of teichoic acid. State its function.

2. What is plaque assay ?
3. Define interferon.
4. What are magnetosomes ?
5. Name one non-leguminous symbiotic nitrogen fixer. Mention its host.
6. What is 'mot' protein ? Mention its function.

GROUP - B

Answer any **four** of the following questions : 4 × 4

7. What is monoclonal antibody ? How is monoclonal antibody produced in laboratory condition ?
8. Compare passive immunity with active immunity. Discuss Helmstetter-Cummings's technique for obtaining synchronous growth.

9. Write down the role of competence in bacterial transformation.
10. Write down the process of gene mapping through interrupted mating experiment.
11. During Log-phase growth of a bacterial culture, a sample was taken at 9.30 am and found to contain 10,000 cells per milliliter. A second sample was taken at 7.24 pm and found to contain 1,00,00,000 cells per milliliter. What is the generation time of that bacteria in hour ?
12. What is oxygen toxicity ? Why obligate anaerobic organisms are unable to survive in oxygenic environment ?

GROUP - C

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

8 × 2

13. Write down the structure of nitrogenase enzyme. What are different nitrogen fixers ? Mention role of leghaemoglobin in nitrogen fixation. 3 + 3 + 2
14. Compare transformation mechanism of gram positive and gram negative bacteria. What is artificial transformation ? 6 + 2
15. Why moist heat is more effective than dry heat for sterilization ? Discuss different physical and chemical sterilization methods to control bacterial growth. 3 + 5
16. Critically discuss the cell wall structure of Gram negative bacteria with diagram. How does it differ from Gram positive one ? 6 + 2

[Internal Assessment – 10 Marks]
