

Reg. No. : .....

Name : .....

First Semester B.Sc. Degree Examination, January 2024

Career Related First Degree Programme under CBCSS

Group 2 (a) : Botany and Biotechnology

Vocational Course

BB 1171 : MICROBIOLOGY

(2023 Admission)

Time : 3 Hours

Max. Marks : 80

SECTION – A

Answer all questions in a word or one or two sentences. Each question carries 1 mark.

1. State the germ theory of diseases.
2. What kind of radiation is used for sterilization?
3. Name the protein constituent of bacterial flagella.
4. Define biovar.
5. What is a nutrient broth?
6. Name the unit of growth of bacteria in turbidometric measurement.
7. What is symbiosis?

8. Name any two factors that affect the growth of bacteria.
9. What are thermophiles?
10. Name the life cycle in which the bacteriophage DNA integrates into the host genome.

(10 × 1 = 10 Marks)

#### SECTION – B

Answer any **eight** questions. **Each** question carries **2** marks. (Answer not to exceed **one** paragraph)

11. Explain the process of autoclaving.
12. What is serial dilution?
13. Write briefly on the Bergey's manual of bacterial classification.
14. Name two microorganisms that can fix nitrogen.
15. What is peptidoglycan?
16. What is chemotaxis of bacteria?
17. Briefly write on the role of bacteria in phosphorus cycle.
18. What is synchronous bacterial growth?
19. What is methanogenic bacteria? Give an example.
20. State two differences between gram-positive and gram-negative bacteria.
21. Classify bacteria based on nutritional requirements.
22. Cite the differences between bacteria and virus.

(8 × 2 = 16 Marks)

#### SECTION – C

Answer any **six** questions. **Each** question carries **4** marks. (Answer not to exceed **120** words)

23. Discuss the role of microorganisms in carbon cycle.
24. With the help of diagram, explain the ultra-structure of bacterial flagellum.
25. Elaborate on the process of nitrogen fixation and the role of microbes in it.
26. Explain Pasteur's experiments and its significance.
27. Give an account on different plating techniques for the isolation of pure culture.
28. What are the general characteristics of viruses?
29. Explain the structure of a T4 bacteriophage with diagram.
30. What are biofertilizers? Comment on its applications.
31. What are extremophiles? Give examples. Write on its biotechnological applications

(6 × 4 = 24 Marks)

#### SECTION – D

Answer any **two** questions. **Each** question carries **15** marks. (Answer not to exceed **three** pages)

32. Give a detailed account of bacterial cell structure with illustrations. How a prokaryotic cell is different from eukaryotes?
33. Describe lytic and lysogenic lifecycles of a bacteriophage.
34. Define sterilization. Discuss different methods of sterilization.
35. What are the essential constituents of culture media? Schematically elaborate various stages of bacterial growth curve.

(2 × 15 = 30 Marks)