

U.G. 5th Semester Examination - 2024**ZOOLOGY****[HONOURS]****Discipline Specific Elective (DSE)****Course Code : ZOOL-H-DSE-T-02****(Microbiology)****Full Marks : 40****Time : $2\frac{1}{2}$ 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.*

1. Answer any five questions of the following:

 $2 \times 5 = 10$

- a) Define the structure of peptidoglycan in bacterial cell walls.
- b) What are gas vesicles? State their function.
- c) What is Hfr cell?
- d) What is magnetosome?
- e) What is endotoxin? How it differs from exotoxin?
- f) Explain Koch's postulates and their significance in microbiology.

[Turn Over]

- g) Differentiate between selective media and enriched media.
- h) Write down the importance of Gram-staining.

2. Answer any two questions of the following:

5×2=10

- a) Compare and contrast generalized and specialized transduction in bacteria.
- b) How bacterial growth is measured in culture media?
- c) Describe the process of adherence in bacterial pathogenesis.
- d) Explain the concept of pandemics with historical examples.

3. Answer any two questions of the following:

10×2=20

- a) Discuss the principles, applications, and steps of acid-fast staining. Explain the various growth requirements and factors for bacterial culture.
- b) Give a detailed account of pathogenesis, transmission routes, symptoms, and current preventive measures available for HIV.

2+3+2+3

- c) Write down the process of Transduction in bacteria with appropriate diagram. What are the functions of reserve materials in bacteria.

7+3

- d) Explain how genetic recombination contributes to antibiotic resistance in bacterial populations. Discuss causative agent, symptoms, and pathogenesis of Typhoid.

4+2+2+2