D5BZL2302 **Reg. No.....**

Name: .....

FIFTH SEMESTER B.Sc. DEGREE EXAMINATION, NOVEMBER 2025

(Regular/Improvement/Supplementary)

ZOOLOGY

GZOL5B07T: BIOTECHNOLOGY, MICROBIOLOGY AND IMMUNOLOGY

Time: 2 ½ Hours **Maximum Marks: 80**

SECTION A: Answer the following questions. Each carries *two* marks.
(Ceiling 25 marks)

1. What is RAPD? Mention its applications.
2. What is Biofiltration?
3. Comment on tumour antigens.
4. Define biosensors and provide examples.
5. Explain viroids as infectious agents.
6. List out the normal microflora found in human throat.
7. Explain how the hybrid cells in hybridoma technology are selected.
8. Describe the embryonic stem cell method of gene transfection.
9. What is artificially acquired active immunity?
10. Add notes on lymph nodes.
11. Comment of antigen binding fragment of antibody molecule.
12. Discuss properties of IgG.
13. Describe the structure of a virus.
14. Comment on Immunologic adjuvants.
15. What is xenotransplantation?

SECTION B: Answer the following questions. Each carries *five* marks.
(Ceiling 35 marks)

16. Briefly describe any two molecular markers and their uses.
17. Compare primary response and secondary response of humoral immunity.
18. What is a culture media? Briefly explain the different types of media.
19. Brief out the methods adopted for preservation of microbial cultures.
20. Explain the four defensive barriers of innate immunity.
21. Give a brief account on various enzymes used in genetic engineering.
22. Define transgene concept. Explain the chemical transfection methods in biotechnology.
23. Briefly explain the essential factor for immunogenicity.

SECTION C: Answer any *two* questions. Each carries *ten* marks.

24. Write an essay on cloning vectors.
25. Detail out the life cycle of a bacteriophage.
26. Explain the major enzymes obtained from the microorganisms in industry and their uses.
27. Give an account on various primary immunodeficiency diseases.

(2 x 10 = 20 Marks)