

**APRIL 2024**

**57152/416C1B**

---

Time : Three hours

Maximum : 75 marks

**PART A — (10 × 1 = 10 marks)**

Answer any TEN questions each in 50 words.

1. What is the role of Major Histocompatibility Complex (MHC) in the immune system?
2. Define antigenicity.
3. Differentiate between innate immunity and acquired immunity.
4. Explain the concept of antigen recognition by T-cell receptors (TCR).
5. Describe the key characteristics of the classical pathway of the complement system.
6. Differentiate between polyclonal antibodies and monoclonal antibodies.
7. What is the role of immunohematology in blood transfusions?
8. Define adjuvant.

9. Explain the role of telomeres in eukaryotic chromosomes.
10. How does acetylation affect the structure of chromatin?
11. What are insertion sequences.
12. How do transposons of *E. coli* differ from those of bacteriophages?

**PART B — (5 × 5 = 25 marks)**

Answer any FIVE questions each in 200 words.

13. Explain the concept of antigen processing and presentation to T-lymphocytes in the context of the immune response.
14. Explain the concept of immunogenicity and provide examples of highly immunogenic antigens.
15. Compare and contrast the production and application of monoclonal and polyclonal antibodies.
16. Explain in detail about classical pathway of the complement system.

17. Compare and contrast primary and secondary immunodeficiency, focusing on their causes and clinical manifestations.
18. Discuss the concept of autoimmunity, including the factors that contribute to the development of autoimmune diseases and potential treatment options.
19. Explain the role of nucleosomes in compacting DNA in eukaryotic cells.

**PART C — (4 × 10 = 40 marks)**

Answer any FOUR questions each in 500 words.

20. Explain in detail the structure and genes of the Major Histocompatibility Complex (MHC). How does MHC contribute to immune recognition and regulation?
21. Provide an in-depth overview of T cell surface alloantigens, their classification and their significance in transplantation and immune recognition.
22. Explain in detail about the principles of immunohematology and its significance in blood typing and transfusions.

23. Discuss in detail about the different gene transfer mechanisms.
  24. Explain in detail about the Agglutination and precipitation reaction.
  25. Describe in detail about the types of Hypersensitivity reactions.
-