

Reg. No. : .....

Name : .....

**Fourth Semester B.Sc. Degree Examination, August 2022**

**Career Related First Degree Programme under CBCSS**

**Group 2 (a) Botany and Biotechnology**

**BB 1472 : IMMUNOLOGY**

**(2019 Admission onwards)**

Time : 3-Hours

Max. Marks : 80

**SECTION – A**

Very Short answer type. Maximum **two** sentences. Answer **all** questions.

1. Comment on DNA Vaccines.
2. What are macrophages?
3. Describe pernicious anemia.
4. What is cross reaction?
5. What are antigens?
6. Comment on IgE.
7. Expand RIA.
8. Define allotypes.
9. What are Toxoid vaccines?
10. Define haptens.

**(10 × 1 = 10 Marks)**

**P.T.O.**

## SECTION – B

Short answer questions. Not exceed in one paragraph. Answer any **eight** questions.

11. Briefly discuss cell mediated immunity.
12. What is meant by affinity maturation?
13. Explain phagocytosis.
14. Describe the properties of monoclonal antibodies.
15. Describe agglutination.
16. Comment on Hashimoto's thyroiditis.
17. Give short note on polio vaccine.
18. What are adjuvants?
19. Comment on Fc region.
20. Explain RH incompatibility.
21. What are attenuated vaccines?
22. Define epitope.
23. Comment on NK cells.
24. Explain immuno-electrophoresis.
25. Define Immunogens.
26. Give note on class switching.

**(8 × 2 = 16 Marks)**

## SECTION – C

Short essay. Not to exceed 120 words. Answer any **six** questions.

27. Briefly describe the hybridoma technology.
28. Give note on T cells and B cells.
29. Differentiate between monoclonal and polyclonal antibodies.
30. Explain clonal proliferation theory.
31. Give short note on hypervariable region.
32. Describe systemic autoimmune disease.
33. Differentiate between Innate or acquired immunity.
34. Explain the structure of IgG.
35. What is ELISA? Discuss different types it.
36. Define immunity. Explain various types of immunity.
37. Give short note on primary lymphoid organs.
38. What are the antigen-antibody reactions?

**(6 × 4 = 24 Marks)**

## SECTION – D

Long essay. Answer any **two** questions.

39. Describe in detail the structure and functions of antibodies.
40. Write a short essay on genetic basis of antibody diversity.
41. Describe in detail hypersensitivity and different types of it.

42. Write an essay on ABO blood grouping and explain the immunological basis of this classification system.
43. What is hematopoiesis? Describe the lineages in immune system.
44. What are Vaccines? Discuss about different types of vaccines?

(2 × 15 = 30 Marks)

---