Register Number:

Date:

ST JOSEPH'S COLLEGE (AUTONOMOUS), BANGALORE-27

B.Sc. BIOTECHNOLOGY – V SEMESTER
SEMESTER EXAMINATION: OCTOBER 2019
BT5115 - CELLULAR IMMUNOLOGY

Duration: 2 ½ Hours **Total Marks = 70**

This question paper contains **ONE** printed pages and **THREE** parts

I. Answer any **TEN** of the following: **10 x 2 = 20**

1. Define clonal expansion very briefly.
2. State two important functions of cytokines.
3. What are conjugate vaccines? Name one such vaccine.
4. List the components of a pre-BCR complex.
5. Why do all nucleated cells in our body possess MHC I on their surface?
6. State two symptoms each for: a) Eythroblastosis fetalis, b) Systemic Lupus Erythematosus
7. What is a/an (i) Epitope, (ii) Isoantigen, (iii) CDRand (iv) Hapten?
8. Describe very briefly the structure of a camel IgG molecule and explain differences in its domain organization from a human IgG using an illustration.
9. Describe two factors affecting immunogenicity, using examples.
10. How do antibodies elicit their effector functions?
11. How is secondary humoral immune response different from primary immune response?
12. Briefly outline the structure of mannose binding lectins (MBL).

II. Answer any **FIVE** of the following: **5 x 6 = 30**

13. Explain the process of MHC II antigen presentation with the help of a schematic diagram.
14. Explain with the help of a schematic diagram the Perforin-Granzyme pathway.
15. Differentiate between acute and chronic inflammation with suitable examples.
16. A patient suffered vigorous reactions following transfusion with incompatible blood. Identify and explain the type of hypersensitivity reaction.
17. Write about the two theories of antibody formation. Which one is closer to reality?
18. Describe Landsteiner's experiments to demonstrate the importance of 3-D confirmation in epitopes for antibody recognition? Which kind of epitopes may not fall under this category and why?
19. Who introduced monoclonal antibody (mAb) technology? Describe the process to generate mAb.Mention the disadvantage and refinement in therapeutic mAb generation.

III. Answer any **TWO** of the following: **2 x 10 = 20**

20. Explain the classical complement pathway in detail. Discuss the functions of C5a and C3a. (8 + 2 = 10)
21. Explain the process of B cell maturation and activation in detail. Write a note on the importance of primary follicles. (8 + 2 = 10)
22. Who conducted the seminal experiments to understand the generation of antibody diversity? Write in brief about the experiment. Describe in detail the mechanism involved in this process. (1 + 3 + 6 = 10)