

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

MID SEMESTER TEST: AUGUST 2019

B.Sc BIOTECHNOLOGY- V SEMESTER

BT 5115: Cellular Immunology

Time: 60 Min

Max Marks: 30

Section A - Answer Any Five

5 x 2 = 10

1. Define negative selection in T lymphocytes.
2. State one specific function each of basophils and macrophages.
3. List the individual components of B Cell Receptor complex.
4. Define opsonization.
5. Enumerate the factors affecting immunogenicity, with an appropriate example for each.
6. How did Landsteiner demonstrate the importance of 3-D confirmation in antibody recognition?
7. What is a) an antigen, b) a paratope, c) a hapten and d) a superantigen?

Section B - Answer Any Two

2 x 5 = 10

8. Consider this hypothetical situation. You have made a genetically engineered mouse with a fully functional thymic cortex and a non-functional thymic medulla. How will the T lymphocyte maturation pathway get affected in such a thymus? Explain with a schematic flowchart.
9. Consider this hypothetical situation. A group of mutated B lymphocytes failed to differentiate into memory B lymphocytes after an infection. List the probable effects this might have on the immune system. Justify your answer.
10. Describe schematically how the structure of immunoglobulins was deduced. How are camel antibodies different?

Section C - Answer Any One

1 x 10 = 10

11. Explain with a schematic diagram the complement pathway that gets activated independent of antibodies. How is the C3 convertase different in the classical and alternative pathways? (7 + 3 = 10 marks)
12. With respect to the death-receptor ligand pathway, answer the following:
 - a. Describe the role of caspases. (2 marks)
 - b. What would happen if pro-apoptotic proteins fail to function properly? (2 marks)
 - c. Comment on the status of mitochondria. (3 marks)
 - d. With the help of a schematic, explain the formation of DISC. (3 marks)