

M.TECH DEGREE EXAMINATIONS: APRIL/MAY 2010

Second Semester

BIOTECHNOLOGY

BTY555: Immunotechnology

Time: Three Hours

Maximum Marks: 100

Answer ALL Questions:-

PART A (10 x 2 = 20 Marks)

1. What characteristics distinguish hematopoietic stem cells from progenitor cells?
2. Why is regulation of complement activation essential for biological system?
3. Differentiate between antibody and antibody affinity? Which of these properties of an antibody better reflects its ability to contribute to the humoral immune response to invading bacteria?
4. Where are the CDR regions located on an antibody molecule and what are their functions?
5. What is the significance of FACS in immunology research?
6. Explain the role of NK cells in killing target cells? How is its activity measured?
7. What are the advantages and disadvantages of attenuated organisms as vaccines?
8. Why is multiple boosters of immunization necessary for children?
9. What are catalytic antibodies? What is its significance?
10. Write the principle of immunocytochemistry.

PART B (5 x 16 = 80 Marks)

11. a) (i) Discuss the process of hematopoiesis and growth factors involved? (8)
(ii) What are the factors affecting immunogenicity of an antigen? (8)

(OR)

- b) (i) Explain the pathways of classical pathway of complement activation? (10)
(ii) What are the biological consequences of complement activation? (6)

12. a) (i) Discuss the mechanism of heavy chain gene rearrangements in detail. (8)
(ii) Describe the technique of radioimmunoassay and its applications. (8)

(OR)

- b) How are monoclonal antibodies produced in the laboratory? How is it useful in diagnostics?

13. a) (i) Explain the significance of technique of mixed lymphocyte reaction in determining the parity between individuals. (10)

(ii) How will you bioassay TNF alpha in laboratory? (6)

(OR)

b) (i) Discuss in detail the PBMC separation from the blood. (10)

(ii) Write a note on HLA typing. (6)

14. a) (i) Explain in detail the steps for the development of plant based vaccines. (10)

(ii) What is a multisubunit vaccine? How is it designed? (6)

(OR)

b) (i) Discuss the strategies involved in designing vaccines for active immunization. (9)

(ii) Write a note on DNA vaccines. (7)

15. a) (i) Illustrate the mechanism of antibody engineering in the production of new drugs. (10)

(ii) Explain how monoclonal are antibodies constructed from Ig gene libraries. (6)

(OR)

b) Describe the principle and applications of immunohistochemistry in detail.
