

Exam.Code:0908
Sub. Code: 6705

1019
B.E. (Biotechnology) Fourth Semester
BIO-415: Immunology and Immuno-Technology

Time allowed: 3 Hours

Max. Marks: 50

NOTE: Attempt five questions in all, including Question No. I which is compulsory and selecting two questions from each Unit.

x-x-x

- I. Attempt the following:-
- Function of B cell
 - Importance of HSC
 - Types of APC
 - Application of isotypic determinants
 - Importance of J-chain in antibody
 - Role of primary lymphoid organs
 - Activation mechanism of classical pathway of complement system
 - Disadvantage of heat inactivated vaccine
 - Reason behind Graves' disease
 - Application of Enzyme linked immunosorbent assay (10x1)

UNIT - I

- II. a) Describe in detail structure and function of IgM antibody. Explain why IgM is more effective in activating complement pathway compared to other immunoglobulin. Also give details about general effector functions of antibodies.
- b) Give structural and functional differences between thymus and spleen. (5,5)
- III. a) Describe in detail structure, function and types of human MHC molecules. Differentiate between peptide binding specificity of class-I and class-II molecules.
- b) What do you understand by antibody diversity? Give an account of different DNA segments and mechanisms involved in generation of antibody diversity.
- IV. a) Elaborate on cytosolic pathway of antigen processing and presentation. How will you justify antigen cross presentation?

P.T.O.

(2)

b) What accounts for immunogenicity of an antigen? How immunogenic capacity of an antigen can be improved. (6,4)

V. a) Describe the development of differential T cell from HSC. Briefly explain positive and negative selection of T cells during activation.

b) Explain the mechanism involved in Type -III hypersensitivity? Explain one example of autoimmune disorder, resulting in hyperactivation of an organ. (4,6)

VI. a) Describe the function of antibody, C1 molecule, factor D and MBL proteins involved in complement pathway activation. Also list similarities between lectin and classical pathways of complement activation.

b) Elaborate on application of super shift assay and radioimmunoassay. (5,5)

VII. a) What are monoclonal antibodies? How precipitation reaction differs from agglutination, explain using example.

b) Describe in detail advantages and disadvantages associated with heat killed, attenuated and recombinant vaccines. (5,5)

x-x-x