

2056  
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. Define the following terms:-

- a) Dendritic cell
- b) Epitope
- c) IgA
- d) Adjuvants
- e) MHC restriction
- f) Plasma cell
- g) Anaphylaxis
- h) Active immunization
- i) Toxoid vaccine
- j) Central tolerance

(10x1)

**UNIT - I**

II. a) Describe the structure and function of white blood cells in the immune system.

b) Write a short note on lymphatic system.

(6,4)

III. a) Describe the basic structure of a human immunoglobulin (IgG) molecule with a labelled diagram.

b) Differentiate between Antigen & Hapten.

(6,4)

IV. a) Explain the Class I MHC Pathway of Antigen Processing.

b) What is Cross-Presentation? Explain its Significance.

(6,4)

**UNIT - II**

V. a) Explain the process of T-cell Dependent B-cell Activation.

b) Describe the Principles and Applications of Agglutination Reactions.

(6,4)

P.T.O.



(2)

- VI. a) Explain the mechanism of Type II Hypersensitivity reaction.  
b) What do you mean by live attenuated Vaccine? Discuss their advantages and disadvantages. (6,4)
- VII. a) Briefly explain the three pathways of complement activation.  
b) Comment on the Principal and application of Supershift assays. (6,4)

x-x-x