

This question paper contains 3 printed pages]

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S. No. of Question Paper : 1740

Unique Paper Code : 2492013602

Name of the Paper : Basics of Immunology

Name of the Course : B.Sc. (Hons.) Biochemistry

Semester : VI

Duration : 2 Hours

Maximum Marks : 60

(Write your Roll No. on the top immediately on receipt of this question paper.)

There are six questions.

Attempt any four questions. Q. No. 1 is compulsory.

1. (A) Justify the following statements :

5×2=10

- (a) CD28 is an important cell membrane molecule responsible for adaptive immunity.
- (b) Deficiency of TAP favours viral replication and progression of infection.
- (c) Innate immunity acts more rapidly than adaptive immunity.
- (d) Secondary immune responses are faster and stronger than primary responses.
- (e) Dendritic cells are the most potent APCs.

P.T.O.

(B) State whether the following statements are true or false. Justify your answer if it is false : 5×1=5

- (a) IL-2 helps in class switching of antibodies in B cells.
- (b) Neutrophils are the first cells to reach at inflammatory site.
- (c) Heavy chains of different types of antibodies are known as isotypes.
- (d) Specialised macrophages found in liver are called kupffer cells.
- (e) CLIP, the protein fragment directs appropriate loading of antigen on MHC II pocket.

2. (a) How do M cells contribute to immune surveillance in the gut ?
- (b) If helper T cells do not directly kill pathogens, why are they essential for effective immunity ?
- (c) Explain the process of generation of antimicrobial reactive oxygen and nitrogen species in phagocytes.
- (d) Explain the cytosolic pathway for processing and presentation of antigen to T lymphocytes by antigen presenting cells. 3,3,3,6
3. (a) Draw a neat well labelled diagram of spleen or lymph node and depict the localization of different immune cells.
- (b) Explain the mechanism of class switching of B cells with the help of diagram.
- (c) Draw a neat well labelled diagram of IgG and elaborate briefly on the functions of various regions of IgG. 3×5=15

4. Differentiate between : 4,4,4,3
- (a) Adjuvants and Haptens
 - (b) BCR and TCR with the help of a diagram
 - (c) MHC-I and MHC-II with the help of a diagram
 - (d) NK and NKT cells.
5. (a) Show diagrammatically the sequence of events in B cell activation by a thymus dependent antigen.
- (b) Describe T-cell development and differentiation with the help of a flow chart.
- (c) Elaborate the major events in that occur in inflammatory response. 5,6,4
6. (a) Using a flow chart elaborate, how complement system is activated via three pathways leading to formation of the membrane attack complex (MAC). Depict each step with their key activators and their respective roles. 6
- (b) What are superantigens ? How do they influence the T-cell activation and maturation ? 5
- (c) What characteristics of an antigen are required to make it immunogenic? Discuss. 4

