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S. No. of Question Paper : 5542

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 6 questions.

- Attempt any *four* questions.

*All* questions carry equal marks.

Question No. 1 is compulsory.

1. (a) Write true or false for the following statements with justification :

- (i) Hen egg albumin is a better immunogen for chicken than for goat.
- (ii) When anti bovine gamma globulin monoclonal antibodies from Balb/c mice are injected into another Balb/c mice, idiotypic antibodies are produced.
- (iii) Unlike Tc cells, NK cells can kill IgG coated target cells.
- (iv) Factor H binds to C5b67 and inhibits the complement pathway.
- (v) Fixed macrophages found in the kidney are called Kupffer cells.
- (vi) Membrane bound Immunoglobulin G is a marker for mature B cells.

P.T.O.

(b) Name the following :

- (i) The cells playing a major role in controlling the early stages of viral infection.
- (ii) An acute phase response protein.
- (iii) The split products C3a and C5a released during activation of complement system.
- (iv) Most potent professional antigen presenting cells (APC).
- (v) An enzyme that triggers generation of reactive oxygen species (ROS) by macrophages.
- (vi) A co-stimulatory signal molecule on the surface of T-cell that interacts with B7 on APC. (9,6)

2. (a) Diagrammatically represent and explain the structure of IgG.

- (b) Explain key points of interaction between innate and adaptive immunity.
- (c) Explain how inflammation helps in combating the early stages on infection. (5,5,5)

3. (a) What are T dependent and T independent antigens ? Explain how each of them activates B cells ?

- (b) Draw a neat well labelled structure of lymph node and depict the localization of immune cells within the lymph node.
- (c) Explain how IgM can exist both as membrane bound and secreted antibody. (6,4,5)

4. (a) Elaborate on the mechanisms used by cytotoxic T cells for killing a target cell.
- (b) Explain the structure and function of TCR-CD3 complex.
- (c) Explain how membrane attack complex (MAC) is formed via classical pathway ? (6,4,5)
5. (a) What is an immunogen ? Describe briefly the characteristics a molecule should have to be an immunogen.
- (b) Explain the Cytosolic pathway for antigen presentation.
- (c) Describe the sequence of events involved in the differentiation and maturation of progenitor B cell (pro-B cell) to an immature B cell in the bone marrow. (6,5,4)
6. Write short notes on : (3×5)
  - (i) Opsonization
  - (ii) Adjuvants
  - (iii) TLRs
  - (iv) NK Cells
  - (v) Class Switching.