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SARDAR PATEL UNIVERSITY
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M.Sc. (III SEM) Biochemistry PS03C BIC02 - Immunology
1Dec 2012, Saturday ,2.30p.m. to 5.30 p.m.

Total Marks: 70

Q I **(1x8=8)**

1. Class switching of immunoglobulins occurs

   A. Usually with booster immunizations, going from IgM to IgG
   B. binds complement
   C. mediates immunoglobulin class switching
   D. results in the glycosylation of immunoglobulins

2. The class of an immunoglobulin

   A. is determined by Class I and Class II major histocompatibility complex proteins
   B. is determined by the carbohydrate attached to the light chain is
   C. is determined by the heavy chain type
   D. Is determined by the all H , L and J-chain(If Present)

3. Each of the following is a characteristic of antibodies, EXCEPT which one?

   A. they are proteins with variable and constant regions
   B. they contain carbohydrates
   C. they are only secreted by T-cells
   D. they are structurally organized in globular domains

4. Which of the following is NOT true of interleukins?

   A. They are cytokines which can be produced by various cells of the immune system.
   B. They are hormones which allow one cell to communicate with another cell.
   C. They are in need of receptors on the target cell in order to mediate their effects.
   D. They are able bind antigen with a high level of specificity.

5. Individuals unable to make the J protein found in certain immunoglobulins would be expected to have frequent infections of the

   A. blood.
   B. lymphnode.
   C. pancreas.
   D. intestinal tract.

6. One principal function of complement is to

   A. inactivate perforins
   B. mediate the release of histamine
   C. Bind antibodies attached to cell surfaces and to lyse these cells
   D. phagocytize antigens

7. Which of the following statement regarding B Cell Hybridoma is true

   A. They are immortal cell lines that produce antibodies with more than one specificity

B. They are derived from B cells that are first cloned and grown in cell culture for short periods
C. They contain one nucleus
D. They are derived by fusing B cells with malignant plasma cells that are unable to secrete immunoglobulin.

8. The usual sequence of events in an allergic reaction is as follows

A. The allergen combines with circulating IgE; then the IgE –allergen complex binds to mast cells
B. The allergen binds to IgE fixed to Mast cells
C. The allergen is processed by APC and then binds to histamine receptors
D. The allergen is processed by APC and then bind to mast cell.

Q II Answer any seven questions **(2x7=14)**

1. Describe the manner in which virally infected cells are recognized and killed by the immune system.
2. What is the major role of C3b in innate immune response?
3. What is the major preformed mediator released by mast cells?
4. Discuss the importance of complement and antibody opsonization in the elimination of bacteria
5. What are natural killer cells? Explain their function
6. Explain the clonal selection theory of antibody diversity
7. Explain the oxygen dependent mechanism of phagocytosis
8. What are CDRs- explain
9. Explain the term hybridoma
10. Differentiate between precipitin and agglutination reaction

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Q III
a. Summaries the various biological effects mediated by complement. (6)
b. Briefly describe the three major events in the inflammatory response (6)

OR

QIII Explain the structure of immunoglobulin with experimental support. Differentiate the structure and functions of IgG, IgM and IgA (12)

QIV Differentiate between Polyclonal and Monoclonal antibody. Write the details of methodology used to produce Monoclonal antibody (12)

OR

QIV Differentiate between central and peripheral tolerance. Explain the role of T cells in tolergenic and immunogenic response. (12)

QV List the various different means of antibody diversification have been identified in mice and human.Explain the mechanism of combinatorial V- (D)-J joining in detail. (12)

OR

QV Explain the term MHC. Give the structure and functions of Class I and II MHC and its products.(12)

QVI Write notes on any three (3x 4)

a. molecular mechanism of IgG-IgM switch
b. Role of T_H cells in humoral response
c. Mechanism of type I hypersensitivity
d. Consequences of immune dysfunction
e. functions of Dendritic cells