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SARDAR PATEL UNIVERSITY
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M.Sc. (III SEM) Industrial Biotechnology PS03CIBT02 - Immunology
1Dec 2012, Saturday ,2.30p.m. to 5.30 p.m.

Total Marks: 70

Q I (1x8=8)

1. 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.

2. 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

3. Which of the following does not participate in formation of antigen antibody complex
   A. Hydrophobic bonds
   B. Covalent bonds
   C. Hydrogen Bonds
   D. Vander walls forces.

4. 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

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

   A. The allergen combines with circulating IgE; then 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

6. The allergen is processed by APC and then binds to mast cell. Which of the following is NOT true of T4 and T8 cell markers?

   A. These are both surface glycoproteins expressed on T-cells.
   B. These serve to distinguish different types of T-cells, e.g., helper, suppressor and cytotoxic, from each other.
   C. The T4 proteins serve both to mediate T-cell helper function as well as the receptor for the AIDS virus.
   D. Both of the markers are present on ALL T-cells

7. When a B-cell undergoes immunoglobulin class switching

   A. the variable region of the light chain changes, but its constant region remains the sam
   B. the variable region of the light chain remains the same, but its constant region changes
   C. the variable region of the heavy chain remains the same but its constant region changes
   D. the variable region of the heavy chain changes but its constant region remains the same

8. Which Is TRUE for BOTH the T-cell antigen receptor and the antibody

   A. They undergo class switching
   B. They can be secreted
   C. They possess J-chains
   D. They can exist as cell surface receptor, integral membrane proteins

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QII Answer any seven questions **(2x7=14)**

1. Differentiate between innate and acquired immune response
2. Discuss the importance of complement and antibody opsonization in the elimination of bacteria
3. What are CDRs- explain
4. What is the major preformed mediator released by mast cells?
5. What are natural killer cells? Explain their function
6. In case of C1 and C3 complement deficiency, which would be more serious clinically? why?
7. Explain the oxygen dependent mechanism of phagocytosis
8. What is the primary advantage(s) of MHC polymorphism
9. Which class of immunoglobins bind to an Fc receptor on mast cells and macrophages?
10. What is the minimum number of rearrangement events needed to produce the variable region of an antibody?

QIII Draw a schematic diagram of IgG showing various polypeptide chains and linkages. How would you have to modify the diagram of IgG to depict and IgA and IgM. (12)

OR

QIII Write the molecular events happening during Type 1 hypersensitivity reaction and also add a note on various strategies used to control it. (12)

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

OR

QIV What is MHC. Write the structure of Class I and II MHC . Explain their role in immune response.(12)

QV List the different means of antibody diversity. Explain the mechanism of combinatorial V- (D)-J joining, in detail. (12)

OR

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

QVI Write notes on any three **(3x 4)**

a. molecular mechanism of IgG-IgM switch
b. Role of TH cells in humoral response
c. Consequences of immune dysfunction
d. Idiotype antiidiotype netwark
e. Mechanism of Cytotoxic T-Cell mediated immune response

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