

[130]

SARDAR PATEL UNIVERSITY
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M.Sc. (III SEM) Biotechnology PS03C BIT02 - Immunology
1Dec 2012, Saturday ,2.30p.m. to 5.30 p.m.

Total Marks: 70

Q1 (1x8=8)

1. 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.

2. The major immunoglobulin family to which a particular immunoglobulin belongs can be determined by sequential analysis of the 110 amino acids beginning from the
 - A. Amino terminus of the light chain.
 - B. Carboxy terminus of the light chain.
 - C. Amino terminus of the heavy chain.
 - D. Carboxy terminus of the heavy chain.

3. The Immunoglobulin Joining chain (J-chain) is
 - A. only produced by T-Cells
 - B. only produced by neutrophils
 - C. associated with only multimeric forms of IgM and IgA
 - D. associated with IgE for histamine release

4. All of the following are true EXCEPT
 - A. An epitope is a small portion of a macromolecule
 - B. the variable region domains contain the antigen recognition site
 - C. an antigenic determinant is a paratope
 - D. The class of an immunoglobulin is determined by its heavy chain

5. 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

6. Which of the following uniquely distinguishes the T-cell receptor (TCR) from an antibody?
 - A. The TCR can bind an antigen fragment only in a trimolecular complex with either the class I or class II surface proteins of the major histocompatibility complex

- B. The TCR polypeptides is composed of domains - an amino terminal variable portion at determines the binding specificity and a constant portion that determines the class of the polypeptide chain.
- C. The TCR is composed of two different types of polypeptide chains
- D. The TCR is capable of participating in a cytotoxic reaction.
7. 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.
8. 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.

Q II Answer any seven questions

(2x7=14)

1. Briefly contrast the way the immune system deals with intracellular bacteria and extracellular bacteria.
2. Difference between Classical and alternative complement cascade?
3. What is the role of C5a and C5b in immune response.
4. What is the major preformed mediator released by mast cells?
5. Discuss the importance of complement and antibody opsonization in the elimination of parasites.
6. What are natural killer cells? Explain their function
7. Explain the clonal selection theory of antibody diversity
8. Explain the oxygen dependent mechanism of phagocytosis
9. What are CDRs- explain

Q III Explain the structure of immunoglobulin. Classify them and write a comparative account on properties of Igs of various classes

(12)

OR

QIII

- a. Give an account on primary and secondary lymphatic organs (8)
- b. What are allotypic variants of human IgG? Explain (4)

QIV Explain the structure of C1 compliment. Give an account on classical pathway and alternate pathway with the role of other complement proteins for complete cell lysis. (12)

OR

QIV What are the major preformed mediators released by mast cells? Explain the role regulatory mechanism of mast cell degranulation. (12)

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

OR

QV

- a. List the various mechanisms leads to antibody diversity. (6)
 - b. The V_H segment cannot join directly with J_H segment in Heavy chain Gene rearrangement- why? (3)
 - c. How many changes does a developing B-cell have to generate a functional Ig light chain gene? Explain with diagram. (3)
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QVI Write notes on any three (3x4)

- a. Role of various cytokines in differentiation of hematopoietic cells
 - b. Clinical Complications of C1 and C3 complement deficiency,
 - c. Schematic out line of Monoclonal antibody production.
 - d. Structure of class -I MHC product and its function
 - e. Role of T_H cells in humoral response
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