

DEPARTMENT OF ZOOLOGY
MARWARI COLLEGE, RANCHI
QUESTION BANK – B. Sc (SEMESTER VI)
PAPER- DSE-4 (IMMUNOLOGY)

1. Fill in the blanks with appropriate terms:

- i. The ancient practice of introducing pathogenic smallpox crusts into the host body is called.....
- ii. The naturally occurring non-specific defence mechanism against pathogen is called.....
- iii. Delayed type of hypersensitivity involvescells.
- iv. Class I MHC are expressed oncells while class II MHC are restricted tocells.
- v. and are primary lymphoid organs.
- vi. Type of immunoglobulin that can cross the placenta is
- vii. Type of immunoglobulin with highest antigen binding capacity is
- viii. The type of antibody present in colostrum, saliva and tears is
- ix. The most effective complement activating antibody is
- x. Antigens artificially injected into cytoplasm of a cell will be displayed onMHC molecules.
- xi. IgE mediated hypersensitivity belong to
- xii. Administration of anti-venom givesimmunity.
- xiii. An immunoglobulin molecule hasantigen binding sites.
- xiv. CD4+ T cells are associated withMHC molecules.
- xv. The formation and maturation of B lymphocytes take place in
- xvi. Antigen presenting cells are restricted toMHC molecules.
- xvii.antibodies are secreted by different B cell lineages.
- xviii. Secondary immune responses to previously exposed antigen are mediated through B cells.
- xix. Spleen is alymphoid organ.
- xx. Macrophage present in liver is known as
- xxi. Inability to differentiate between self and non-self cells leads to

2. State TRUE/FALSE against each statement:

- i. The complete antigen molecule is immunogenic.
- ii. Adjuvants enhance and prolong the immunogenicity of the antigen.
- iii. T-cell epitopes are always presented together with MHC.
- iv. Hapten can stimulate antibody formation by itself.
- v. Neutrophils are involved in inflammatory responses.
- vi. Basophils are non-phagocytic granulocytes.
- vii. All cells of the immune system are derived from the bone marrow.
- viii. T cells mature in the bone marrow and B cells mature in the thymus.
- ix. Anatomical barriers are the components of innate immunity.
- x. B lymphocytes mediate humoral immunity.
- xi. Antibodies are generally proteinaceous in nature.
- xii. Interaction of antigen and antibody is non-specific.
- xiii. Antigen- binding sites are present in constant regions of light and heavy chain of antibody.
- xiv. IgA is pentameric in nature.
- xv. Class I MHC molecules are present on all types of cells.
- xvi. Alternate pathway of complement activation can occur in absence of antibody.
- xvii. Exogenous pathway of antigen presentation is associated with class II MHC.
- xviii. Mast cells and basophils are primarily involved in type IV hypersensitivity.
- xix. DNA vaccine contains nucleic acid with adjuvant.
- xx. Monoclonal antibody can bind to a single epitope on the antigen.
- xxi. Cytokines are not antigen- specific.
- xxii. Loss of suppressor T cells can lead to auto-immunity.
- xxiii. Direct ELISA technique requires two different antibodies.
- xxiv. HIV stands for Human Immunodeficiency Virus.
- xxv. Hybridoma technology is used to produce polyclonal antibodies.

3. Choose the correct option:

- A. Which of the following are the reason(s) for Rheumatoid arthritis? Choose the correct option.
- i. Lymphocytes become more active
 - ii. Body attacks self cells
 - iii. More antibodies are produced in the body
 - iv. The ability to differentiate foreign molecules from self cells is lost.
- a. i and ii b. ii and iv c. iii and iv d. i and iii
- B. AIDS is caused by HIV. Among the following, which one is not a mode of transmission of HIV?
- a. Transfusion of contaminated blood
 - b. Sharing the infected needles
 - c. Shaking hands with infected persons
 - d. Sexual contact with infected persons
- C. Which of the following is not a lymphoid tissue?
- a. Spleen
 - b. Tonsils
 - c. Appendix
 - d. Thymus
- D. Which of the following glands is large sized at birth but reduces in size with aging?
- a. Pineal
 - b. Pituitary
 - c. Thymus
 - d. Thyroid
- E. Memory cells are formed in all, except
- a. primary immune response
 - b. Active immunisation
 - c. Passive immunisation
 - d. secondary immune response
- F. MHC plays important role in all, except:
- a. tissue transplantation
 - b. blood transfusion
 - c. antigen presentation
 - d. t-cell response

4. Write short notes on the following:

- i. Cells involved in innate immunity
- ii. Phagocytosis
- iii. Inflammation
- iv. Functions of cytokine
- v. Spleen
- vi. Thymus
- vii. Active immunity
- viii. Passive immunity
- ix. Direct ELISA
- x. Adjuvant
- xi. Hapten
- xii. B-cell epitope
- xiii. Endogenous antigen
- xiv. Alternate pathway of complement activation
- xv. AIDS
- xvi. Type IV hypersensitivity
- xvii. DNA vaccine
- xviii. Recombinant vaccine
- xix. Structure of MHC I
- xx. Structure of immunoglobulin

5. Answer the following question (Long Answer Type Questions).

- i. Differentiate between primary and secondary lymphoid organs. Illustrate the structure and function of respective organs (One from each type).
- ii. How and when the concept of immunology came into light? Discuss the early theories of immunology.
- iii. Discuss about the components of innate immune system.
- iv. Define immunity. Discuss different types of active and passive immunity.
- v. Define adaptive immunity. Differentiate between humoral and cell-mediated immunity.
- vi. Define autoimmunity. Illustrate the underlying mechanism with reference to Rheumatoid Arthritis.
- vii. Are antigen and immunogen similar? Write about the factors influencing immunogenicity of the pathogen.
- viii. Draw a well labelled structure of immunoglobulin. Discuss the characteristic features and functions of different types of immunoglobulin.

- ix. What is epitope? Write an essay on characteristic features of B and T-cell epitopes.
- x. Compare the two classes of Major Histocompatibility Complex (MHC) molecules with reference to structure, function and mechanism of action.
- xi. Write the full form of ELISA? Diagrammatically illustrate the different types of ELISA techniques used for assay.
- xii. What are the special features of antigen-antibody interaction? Discuss it with the illustration of RIA technique.
- xiii. Differentiate between polyclonal and monoclonal antibodies? How hybridoma technology can be used to develop monoclonal antibodies?
- xiv. Define antigen. Discuss the endogenous the exogenous pathways of antigen presentation.
- xv. Describe the properties and functions of cytokines. Give examples of therapeutic cytokines.
- xvi. What are the components of complement system? Discuss about the classical and alternate pathways of complement activation.
- xvii. Define hypersensitivity. Classify them according to Gell and Coombs' classification system.
- xviii. Briefly describe the components and functions of different types of hypersensitivity.
- xix. Define vaccine? How DNA vaccine is formed? Write about the advantages and disadvantages of DNA vaccine.
- xx. What type of immunity is induced by using vaccine? Discuss the mechanism, advantages and disadvantages of recombinant vaccines.