

**PARUL UNIVERSITY**  
**FACULTY OF APPLIED SCIENCE**  
**B.Sc./I.M.Sc, Winter 2017-18 Examination**

**Semester: 3**  
**Subject Code: 11101202**  
**Subject Name: Immunology**

**Date: 21/12/2017**  
**Time: 10:30 am to 1:00 pm**  
**Total Marks: 60**

**Instructions:**

1. All questions are compulsory.
2. Figures to the right indicate full marks.
3. Make suitable assumptions wherever necessary.
4. Start new question on new page.

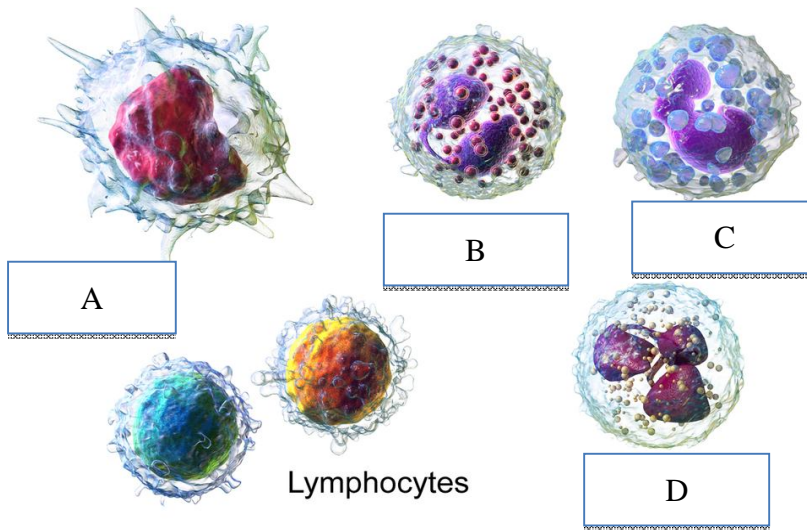
**Q.1. A)** Adaptive immunity exhibits several characteristic attributes, which are mediated by lymphocytes. List four attributes of adaptive immunity and briefly explain how they arise. **(08)**

**Q.1. B) Answer the following questions (Any two)**

**(a) Schematically label the figures (Each of 02 marks)**

**(04)**

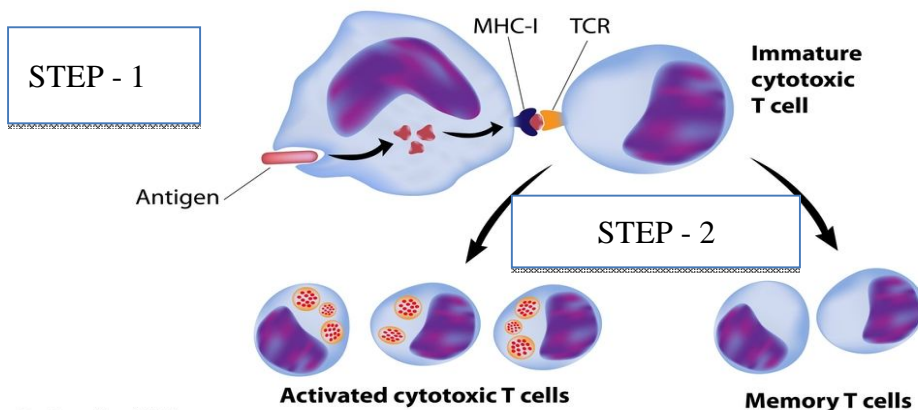
**1. LABEL CELLS OF TYPE "A", "B", "C", "D"**



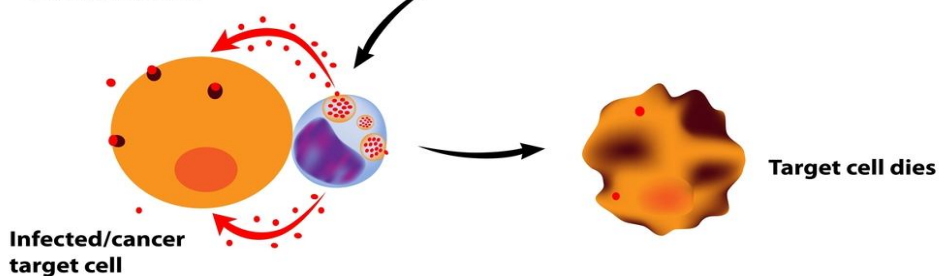
**White Blood Cells**

**2. LABEL STEP 1 AND STEP 2**

**Cytotoxic T cell Activation and Action**



**3. Lethal hit**



- (b) Write a short note on Innate Immunity. (04)
- (c) Explain functions of atleast 4 soluble effectors of Innate immunity. (04)
- Q.2. A) Answer the following questions.**
- (a) Fill in the blanks. (Each of 02 marks) (04)**
- \_\_\_\_\_ is an example of autoimmune disease of blood and \_\_\_\_\_ is an example of autoimmune disease of skin.
  - The function of macrophages in innate immunity is \_\_\_\_\_ and in adaptive immunity is \_\_\_\_\_.
- (b) Short note on Antigen-Antibody interactions. (04)
- Q.2. B) Answer the following questions (Any two)**
- (a) Short note/ Multiple choice questions. (Each of 01 marks) (03)**
- All of the following are true with respect to IgM antibodies EXCEPT which one:
    - they fix complement
    - they occur on the surface of lymphocytes
    - they predominate in the primary response to antigen
    - they are glycoproteins
    - they mediate allergic reaction
  - T-cell antigen receptors are distinguished from antibodies by which of the following:
    - T-Cell receptors are glycosylated
    - T-cell receptors must interact with antigen uniquely presented by other cells but not with free antigen
    - T-Cell receptors bind various cytokines
    - T-Cell receptors bind complement to lyse cells
    - T-cell receptors are mediators of allergic reactions
  - All of the following are true of antigen EXCEPT which one of the following?
    - They contain epitopes.
    - They will react with antibodies.
    - They contain antigenic determinants.
    - They can elicit an immune response.
    - They contain paratopes.
- (b) Short note on MHC Restriction (03)
- (c) List the roles of complement in immune defense. (03)
- Q.3. A) Explain the role of Thymus and bone marrow in developing Immune system. (08)**
- Q.3. B) Answer the following questions (Any two)**
- (a) Short note on: (04)**
- Allergy
  - Neutrophils
- (b) Short note on ABO blood grouping (04)
- (c) Short note on Immunoelectrophoresis (04)
- Q.4. A) Answer the following questions.**
- (a) The two examples of natural passive immunity are: (04)
- \_\_\_\_\_
  - \_\_\_\_\_
- (b) Short note on Hematopoiesis (04)
- Q.4. B) Answer the following questions (Any two)**
- (a) Short note/ Multiple choice questions. (Each of 01 marks) (03)**
- The immunoglobulin Joining chain (J-chain) is:
    - only produced by T-Cells
    - only produced by neutrophils
    - associated with only multimeric forms of IgM and IgA
    - associated with IgE for histamine release
    - only produced by mast cells

2. 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
  - E. An IgG antibody is bivalent
3. Light chains are
- A. specific for each class of antibody
  - B. not specific for each class of antibody
  - C. reactive with antigen
  - D. have only a constant region
  - E. are composed only of carbohydrate
- (b) Short note on Antibody structure **(03)**
- (c) Design a test kit for detecting pregnancy based on the principle of agglutination inhibition **(03)**