

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

**Semester: 3****Subject Code: 11101208****Subject Name: Immunology-I****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)** Write a comparative and contrasting account of Innate and Adaptive Immunity. **(08)**
- Q.1. B) Answer the following questions (Any two)**
- (a) Draw a schematically labeled diagram of the Instrumentation of Flow Cytometry. **(04)**
- (b) Short note on Positive and Negative Selection of T-cells. **(04)**
- (c) Short note on Inflammation. **(04)**
- Q.2. A) Answer the following questions.**
- (a) Fill in the blanks. (Each of 02 marks)** **(04)**
1. \_\_\_\_\_ and \_\_\_\_\_ immunoglobulins are least found in blood.
2. MHC-I presents \_\_\_\_\_ antigens whereas MHC-II presents \_\_\_\_\_ antigens.
- (b) Short note on Autoimmunity. **(04)**
- Q.2. B) Answer the following questions (Any two)**
- (a) Short note/ Multiple choice questions. (Each of 01 marks)** **(03)**
1. The secondary, but not the primary, immune response is based on
- A. Memory
- B. The bonus effect of multivalency
- C. Complement activation
- D. Mast cell degranulation
- E. Clonal selection
2. Adoptive-acquired immunity may be the result of:
- A. Transfer of bone marrow from one individual to another.
- B. Immunization with a vaccine.
- C. Exposure to an individual who has an infectious disease.
- D. A physician administering a gamma globulin shot to someone who has had a needle stick (immunoglobulins).
- E. A and D.
3. Which of these is not associated with adjuvants?
- A. Forms an antigen depot.
- B. Provides non-specific T cell stimulation.
- C. Activates antigen-presenting cells.
- D. Activates the complement cascade.
- E. None of the above.
- (b) In the normal healthy person, how is tolerance against self antigens and cross reacting antigens maintained? **(03)**
- (c) Short note on antigenic determinants of Immunoglobulins. **(03)**
- Q.3. A) Write a note on different Immunoglobulin classes and their functions** **(08)**
- Q.3. B) Answer the following questions (Any two)**
- (a) Answer as directed: (Each of 02 marks)** **(04)**
1. Explain Affinity and Avidity.
2. Draw a labeled anatomical structure of lymph nodes.
- (b) Short note on Precipitation reactions. **(04)**
- (c) How do you detect specific proteins from a given sample using Western blotting. **(04)**

**Q.4. A) Answer the following questions.**

**(a) State True or False**

**(04)**

1. Affinity maturation is the result of clonal selection over time.
2. Fc and complement receptors on phagocytic cells prevent opsonized bacteria from being pulled into phagocytic vacuoles.
3. Mast cell degranulation occurs as a result of cross-linkage of Fc receptors on Mast cells.
4. Serum sickness occurs when massive amounts of foreign proteins are introduced into the body.

**(b) Short note on antigen processing and presentation.**

**(04)**

**Q.4. B) Answer the following questions (Any two)**

**(a) Define: (Each of 01 marks)**

**(03)**

1. Valency of Antibody
2. Somatic hypermutation
3. Cross-reactivity

**(b) Short note on Phagocytosis**

**(03)**

- (c) If a given antigen X gives a precipitin ring of diameter 5 cm with 3 ml of 15 mM antigen solution, what is the concentration of antigen present in an infected individual which gives a precipitin ring of diameter 1 cm with 9 ml of serum sample?**

**(03)**