

**M. Sc. (Biotechnology) Sem-II (2012 Course)(Choice Based Credit System) : WINTER - 2018**

**SUBJECT: IMMUNOLOGY**

Day: Friday  
Date: 26/10/2018

**W-2018-1209**

Time: 02.00 PM TO 05.00 PM  
Max. Marks: 60

**N.B:**

- 1) **Q. No.1 and Q. No.5 are COMPULSORY.**
- 2) Attempt **ANY TWO** questions from **Q. No.2, 3 and 4.**
- 3) Attempt **ANY TWO** questions from **Q. No.6, 7, 8.**
- 4) Answer to both the sections should be written in **SEPARATE** answer book.

**SECTION-I**

- Q.1** Answer the following in brief (**ANY FIVE**): **(10)**
- a) Define: Epitope and Hapten
  - b) Name and state the function of two primary lymphoid organs
  - c) Differentiate between humoral and cell mediated immune response
  - d) State the role of Complementarity Determining Regions in immunoglobulins
  - e) State the function of Langerhan's cells
  - f) Expand the terms HGPRT and APC.
- Q.2** Answer the following questions: **(10)**
- a) Explain in brief the biological consequences of complement activation.
  - b) Discuss the endocytic pathway for processing and presentation of exogenous antigens.
- Q.3** Answer the following questions: **(10)**
- a) Describe the proposed pathway for T cell maturation in thymus. Add a note on thymic selection.
  - b) Explain with help of a diagram how antibody diversity is created at the level of Immunoglobulin gene rearrangement
- Q.4** Write short notes on **ANY TWO** of the following: **(10)**
- a) MHC Class I molecules
  - b) Inflammation
  - c) Precipitation reactions in gel

**SECTION-II**

- Q.5** Answer in brief (**ANY FIVE**): **(10)**
- a) Sequestered antigens
  - b) Autoimmunity
  - c) Freund's complete Adjuvant
  - d) Different types of vaccines
  - e) Peripheral tolerance
  - f) Isografts
- Q.6** Answer in brief: **(10)**
- a) Describe the sensitization stage of allograft rejection.
  - b) What are tumor antigens? Discuss the two main types of tumor antigens.
- Q.7** Write short notes on: **(10)**
- a) Subunit vaccines
  - b) Immunotoxins
- Q.8** Discuss the mechanisms proposed for induction of autoimmunity. Add a note on any two organ specific autoimmune diseases. **(10)**

**OR**

Explain in detail Type II hypersensitivity reactions with suitable examples

\* \* \* \* \*