

Seat No.	
----------	--

**B.Sc.(Semester–III) (CBCS) Examination Oct/Nov-2019**  
**Biotechnology**  
**FUNDAMENTALS OF IMMUNOLOGY**

Day & Date: Saturday, 12-10-2019  
 Time: 03:00 PM To 05:30 PM

Max. Marks: 70

- Instructions:** 1) All questions are compulsory.  
 2) Figures to the right indicate full marks.  
 3) Neat and labeled diagrams must be drawn wherever necessary.

**Q.1 Fill in the blanks by choosing correct alternatives given below.**

**14**

- 1) In the adult, normal blood-cell count has shows \_\_\_\_\_ RBCs.  
 a)  $2.5 \times 10^5$  cells/mm<sup>3</sup>                      b)  $5.0 \times 10^6$  cells/mm<sup>3</sup>  
 c)  $7.3 \times 10^3$  cells/mm<sup>3</sup>                      d)  $4.5 \times 10^4$  cells/mm<sup>3</sup>
- 2) Macrophage-like cells present in liver are called as \_\_\_\_\_.  
 a) Langerhan                                      b) Kuffer  
 c) Microglial                                      d) Alveolar
- 3) Tonsils and appendix are the examples of \_\_\_\_\_ associated lymphoid tissues.  
 a) Gut                                              b) Bronchus  
 c) Peyer's                                              d) Spleen
- 4) Horny outer layer of the skin called stratum corneum is made up of \_\_\_\_\_.  
 a) sebum                                              b) fatty acid  
 c) cartilage                                              d) keratin
- 5) Spermine and \_\_\_\_\_ present in the semen carry out antibacterial activity.  
 a) cobalt                                              b) copper  
 c) zinc                                              d) nickel
- 6) Spread of viral infection is avoided by \_\_\_\_\_ as a member of innate immunity.  
 a) interleukin                                      b) interferon  
 c) chemokine                                      d) tumor necrosis factor
- 7) Two or more cytokines that mediate similar functions are called \_\_\_\_\_.  
 a) redundant                                      b) pleiotropic  
 c) synergetic                                      d) antagonist
- 8) In the class I MHC  $\alpha$ -chain is encoded by \_\_\_\_\_ structure gene/s.  
 a) A                                              b) B  
 c) C                                              d) all of these
- 9) Antigen showing immunogenicity and immunological reactivity are \_\_\_\_\_.  
 a) Incomplete antigens                      b) Complete antigens  
 c) Haptens                                      d) Adjuvants
- 10) \_\_\_\_\_ shows monomeric type of antibody structure.  
 a) IgD                                              b) IgA  
 c) IgG                                              d) all of these

- 11) \_\_\_\_\_ antibody can pass the placenta.  
 a) IgG                                                b) IgD  
 c) IgA                                                d) IgM
- 12) \_\_\_\_\_ is the example of secretory antibody.  
 a) IgG                                                b) IgD  
 c) IgA                                                d) IgM
- 13) End products of enzyme-substrate reaction are analyzed in \_\_\_\_\_ test.  
 a) Radioimmunoassay                                                b) Immunofluorescence  
 c) Precipitation                                                d) ELISA
- 14) Lissamine rhodamine is used in \_\_\_\_\_ antigen – antibody test.  
 a) ELISA                                                b) immune-fluorescence  
 c) RIA                                                d) Complement fixation

- Q.2 A) Answer the following questions. (Any Four)                                                08**
- 1) Apoptosis.
  - 2) Inflammation.
  - 3) Racial immunity.
  - 4) Paratope.
  - 5) Affinity of interaction.
- B) Write short notes (Any Two)                                                06**
- 1) Titre.
  - 2) B cell epitope.
  - 3) T cells.
- Q.3 A) Answer the following questions. (Any two)                                                08**
- 1) Explain the role of Dendritic cells in immunity.
  - 2) Describe in detail chemical barriers of innate immunity.
  - 3) Write in detail on structure of Class II MHC.
- B) Answer the following questions. (Any One)                                                06**
- 1) Describe in detail on structure and functions of IgA.
  - 2) Explain in detail immune-diffusion tests.
- Q.4 A) Answer the following questions. (Any Two)                                                10**
- 1) What is adjuvant? Explain various examples with its functions.
  - 2) Describe the structure and functions of thymus.
  - 3) Explain in detail properties and functions of cytokines.
- B) Answer the following questions. (Any One)                                                04**
- 1) Explain the history of antibody discovery.
  - 2) Describe in brief immunofluorescence test.
- Q.5 Answer the following questions. (Any two)                                                14**
- a) Write in detail on factors affecting antigenicity.
  - b) Describe in detail on structure and functions of IgG.
  - c) Explain in detail on immune-electrophoresis with suitable examples.