

**The West Bengal University of Health Sciences**  
**B.Sc. in Medical Microbiology 4th Semester November, 2023**  
**Examination**

**Subject : Immunology**

**Time : 2 hrs.**

**Full Marks : 50**

*Attempt all questions*

1. Tick the correct answer :

10 x 1



- a) Widal test is detect Salmonella bacteria based on the technique used :
  - i) Agglutination.
  - ii) Hemagglutination.
  - iii) Precipitation.
  - iv) Coimmunoprecipitation.
- b) Monocytes differentiate into which kind of phagocytic cells?
  - i) Neutrophil.
  - ii) B cell.
  - iii) Macrophage.
  - iv) T cell.
- c) Interferons are which type of barriers?
  - i) Cytokine barriers.
  - ii) Physical barriers.
  - iii) Cellular barriers.
  - iv) Physiological barriers.
- d) Helper T cells mediate their effects by secreting cytokines which help other immune responses. Which transcription factor is associated with the development of immune suppression?
  - i) T-bet.
  - ii) GATA-3.
  - iii) ROR $\gamma$ T.
  - iv) FOXP3.
- e) Which of the following cells is involved in cell-mediated immunity?
  - i) Leukocytes.
  - ii) T cells.
  - iii) Mast cells.
  - iv) Thrombocytes.
- f) Which of the following immunity is obtained during a lifetime?
  - i) Acquired immunity.
  - ii) Active immunity.
  - iii) Passive immunity.
  - iv) None of the above.
- g) Which type of cell specifically destroys virally infected body cells?
  - i) Cytotoxic T lymphocytes.
  - ii) Activated B lymphocytes.
  - iii) Phagocytic macrophages.
  - iv) Plasma cells.
- h) Which is the molecule known as opsonin?
  - i) Immunoglobulin.
  - ii) Complement protein.
  - iii) Both of these.
  - iv) None of these.
- i) Herd immunity can be obtained by :
  - i) Vaccination.
  - ii) Active infection.
  - iii) Passive infection.
  - iv) Passive immunization.
- j) This types of antibody can be produced in placenta :
  - i) IgG.
  - ii) IgM.
  - iii) IgE.
  - iv) IgA.

2. Answer **any four** of the following questions :

4 x 2

- a) Write two functions of NK cells.
- b) How does passive immunity protect infants?
- c) What is MAC?
- d) State the role of variable region of an immunoglobulin molecule.
- e) What is self MHC restriction?
- f) What is malaria pigment?

3. Answer **any four** of the following questions :

- a) Differentiate between primary and secondary immune responses. 4
- b) Discuss the different types of innate immune barriers with examples. 4
- c) What is positive and negative selection during T-cell maturation? 2+2
- d) Write a note on opsonin and opsonization. 4
- e) State the effector responses of different types of T-lymphocytes. 4
- f) What is HAT medium? Discuss its role in hybridoma technology. 2+2

4. Answer **any two** of the following questions :

- a) Discuss the different mechanisms of B-cell activation process. 8
- b) Discuss the synergic effect of cytokines with examples. Write the functions of dendritic cells in immunology. 4+4
- c) Make a comparative note on classical and alternative pathway of complement activation. 8