

U.G. 5th Semester Examination-2025**ZOOLOGY****[MAJOR-VII]****Course Code : ZOOL-M-T-502****(Immunology)****[NEP-2020]****Full Marks : 40****Time : 2½ Hours***The figures in the right-hand margin indicate marks.**Candidates are required to give their answers in their own words as far as practicable.*

1. Answer any five questions of the following:

 $2 \times 5 = 10$

- a) What is the respiratory burst?
- b) What are monokine, chemokine and lymphokine?
- c) Give one example each from water soluble and oil soluble adjuvant. What is the role of J-chain in Ig structure?
- d) Enumerate the functions of memory cells in immune system.
- e) What is opsonization?

- f) What are physical and chemical barrier of immunity?
- g) What is antibody affinity? How does it differ from avidity?
- h) How NK cells act in immunological defence?

2. Answer any two questions of the following:

5×2=10

- a) Define immediate hypersensitivity. Describe the involvement of Plasma cell, T_H cells, Mast cells in Ig E mediated hypersensitivity. 2+3
- b) Write down a short note on the conversion of monocytes to macrophages. What is the role of MHC-II molecule in antigen processing and presentation? 2+3
- c) Write the chemical reactions involved in O₂ dependent killing of bacteria in phagocytic cell. Describe sequentially the process of alternative pathway in complement activation. 2+3
- d) What is T cell-B cell cooperation in cell mediated immune response? Explain the properties and functions of cytokines in immune system. 2+3

3. Answer any two questions of the following:

10×2=20

- a) What is Immunoglobulin class switching? Why is it important? Describe the classical pathway of complement activation. When Fab and Fc domains are formed in antibody? 2+2+4+2
- b) Describe cytokine signaling through JAK-STAT pathway. What are Antigen Presenting Cells? Give two example. Write the role of Langerhans cells in CMI. 4+2+1+3
- c) What are the functions of MBL and MASPs in complement system? Indicate different stage of phagocytosis with proper diagram. What is herd immunity, and why is it important? 3+4+3
- d) What are the differences between innate and adaptive immune system? What are primary and secondary lymphoid organs? Give example. How is a DNA vaccine different from a traditional vaccine? 3+2+1+4