



**WEST BENGAL STATE UNIVERSITY**  
B.Sc. Honours 4th Semester Examination, 2022

**ZOOACOR10T-ZOOLOGY (CC10)**

Time Allotted: 2 Hours

Full Marks: 40

*The figures in the margin indicate full marks.  
Candidates should answer in their own words and adhere to the word limit as practicable.*

1. Answer any **eight** questions from the following: 2×8 = 16
  - (a) Differentiate between T-dependent and T-independent antigens.
  - (b) Name two enzymes used in ELISA test.
  - (c) Mention two uses of HLA typing.
  - (d) What is MAC?
  - (e) What is adjuvant? Give example.
  - (f) State the factors which influence immunogenicity of a potential antigen.
  - (g) Define hypersensitivity.
  - (h) State the function of Natural Killer (NK) cells.
  - (i) Differentiate between primary and secondary lymphoid organ.
  - (j) What do you mean by “memory” of immune cells?
  - (k) What is hybridoma?
  - (l) What are affinity and avidity during Antigen-Antibody reaction?
  
2. Answer any **three** questions from the following: 3×3 = 9
  - (a) Differentiate between active and passive immunity.
  - (b) State the principle and application of Sandwich ELISA technique.
  - (c) Distinguish between T cell and B cell.
  - (d) “All immunogens are antigens, but not all antigens are immunogen” — Explain.
  - (e) Which region of an Immunoglobulin molecule determines its class? What is meant by the term ‘immunoglobulin class switching’? 1+2
  
3. Answer any **three** questions from the following: 5×3 = 15
  - (a) Draw a schematic diagram of a typical IgG molecule and label each of the following parts: H chain, L chain, interchain disulphide bonds, intrachain disulphide bonds, hinge, Fab, F<sub>c</sub> and all the domains. Indicate, which domains are involved in antigen binding. 3+2



- (b) List the three types of purified macromolecules that are currently used as vaccines. What are the advantages and disadvantages of using attenuated organisms as vaccines?
- (c) Briefly describe the stages in T-cell development in the thymus. Describe the mechanism that lead to self-tolerance.
- (d) How Dengue viruses trick immune system to infect host cells in human body? What effect would removal of bursa of Fabricius (bursectomy) have on chicken? 3+2
- (e) Describe the activation and control of the alternative pathway of complement activation. What does the term 'immunologic memory' mean? 3+2

**N.B. :** *Students have to complete submission of their Answer Scripts through E-mail / Whatsapp to their own respective colleges on the same day / date of examination within 1 hour after end of exam. University / College authorities will not be held responsible for wrong submission (at in proper address). Students are strongly advised not to submit multiple copies of the same answer script.*

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