



'समानो मन्त्रः समितिः समानी'

**UNIVERSITY OF NORTH BENGAL**

B.Sc. Honours 5th Semester Examination, 2021

**CC12- ZOOLOGY**

**IMMUNOLOGY**

Time Allotted: 2 Hours

Full Marks: 40

*The figures in the margin indicate full marks.*

1. Answer any **five** questions from the following: 1×5 = 5
  - (a) What do you mean by hapten?
  - (b) What is epitope?
  - (c) Expand CDR. What is its function?
  - (d) Name two secondary lymphoid organs.
  - (e) What is the impact of 2-mercaptoethanol on IgG molecule?
  - (f) What do you mean by ITAM?
  - (g) Which immunoglobulin is produced in Type 1 hypersensitivity?
  - (h) What is a toxoid?
  
2. Answer any **three** questions from the following: 5×3 = 15
  - (a) What are haematopoietic stem cells? Differentiate between B and T lymphocytes. 2+3
  - (b) Briefly explain the process of antigen presentation by intrinsic pathway.
  - (c) Describe the structure of TCR complex.
  - (d) Why is there low host immune response to malarial parasites?
  - (e) Write down the classification of hypersensitivity proposed by Gell and Coombs, giving brief explanation of each type. 1+4
  
3. Answer any **two** questions from the following: 10×2 = 20
  - (a) Explain in brief the classical pathway of complement system. How does it differ from alternative pathway? 8+2
  - (b) Compare the structures of MHC class I and class II molecules. Write a short note on the functions of Natural Killer (NK) cells. 6+4
  - (c) Describe the structure of IgG. Explain the hybridoma technology for the production of monoclonal antibodies. 4+6
  - (d) Differentiate between passive and active immunization. Describe in brief the various types of vaccines with the help of diagrams and flowcharts. 3+(4+3)

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