

**2021**

**PHYSIOLOGY — HONOURS**

**Paper : DSE-A-2**

**(Microbiology and Immunology)**

**Full Marks : 50**

*The figures in the margin indicate full marks.*

*Candidates are required to give their answers in their own words  
as far as practicable.*

**Group - A**

1. Answer **any five** questions : 2×5
- (a) Define selective media and give one example.
  - (b) What is the advantage of using logarithmic plot in the study of bacterial growth?
  - (c) Distinguish between affinity and avidity.
  - (d) What are endospores and why they are heat resistant?
  - (e) “All immunogens are antigens but all antigens are not necessarily immunogen”— explain.
  - (f) What are naive Beells?
  - (g) What do you mean by DNA vaccine?
  - (h) How the principle of osmosis is used in preservation of foods?
  - (i) What are facultative anaerobic bacteria?
  - (j) What do you mean by monoclonal and polyclonal antibodies?

**Group - B**

2. Answer **any two** questions of the following :
- (a) Write short note on (**any one**) : 5
    - (i) Biochemical tests applied for ‘Bacterial Identification’.
    - (ii) Type I hypersensitivity reaction
    - (iii) Immunoglobulin types and functions.
  - (b) Correlate the principle of Gram-staining with the structure of bacterial cell wall. 5
  - (c) Discuss the different steps of Glyoxalate cycle and state its significance. 5

**Please Turn Over**

- (d) (i) What do you mean by hyper-variable region of antibody?  
(ii) What is hinge region of antibody and mention its function.  
(iii) What do you mean by Immunological memory? 1+2+2

**Group - C**

Answer *any three* questions.

3. (a) Describe briefly the lytic cycle of bacteriophage replication.  
(b) What are retroviruses?  
(c) Name one RNA virus and mention the disease produced by it. 6+2+2
4. (a) Name the cells involved in innate and acquired immune response in human.  
(b) Describe briefly the alternative pathway of complement activation. 4+6
5. (a) What do you understand by passive and active immunization?  
(b) Write the differences between thymus dependent and thymus independent antibodies.  
(c) What is BCG vaccine? 4+4+2
6. (a) Write a brief note on ADCC.  
(b) Give a brief outline of the differences between the B-cell mediated and the T-cell mediated immune responses. 5+5
7. (a) Classify bacteria, based on temperature sensitivity.  
(b) Briefly describe the process of bacterial conjugation. 5+5
8. (a) What are the different modes of action of antibiotics?  
(b) Discuss the mechanism of action of any one bacteriocidal antibiotic.  
(c) Cite one example of a moist-heat sterilizer and state the principle of this type of sterilization process. 4+3+3
-