

2020

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) What is batch culture?
  - (b) State the characteristic features of plasmids.
  - (c) What do you mean by Homolactic fermentation?
  - (d) Differentiate between flagella and pili.
  - (e) What do you mean by Pasteurization?
  - (f) Name two causative agents of food-borne infections.
  - (g) What is the role of teichoic acid in bacteria?
  - (h) Mention the functions of NK cells.
  - (i) Name two cytokines that are released during  $T_H$  – B cell co-operation.
  - (j) Mention the significance of Catalase test in bacteriology.

Group - B

2. Answer **any two** questions of the following : 5
- (a) Write short note on (**any one**) : 5
    - (i) Hybridoma technology
    - (ii) Primary and secondary immune response
    - (iii) Continuous growth culture and its utility.
  - (b) (i) Differentiate between innate and adaptive immunity.
  - (ii) How can *Clostridium botulinum* cause disease even when the bacteria are dead? 4+1
  - (c) Describe the Entner-Duodoroff pathway and mention its significance. 4+1
  - (d) (i) What are positive and negative thymic selections?
  - (ii) What are prions? (2+2)+1

Please Turn Over

**Group - C**

Answer *any three* questions.

3. (a) Describe the cell wall structure of a Gram-negative bacteria with the help of a labelled diagram.  
(b) Discuss briefly the methods of prevention of food-borne infections. (5+2)+3
4. (a) Describe the different phases of bacterial growth curve and mention their significance.  
(b) Which physical or chemical agent would be the best choice for sterilising the following items and why— (i) Nutrient agar media, (ii) Glass pipettes? 6+(2+2)
5. (a) What is a virion?  
(b) Describe the lysogenic cycle of a bacteriophage.  
(c) Classify viruses on the basis of nucleic acid composition with examples. 2+4+4
6. (a) State three important requirements of a molecule for being an ideal immunogen.  
(b) Outline the Classical pathway of complement activation.  
(c) What are allergens? 3+5+2
7. (a) Describe the structure of a typical immunoglobulin molecule with a labelled diagram.  
(b) What is epitope?  
(c) What do you mean by attenuated vaccine? (4+3)+1+2
8. (a) Differentiate between Class I and Class II MHC molecules.  
(b) Name the primary and secondary organs involved in immune response.  
(c) What are cytotoxic Lymphocytes? 4+(2+2)+2
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