

Name :

Roll No. :

Invigilator's Signature :

CS/M.Sc.(GE)/SEM-3/MSGEN(MBT)-305B/2009-10

2009

IMMUNO-TECHNOLOGY

Time Allotted : 2 Hours

Full Marks : 35

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

(Multiple Choice Type Questions)

1. Choose the correct alternatives for any *five* of the following :

5 × 1 = 5

- i) Haematopoietic stem cells are pluripotent, which means that they are
 - a) antigen-specific cells
 - b) capable of developing into any blood cells
 - c) committed to produce cells of a single lineage
 - d) not self-renewing.
- ii) The PRIMARY purpose of the adaptive immune system is to
 - a) block all pathogens from entering the body
 - b) cure allergic reactions
 - c) kill tumor cells
 - d) protect from disease upon re-infection with a specific pathogen.



- iii) The ability of an antigen to induce an immune response does NOT depend on the antigen's
- a) ability to enter the thyriod
 - b) degree of aggregation
 - c) dose
 - d) size.
- iv) Effector functions of complement include all of the following EXCEPT
- a) attracting phagocytes to the site of infection
 - b) facilitating phagocytosis of complement-coated bacteria
 - c) lysing bacterial cells
 - d) presenting antigen to *B*-cells.
- v) Immune complex-mediated hypersensitivity is
- a) type-I Hypersensitivity
 - b) type-II Hypersensitivity
 - c) type-III Hypersensitivity
 - d) type-IV Hypersensitivity.
- vi) Self-tissue transferred from one body site to another in the same individual is
- a) Autograft
 - b) Isograft
 - c) Allograft
 - d) Xenograft.



vii) To elicit the best antibodies to mouse MHC I, you should inject it into

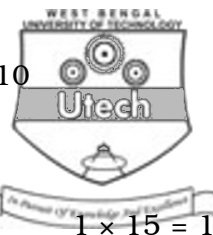
- a) the mouse you isolated it from
- b) a mouse of the same genetic background (strain)
- c) a mouse of a different strain
- d) a rat.

GROUP – B

(Short Answer Type Questions)

Answer any *three* of the following. $3 \times 5 = 15$

- 2. Cell mediated and humoral immunity act in cooperative and interdependent ways to protect the host. Discuss the collaboration of these two forms of immunity. 5
- 3. In which way the receptors of adaptive and innate immunity differ ? 5
- 4. What are the advantages and disadvantages of attenuated organisms as vaccine. 5
- 5. With a neat diagram, explain the features of an activated macrophage. 5
- 6. What are the different ways of generation of antibody diversity ? 5



GROUP – C

(Long Answer Type Questions)

Answer any *one* of the following.

1 × 15 = 15

7. a) Two vaccines are described below. Would you expect either or both of them to activate TC cells ? Explain your answer.
- i) A UV-inactivated ("killed") viral preparation that has retained its antigenic properties but cannot replicate.
- ii) An attenuated viral preparation that has low virulence but can still replicate within host cells.
- b) What are the host defence strategies for immunity against the pathogen. 5 + 10
8. a) Explain the difference between antibody affinity and antibody avidity. Which of these properties of an antibody better reflects its ability to contribute to the humoral immune response to invading bacteria ?
- b) What mechanisms generate the three hypervariable regions (complementarity-determining regions) of immunoglobulin heavy and light chains ? Why is the third hypervariable region (CDR3) more variable than the other two (CDR1 and CDR2) ?
- c) Name and explain the clinical consequences of one autoimmune disorder due to the cross-reactive antibody. 3 + 3 + 4 + 5

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