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 : $5 \times 1 = 5$

   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 × 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 adantages 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 nad 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