Name : Roll No. :

Invigilator's Signature :

CS/B.TECH (BT)/SEM-5/BT-501/2009-10 2009 IMMUNOLOGY

Time Allotted : 3 Hours

Full Marks : 70

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 *ten* of the following :

 $10 \times 1 = 10$

- i) An opsonin is
 - a) a chemotactic factor
 - b) a chemokine
 - c) a substance that enhances phagocytosis
 - d) a lysosomal enzyme.

ii) A receptor that binds antibody to a cell surface is called

- a) Fc receptor b) complement receptor
- c) CD molecule d) selectin.

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- iii) The thymus is
 - a) a primary lymphoid organ
 - b) a secondary lymphoid organ
 - c) a reticuloendothelial organ
 - d) a lymphoreticular organ.
- iv) Helper *T* cells are distinguished by having which marker ?
 - a) CD2 b) CD3
 - c) CD4 d) IL-2 receptor.
- v) The foetus can be considered
 - a) allograft b) xenograft
 - c) heterograft d) isograft.
- vi) The elimination of self-reactive T cells from the thymus is called
 - a) negative selection b) positive selection
 - c) clonal selection d) apoptosis.

vii) β 2-Microglobulin is an integral part of

- a) IgM b) MHC Class I
- c) MHC Class II d) T cell receptor.
- viii) The major force linking antigen to antibody is
 - a) Hydrogen bonds b) Covalent bonds
 - c) Hydrophobic bonds d) Ionic bonds.
- ix) Maximum precipitation occurs in Ag-Ab reaction in
 - a) equivalence zone b) before eqivalence zone
 - c) after equivalence zone d) both (b) and (c).
- x) Bivalent fragments of 'Ab' are formed by the proteolytic enzyme
 - a) Trypsin b) Papain
 - c) Pepsin d) both (b) and (c).

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xi)	The number	of epitopes	in antigen is
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- a) one b) two
- c) three d) four.
- xii) Antigen and antibody are linked by co-valent bonds.
 - a) True b) False
 - c) In some coses true d) None of these.

GROUP – **B**

(Short Answer Type Questions)

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

- 2. How can you determine the number of possible antigenic epitopes ?
- 3. What is serum sickness ? How is it caused ?
- 4. What are toxoids ? How are used in vaccination ?
- 5. How do corticosteroids help in managing transplantation problems ?
- 6. What are the factors responsible for autoimmunity?

GROUP – C

(Long Answer Type Questions)

Answer any *three* of the following. $3 \times 15 = 45$

7. What are sequestered antigens ? Give examples. How can they cause autoimmune disorders ? How do steroids alleviate hypersensitivity reactions ? Why is complete Freund's adjuvant not administered in human ?

1 + 1 + 5 + 5 + 3

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- 8. Can you use polyclonal antibody as the first antibody in ELISA or Immunofluorescence studies ? Why ? Describe with the help of a neat flowchart the procedure for indirect immunofluorescence. What are attenuated vaccines ? Give two examples of attenuated vaccine. 1 + 3 + 6 + 3 + 2
- 9. Can the foetus be regarded as a graft ? Why ? What is erythroblastosis fetalis ? How is it caused ? What are the present therapies for the problem ? 2 + 3 + 2 + 4 + 4
- 10. What is clonal selection ? What are memory cells ? How are they produced ? If you treat a sample of polyclonal antibody with (i) pepsin and (ii) papain and run a polyacrylamide gel electrophoresis on the treated samples, what bonding patterns would you expect ? $4 + 3 + 3 + 2\frac{1}{2} + 2\frac{1}{2}$
- 11. What are the advantages and disadvantages of monoclonal antibodies ? A person develops skin disorders after wearing a metal ring. How could the problem originate ? State the therapeutic and diagnostic uses of monoclonal antibodies.

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 $2 \times 2\frac{1}{2} + 4 + 6$

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