[This question paper contains 3 printed pages]

Your Roll No

6870 **J**

M.Sc. / BIOMEDICAL SCIENCES/ Sem. II

Paper—MBS–204 Immunology

(Admissions of 2009 and onwards)

Time 3 *Hours* *Maximum Marks* 70

(Write your Roll No on the top immediately on receipt of this question paper)

Attempt ***all*** *questions*

1 Describe briefly 6

(a) Bence Jones Proteins and their significance in study of Immunology

(b) Passive Immunization

(c) Type II hypersensitivity reaction with one example

(d) Freund's incomplete adjuvant

2 Write short notes on 14

(a) Cytotoxic T lymphocytes

(b) ADCC

(c) Transport of IgA across mucosal surfaces

(d) Importance of src kinases in T cell signaling and activation

(e) CD45

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(f) Pattern recognition receptors

(g) Grave's disease

3 Describe the sequential development of a thymocyte into a naive T cell Schematically represent the stages of development with respect to changes at gene level Explain the term 'Self Tolerance' with respect to T cell development Draw Histological section of the organ involved in T cell development. 6+1½

4 (a) Explain the pathway(s) of complement activation following primary infection with a bacterial pathogen. 4½

(b) Explain the terms 3

(i) Decay accelerating factor

(ii) CLIP

(iii) T dependent antigens

5 (a) Explain the polymorphism and polygeny noticed in MHC and its importance in immune responses against a bacterial pathogen 2½

(b) Describe the steps of antigen processing and presentation for an endogenous antigen 4

6 (a) Design an experiment to analyse the antigen-antibody interactions of a polyclonal antibody with an antigen 3½

(b) Explain the immune responses generated by superantigens 2

(c) Describe the term 'atopy' 2

(d) Describe briefly Passive agglutination and agglutination inhibition assays 2

7 (a) Explain the principle of flow cytometry and its importance in study of Immunology 4

(b) What mechanisms generate the three hypervariable region of immunoglobulin heavy and light chains ? Why is the third hypervariable region (CDR3) more variable than the other two (CDR1 and CDR2) 4

(c) Describe advantages and disadvantages of N nucleotide addition during the rearrangement of immunoglobulin heavy chain gene segments 3

(d) Discuss the importance of Eosinophils in immune responses generated during helminthic infections 3

(e) Discuss the importance of dendritic cells in generation of immune responses against a bacterial pathogen 2½

(f) Describe the Oxygen dependent killing of pathogens by neutrophils and macrophages 2½