7. Discuss the following (any *two*) : 15

(a) The principle, methodology, and applications of ELISPOT assay

(b) The clonal selection theory and its importance in adaptive immunity

(c) The five classes of immunoglobulins and their biological functions.

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758207

May 2026

M. Sc. (Microbiology) (Second Semester)

Immunology (MMT-205)

Time : 3 *Hours*] [*Maximum Marks :* 75

Note : It is compulsory to answer all the questions (1.5 marks each) of Part A in short. Answer any *four* questions from Part B in detail. Different sub-parts of a question are to be attempted adjacent to each other.

Part A

1. (a) What are the major cells involved in the immune system ? 1.5

(b) Define Humoral adaptive immunity. 1.5

(c) What do you mean by PAMP ? 1.5

(d) What are Idiotypes ? **1.5**

(e) What is the structure of MHC class II molecules ? **1.5**

(f) What is somatic hypermutation ? **1.5**

(g) What is Autoimmunity ? **1.5**

(h) What is the effect of AIDS on the immune system ? **1.5**

(i) Define Cytokines. **1.5**

(j) What is whole organism type of vaccine ? **1.5**

Part B

2. (a) Explain innate and adaptive immunity with suitable examples. **10**

(b) Describe the structure of an antibody molecule with a neat diagram and explain its functions. **5**

3. (a) Explain the process of B cell development, maturation and activation. **5**

(b) Describe the role of proteasome, TAP and MHC molecules in antigen presentation by endogenous pathway. **10**

4. Discuss the classical pathway of complement system and its activation mechanism involving the formation of MAC. **15**

5. (a) What is Transplantation Immunology ? Discuss the process of allograft graft acceptance and rejection. **5**

(b) Explain host immune response against bacterial infections with reference to Tuberculosis. **10**

6. (a) Discuss the techniques of antigen-antibody interaction RIA and ELISA with applications. **10**

(b) Explain the principle and significance of HAT selection in hybridoma technology. **5**