

[This question paper contains 4 printed pages.]

**Sr. No. of Question Paper : 6533**

**D**

**Your Roll No.....**

Unique Paper Code : 253503

Name of the Course : **B.Sc. (H) MICROBIOLOGY, PART-III**

Name of the Paper : Immunology (MIHT-509)

Semester : V

Duration : 3 Hours

Maximum Marks : 75

**Instructions for Candidates**

1. Write your Roll No. on the top immediately on receipt of this question paper.
2. Attempt **any five** questions.
3. **All** questions carry equal marks.

1. (a) What is Complete Freund's Adjuvant ? Describe its composition. How does it enhance the immune response ? (1+1+3=5)

(b) Explain digestion of an antibody molecule by the enzyme pepsin. Name the scientist associated with it. (3+1= 4)

(c) Give functions of the following (**any three**) :

(i) Neutrophil

(ii) CD28

(iii) C 5a

(iv) M cell

(2×3=6)

2. (a) What are primary lymphoid organs ? Draw a well labeled cross-sectional diagram of GALT. (2+4=6)

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- (b) What is Type I hypersensitivity ? Name different components involved in it. (1+2=3)
- (c) Write characteristic features of the following :-
- (i) DiGeorge syndrome.
  - (ii) Goodpasture's syndrome (2×2=4)
- (d) What is ADCC ? (2)
3. (a) Differentiate between following (any four) :-
- (i) Class I and Class II MHC molecules
  - (ii) B cell and T cell activation
  - (iii) T-dependent and T-independent antigens
  - (iv) APC & altered self cell
  - (v) ELISA and Immunofluorescence
  - (vi) Innate and adaptive immunity (3×4=12)
- (b) Elaborate GM-CSF, LPS, PAMPs, M-CSF, sIg, CML. (½×6=3)
4. (a) Describe the mechanism of processing and presentation of an exogenous antigen. (5)
- (b) Define the following (any five) :-
- (i) Isotype
  - (ii) Tolerance
  - (iii) SCID mice

- (iv) Opsonization
  - (v) Humanized antibodies
  - (vi) Negative selection of thymocyte (2×5=10)
5. (a) Explain the complement system. Describe membrane attack complex (MAC) formation by classical pathway of complement activation. (1+6=7)
- (b) Describe the contribution(s) of following scientists (any two) :-
- (i) Susumu Tonegawa
  - (ii) Elie Metchnikoff
  - (iii) M. Burnet (2.5×2=5)
- (c) Explain the principle of mixed lymphocyte reaction (MLR). (3)
6. (a) Explain the structure of TCR-CD3 complex. (4)
- (b) Describe in detail the destruction of target cells by CTLs. (6)
- (c) Give one word for each :-
- (i) Antibody crossing the placenta
  - (ii) Macrophages found in kidney
  - (iii) Antibody-binding sites on antigens
  - (iv) Light chains secreted in urine of myeloma patients
  - (v) Site of proliferation of B lymphocytes in the secondary follicle (1×5=5)

7. (a) What are dendritic cells ? Write their types and functions. (1+4=5)
- (b) Describe any two reasons for generation of autoimmunity. (1.5×2=3)
- (c) Explain the production of monoclonal antibody. (3)
- (d) Diagrammatically explain all the steps of inflammation. (4)