

Roll No: _____

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M.Sc. Biochemistry Semester II Examination, May 2024

Paper Title: Immunology
Paper Code: MBC 204

Time: 2½ h

Max Marks: 60

Note: This paper has 3 Sections, A, B, and C. Attempt all three sections. Section A: Answer all the questions; Section B: Answer any two; Section C: Answer all the questions, each question in this section has an internal choice.

Abbreviations Used: CLO- Course Learning Outcome, PLO- Program Learning Outcome, BTL- Bloom Taxonomy Level: BT level 1- Remember; BT level 2-Understand; BT level 3-Apply; BT level 4-Analyse; BT level 5-Evaluate, BT level 6-Create.

SECTION A: Attempt all questions.

(1x12=12 Marks)

Q No. 1 (a)	Questions (Fill in the blanks/True and False/short answers)	BTL	CLO	PLO
i.	In the lymph nodes, the memory cells are generated in a. Primary follicles b. Germinal center c. Paracortex d. Sinusoids	1	2	3
ii.	Opsonin is a a. Granulocyte b. Chemokine c. Lysosomal enzyme d. Substance that enhances phagocytosis	2	2	3
iii.	An epitope is about the size of a. One amino acid b. Three amino acids c. Five amino acids d. Ten amino acids	1	4	2
iv.	Molecules in the immunoglobulin superfamily share a. Antigen binding sites b. Domains c. Variable regions d. Tyrosine residues	3	1	3
v.	The antigen combining site of an antibody molecule determines it a. Isotype b. Allotype c. Idiotype d. Anti-idiotypic	5	3	2

vi.	Which of the following is a quantitative precipitation technique? a. Gel diffusion b. Western Blotting c. Radial immunodiffusion d. Immunoelectrophoresis	1	5	3
vii.	Class II MHC molecules contain a. One γ and one δ chain b. One α and one β chain c. Two light and two heavy chains d. one γ chain	3	3	3
viii.	For serological tests, complement is derived from. a. Horses b. Guinea pigs c. Cattle d. Rabbits	4	4	3
ix.	On degranulation, mast cells release which of the following. a. Interleukin 4 b. Interleukin 1 c. Anaphylatoxins d. Immunoglobulin E	2	2	3
x.	Some autoimmune diseases may result from cross reactions between organisms and tissues. This phenomenon is called a. Molecular mimicry b. Antigenic variation c. Tissue sensitization d. Clonal anergy	3	1	3
xi.	Antibodies can protect against viral diseases through a. Release of antibodies from B cells b. Blocking viral adsorption to cells c. T-cell derived viricidal proteins d. Viricidal activity of histamine	2	3	2
xii.	Carcinoembryonic antigen is characteristically secreted a. Kidney tumor b. Lung tumors c. Bone tumor d. Gastrointestinal tract tumor	1	1	3

SECTION B: LONG ANSWER QUESTIONS

Attempt any TWO out of four questions

(2x12=24 Marks)

Q No. 2	Questions	BTL	CLO	PLO
(a)	What are the characteristics and functions of cytokines? Highlight the different families of cytokines with examples.	1	3	3
(b)	Discuss immunosuppressive measures that are taken to avoid rejection of transplants.	4	2	3
(c)	Describe the various ways by which antibody diversity is generated.	3	4	2
(d)	Discuss the structure of antibody molecule, with special reference to their antigenic determinants and CDRs.	2	1	3

SECTION C: SHORT ANSWER QUESTIONS

Attempt ALL questions, each question has an internal choice

(6x4=24 Marks)

Q. No 3	Questions	BTL	CLO	PLO
(a)	Describe the allergen and the effector mechanisms in different types of hypersensitivity. OR What are monoclonal antibodies? How are they produced?	5	1	2
(b)	How does haematopoiesis occur? OR What is lymphocyte traffic? Describe the cell adhesion molecule families that participate in it.	1	4	3
(c)	What are the requirements of immunogenicity? OR Describe the structure and functions of macrophages.	2	3	2
(d)	Discuss how fluorescence is used in immune assays. OR Describe the principle and procedure of radioimmunoassay and ELISPOT.	4	1	3
(e)	What are histocompatibility antigens? How do they participate in an immune response? OR Describe the different complement pathways.	2	2	2
(f)	Discuss the structure and functions of lymph nodes. OR Discuss the various kinds of T cells.	3	4	2

END OF THE QUESTION PAPER