JAYPEE UNIVERSITY OF INFORMATION TECHNOLOGY, WAKNAGHAT

TEST -3 EXAMINATION- 2025

B.Tech-V Semester (BT)

Course Code(Credits): 18B11BT513 (4)　　　　　　　　Max. Marks: 35

Course Name: Immunology

Course Instructors:Dr. Abhishek Chaudhary　　　　　　Max. Time: 2 Hour

Note: All questions are compulsory. Marks are indicated against each question in square brackets.

Q.No	Question	CO	Marks
Q1	a. Draw a schematic diagram of a typical IgG molecule and label each of the following parts: H chains, L chains, interchain disulfide bonds, intrachain disulfide bonds, hinge, Fab, Fc, and all the domains. Indicate which domainsare involved in antigen binding. b. How would you have to modify the diagram of IgG to depict an IgA molecule isolated from saliva? c. How would you have to modify the diagram of IgG to depict serum IgM?	CO-2	4+2+2
Q2	Hypersensitivity is an immune response characterized by mechanisms that cause significant tissue damage or physiological dysfunction, In 1963, Philip George Houthem Gell and Robin Coombs introduced a systematic classification of the different types of hypersensitivity based on the types of antigens and immune responses involved. Based on the Philip classification explain 　　a. IgE-Mediated Hypersensitivity 　　b. IgG-Mediated Cytotoxic Hypersensitivity 　　c. Cell-Mediated Hypersensitivity 　　d. Immune Complex-Mediated Hypersensitivity	CO-5	2+2 2+2
Q3	a. Molecular mimicry is one mechanism proposed to account for the development of autoimmunity. Explain with suitable example b. Some Autoimmune Diseases Are Mediated by Stimulating or Blocking Auto-Antibodies. Justify the statement using Grave Disease and Myasthenia gravis as an example c. What do you mean by immunodeficiency? Elaborate the primary and secondary immunodeficiency and the causes of primary and secondary immunodeficiencies.	CO-4	2+4+3

Q4			3+2
	a. Considering only combinatorial joining of gene segments and association of light and heavy chains, how many different antibody molecules potentially could be generated from germ-line DNA containing 500 VL and 4 JL gene segments and 300 VH, 15 DH, and 4 JH gene segments?	CO-3	
	b. Explain why a VH segment cannot join directly with a JH segment in heavy-chain gene rearrangement		
Q5	a. Innate and adaptive immunity act in cooperative and interdependent ways to protect the host. Discuss the collaboration of these two forms of immunity.	CO-1	2+3
	b. List the primary and secondary lymphoid organs and summarize their functions in the immune response		