JAYPEE UNIVERSITY OF INFORMATION TECHNOLOGY, WAKNAGHAT

TEST -3 EXAMINATION- 2024

B.Tech-V Semester (BT)

COURSE CODE (CREDITS): 18B11BT513 (4) MAX. MARKS: 35

COURSE NAME: Immunology

COURSE INSTRUCTORS: Dr. Abhishek MAX. TIME: 2 Hour

Note: *(a) All questions are compulsory.*

(b) The candidate is allowed to make Suitable numeric assumptions wherever required for solving problems

Q.No	Question	CO	Marks
Q1	Several forms of hypersensitive reaction can be distinguished, reflecting differences in the effector molecules generated in the course of the reaction. The treatment of hypersensitive reactions depends on the type of reaction, its cause and how the body responds. Some people may require immediate emergency medical treatment, while other may require other medications for mild symptoms. To understand the fundamental mechanism of hypersensitive reaction a. Signify the role of reaginic antibody in type I hypersensitive reaction b. Illustrate the mechanism of DTH using Contact Dermatitis as an example c. Detail out the concept of Type II hypersensitive reaction and explain how type II hypersensitive reaction induce **erythroblastosis fetalis** and **Drug-Induced Hemolytic Anemia** d. Do you think, Complement system is an important component for the generation of hypersensitive reaction, if yes then explain how?	CO-5	9 [1+2+4+2]
Q2	A healthy immune system defends the body against disease and infection. But if the immune system malfunctions, it mistakenly attacks healthy cells, tissues, and organs. Called autoimmune disease, these attacks can affect any part of the body, weakening bodily function and even turning life-threatening. a. What do you understand by systemic autoimmune disease b. Illustrate the mechanism of Organ specific autoimmune disease using **Grave disease and Myasthenia gravis** as examples. c. "Rheumatic fever is a classic example of molecular mimicry" justify the statement	CO-4	6 [1+4+1]
Q3	According to WHO,Vaccination is a simple, safe, and effective way of protecting people against harmful diseases, before they come into contact with them then a. Why the Sabin vaccine is no longer recommended for use in the United States? b. What are the advantages of the Sabin polio vaccine compared with the Salk vaccine? c. Explain the phenomenon of herd immunity. How does this phenomenon relate to the appearance of certain epidemics?	CO-5	6 [2+2+2]

Q4	Three biochemical pathways activate the complement system: the classical, alternative, and the lectin complement pathway. a. How do the three pathways differ in the substances that can initiate activation? b. Which portion of the overall activation sequence differs in the three pathways? Which portion is similar? c. How do the biological consequences of complement activation via these pathways differ?	CO-3	6 [2+2+2]
Q5	An antigen is any substance that causes your immune system to produce antibodies against it. For each pair of antigens listed below, indicate which is likely to be more immunogenic. Explain your answer. a. Serum albumin in native conformation Heat-denatured serum albumin b. Protein with amino acid sequence of (Asp-Trp-Gly-Lys-His-Met-Val)n Protein with amino acid sequence of (Val-Val-Val-Val-Val-Val-Val)n c. A serum protein with a molecular weight of 68000 Da A protein insulin with a molecular weight of 5800 Da d. A protein with Freund's complete adjuvant A protein with Freund's incomplete adjuvant	CO-2	6 [1.5x4]
Q 6	How might a insect, such as a Honeybee, beetle, or Housefly protect itself from infection? In what ways might the innate immune responses of an insect be similar to those of a plant and how might they differ?	CO-1	2