JAYPEE UNIVERSITY OF INFORMATION TECHNOLOGY, WAKNAGHAT

TEST -2 EXAMINATION- 2024

B.Tech-V Semester (BT)

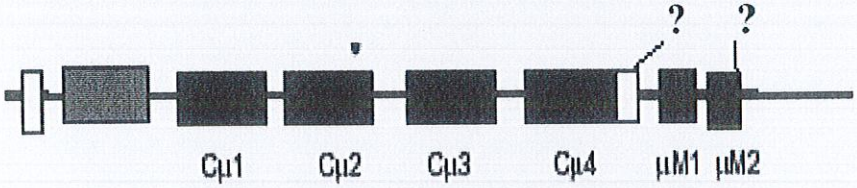
COURSE CODE (CREDITS): 18B11BT513 (4) MAX. MARKS: 25

COURSE NAME: Immunology

COURSE INSTRUCTORS: Dr. Abhishek MAX. TIME: 1 Hour 30 Minutes

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	A mouse denoted strain B (H-2b) is irradiated (which destroys bone marrow cells and bone marrow derived cells) and transplanted with bone marrow from Strain A mice (H2k). These mice are noticed to be very vulnerable to infectious illnesses of all kinds and a few of them die before they can be transferred to a germ-free environment. Why do these mice get sick so easily?	CO-2	5
Q2	This is a schematic view of a rearranged μ chain.  a. What is coded by the unfilled box at **the left?** [1] b. What does the second box from the left in light gray code for? [1] c. What regions are at the locations of the two question marks? [1] d. In which box will the first amino acid of the mature protein be located? [1] e. What function is mediated by the protein sequences in the unfilled box on the left? [1] f. Describe how these sequences are critical and what they might bind to in the cell [1] g. Which portions of the above protein are associated with light chains? [1]	CO-3	7
Q3	Please provide a diagram of deletional VDJ signal and coding joint formation (include a diagram of the important parts of the locus before VDJ recombination, the two intermediates, and the end products. Please indicate any regions which are altered in the process). Also provide the mechanism of P-region nucleotide addition N-region nucleotide addition	CO-3	5

Q4	Monoclonal antibodies (mAbs) are universal highly specific binding proteins that were envisioned for a long time as "magic bullets" in the fight against diseases, and also important tools for other biological uses, including diagnosis and research. These applications were only possible with the advent of methodologies that allow the isolation of individual antibodies. The hybridoma technology was the pioneer on that. Illustrate the production and mechanism of Monoclonal antibodies (mAbs) and its advantages compared with other methods that further come out.	CO-2	5
Q5	Antibodies are proteins that protect you when an unwanted substance enters your body. Produced by your immune system, antibodies bind to these unwanted substances in order to eliminate them from your system. Draw the structure of antibody and the effect of pepsin and papain on the activity of antibody	CO-2	3