

JAYPEE UNIVERSITY OF INFORMATION TECHNOLOGY, WAKNAGHAT

TEST -2 EXAMINATIONS- 2024

MSc II Semester (Microbiology)

COURSE CODE (CREDITS): 18MS1BT211 (3-0-0)

MAX. MARKS: 25

COURSE NAME: Immunology and Immunotechnology

COURSE INSTRUCTORS: Dr. Tyson

MAX. TIME: 1 Hour 30 Minutes

Note: (a) All questions are compulsory.

(b) Marks are indicated against each question in square brackets.

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

1. Explain the terms antigenicity and immunogenicity and write the different factors influencing immunogenicity. 2 Marks (Co-1)

2. Given a scenario where a patient presents with history of ulnar deviation deformities, Button hole deformity and pain in inter-phalangeal joints. 2 Marks (Co-2)
 - a) Diagnose the autoimmune condition.
 - b) Write the different auto-antibodies formed in disease.

3. Explain the difference between primary and secondary lymphoid organs and provide examples of each type. Also draw a well labeled diagram of lymphoid organ. 3 Marks (Co-1)

4. Describe the process of V(D)J recombination in B cell development. What role does this mechanism play in generating antibody diversity, and what are the key enzymes involved in this process? 3 Marks (Co-1)

5. Describe the different mechanism of central tolerance for the establishment for T cells in maintaining immune homeostasis and preventing autoimmune reactions. 3 Marks (Co-1)

6. Write in details about the activation of T-cells. Describe the signaling pathways and transcription factors involved in the differentiation of naive T cells into Th1, Th2, Th17, and Treg cells. **4 Marks (Co-1)**
7. Discuss the transition of immature B cells from the bone marrow to the spleen, detailing the changes in surface markers and the environmental signals required for their maturation . **4 Marks (Co-1)**
8. Explain in detail the pathophysiological mechanisms underlying Type III hypersensitivity reactions. How does the formation of immune complexes between antigens and antibodies lead to tissue damage and illustrate your explanation with examples of diseases characterized by Type III hypersensitivity. **4 Marks (Co-2)**