

JAYPEE UNIVERSITY OF INFORMATION TECHNOLOGY, WAKNAGHAT

TEST -2 EXAMINATIONS- 2026

M.tech / M.Sc-II Semester (BT/Micro)

COURSE CODE (CREDITS): 14M11BT212/18MS1BT211-(3-0-0)

MAX MARKS: 25

COURSE NAME: Immunotechnology/Immunology and Immunotechnology

COURSE INSTRUCTOR: Dr. Tyson

MAX. TIME: 1 Hour 30 Min

Note: (a) All questions are compulsory.

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

(c) Use of calculator is not allowed

Q.No	Question	Marks
Q1	A neonate shows increased vulnerability to infections which decreases with age. Provide a immunological explanation for this phenomenon.	3
Q2	How does removal of the thymus during early life affect cell-mediated and humoral immunity? Briefly explain the immunological basis of these effects.	3
Q3	Describe the immunological pathway involved in the host response to a fungal infection.	3
Q4	B cell activation and antibody diversification are central processes in adaptive immunity. i) Describe the mechanism of B cell activation. ii) Explain the process of somatic hypermutation (SHM) and its significance in affinity maturation.	3+2
Q5	During an antigen-antibody interaction, visible precipitation does not occur uniformly at all antigen or antibody concentrations. Explain this observation with reference to the precipitation curve and its underlying immunological principles.	3
Q6	Antibodies exhibit structural and genetic variations that influence their antigenic properties. Classify antibodies based on isotype, allotype, and idiotype, and briefly explain the significance of each.	3
Q7	Immunoassays are widely used for the detection and quantification of antigens and antibodies in biological samples. i) Explain the immunological principle underlying competitive ELISA and RIA. ii) Analyze how this competitive binding affects the interpretation of results and assay sensitivity.	3+2