JAYPEE UNIVERSITY OF INFORMATION TECHNOLOGY, WAKNAGHAT

TEST -1 EXAMINATION - 2025

B.Tech - VIII Semester (BT)

COURSE CODE (CREDITS): 18B1WBT833 (3) MAX. MARKS: 15

COURSE NAME: DIAGNOSTICS AND VACCINE MANUFACTURE

COURSE INSTRUCTORS: Dr. Rahul Shrivastava MAX. TIME: 1 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	**Case Study:** Serum samples were collected from four individuals to check for the generation of antibody due to vaccination by Bacillus Calmette-Guérin (BCG) vaccine, used against *Mycobacterium tuberculosis* infection. Purified BCG antigen is also available with you. Design a Rocket Immuno-electrophoresis Assay based experiment to **identify** and also **quantify** the amount of antigen present in the samples provided. Provide details of the protocol, suitable diagrams and standard curve you would utilize.	II	**5**
Q2	Analyze the following pair of antibody and antigen types, and comment with reason on their utility for diagnostics, using precipitation based interaction. Draw Precipitin curve that would be obtained in each case. i. Monoclonal antibodies and monovalent antigens ii. Monoclonal antibodies and polyvalent antigens iii. Polyclonal antibodies and monovalent antigens iv. Polyclonal antibodies and polyvalent antigens	II	**[1 X 4 = 4]**
Q3	Differentiate between the following, draw diagrams/graphs if required. **(ANY TWO)** a. Direct and Indirect Diagnostics b. Primary and Secondary Immune response c. Reaction of Identity and Non-Identity in a Double Diffusion Method	II	**[1.5 X 2 = 3]**
Q4	Write Note on Crossed Immunoelectrophoresis (two-dimensional immunoelectrophoresis) and its application in diagnostics with suitable diagram.	II	**3**