

JAYPEE UNIVERSITY OF INFORMATION TECHNOLOGY, WAKNAGHAT

TEST -2 EXAMINATION - MAY- 2023

COURSE CODE (CREDITS): 18MS1BT211 (3) / 14M11BT212 (3) MAX. MARKS: 25

COURSE NAME: IMMUNOLOGY & IMMUNOTECHNOLOGY / IMMUNOTECHNOLOGY

COURSE INSTRUCTORS: Dr. Rahul Shrivastava

MAX. TIME: 1 Hour 30 Minutes

*Note: All questions are compulsory. Marks are indicated against each question in square brackets.*

Q1. Write Notes on the following with suitable diagrams wherever required: [4 X 2 = 8]

- i. Phagocytosis
- ii. Types and detailed structure of Antibodies

Q2. Provide suitable justification / explanation for the following statements: [1.5 X 5 = 7.5]

- a. If 3-D structure of an antigenic protein is lost after its treatment with a detergent, would its epitopes still be recognized by immune system cells?
- b. The fate an antibody if 5' Leader sequence is not transcribed with the variable gene transcript.
- c. Significance of constant region heavy chain gene sequence/arrangement in the germ-line DNA.
- d. Intramuscular or subcutaneous administration of protein vaccines is considered better than their oral administration.
- e. Immunoglobulins are Bifunctional Proteins.

Q3. Describe with diagrams the maturation and development of a progenitor B cell into plasma cell, showing sequence of events that contribute to the expression of an antibody. [5]

Q4. **Case study:** Nayan was infected with Covid-19, and was admitted and treated in a hospital. He recovered from the infection, but was not given any vaccine for Covid-19. Virat received two doses of the Covid-19 vaccine. On serum analysis both showed similar levels of antibodies for the Covid-19 infection. Analyzing both cases, discuss the type of immunity and duration of immunity acquired by the two people. Provide an immunological analysis of both scenarios. What would be the difference in type of immune response shown by immune system of Nayan and Virat if they encounter a new infection now? [4.5]