

JAYPEE UNIVERSITY OF INFORMATION TECHNOLOGY, WAKNAGHAT

TEST -3 EXAMINATION- JUNE 2023

M.Sc. / M.Tech. – Semester II

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

MAX. MARKS: 35

COURSE NAME: IMMUNOLOGY & IMMUNOTECHNOLOGY / IMMUNOTECHNOLOGY

COURSE INSTRUCTORS: Dr. Rahul Shrivastava

MAX. TIME: 2 Hours

Note: (a) All questions are compulsory.

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

Q1. Case study: Mrs. Nikita Verma is suffering from breast cancer, and has been advised for antibody therapy for effective cure of the cancer. What are the different generations of antibodies which may be used for her treatment? Compare the advantages and limitations of the different generations available. Draw diagrams if required. [7]

Q2. In context with monoclonal antibody production using hybridoma technology, answer the following: [3+2+2=7]

- Design a flowchart for method used for production of monoclonal antibodies, draw diagrams if required.
- Necessity of using HGPRT⁻(negative) cancer cells for the protocol.
- Significance of use of HAT medium for propagation of cells after fusion Myeloma and Lymphoma cells.

Q3. With reference to production of Chimeric Antibodies, provide suitable reasons for the following **CORRECT** statements: [1 X 7 = 7]

- IgG constant regions is preferred as framework for chimeric antibodies.
- Chimeric antibodies are preferably administered through intra-venous route.
- Chimeric antibodies formed by cDNA cloning method are difficult to engineer or form fusion products.

- d. A strong heterologous promoter is preferred in place of tissue specific Ig promoter for production of Chimeric Antibodies.
- e. Bacteria like *E. coli* are NOT preferred as host for production of chimeric antibodies.
- f. Chinese hamster ovary (CHO) and HeLa cells are most proffered as host cells for expression.
- g. Production of Chimeric antibodies provides a suitable platform for production of humanized antibodies.

Q4. Describe the following in detail with comparison of their types and significance to human body immunity: (ANY TWO)

- a. Autoimmunity [6]
- b. Hypersensitivity [6]
- c. Major Histocompatibility Complex [6]

Q5. What are edible vaccines? State advantages and limitations of edible vaccines. [2]