

# B.M.S. College of Engineering, Bengaluru-560019

Autonomous Institute Affiliated to VTU

## February / March 2023 Semester End Main Examinations

**Programme: B.E.**

**Branch: Biotechnology**

**Course Code: 19BT5DE1IMM**

**Course: Immunotechnology**

**Semester: V**

**Duration: 3 hrs.**

**Max Marks: 100**

**Date: 03.03.2023**

**Instructions:** 1. Answer any FIVE full questions, choosing one full question from each unit.  
2. Missing data, if any, may be suitably assumed.

### UNIT - I

- 1 a) List various types of immune organs and write on any two briefly **06**
- b) Compare and contrast cell mediated and humoral immunity **06**
- c) Classify various types of Adaptive immune system with examples and important cells and molecules **08**

### UNIT - II

- 2 a) Draw the developmental stages of B-Cell and explain detail. **10**
- b) Outline the mechanism of action of T-helper and T-cytotoxic cells interaction with target cells. **05**
- c) Illustrate the pathway of Antigen processing with respect to extracellular pathogen and explain briefly. **05**

### OR

- 3 a) Immune system in theory can defend different types of pathogens by antibody diversity. Justify this statement with respect to antibody diversity by explaining process behind it with neat illustrations. **10**
- b) Classify various types of antibodies and briefly explain their function. Draw the structure of a typical antibody with neat labelling. **10**

### UNIT - III

- 4 a) Immune defense is not complete without the action of series of free floating, inactive proteins. Identify the system that is final a pathway of immune defense. Explain in detail components and mode of action. **10**
- b) Classify various types of immune deficiencies and provide reasons for each type and explain any two examples from each type. **10**

### OR

- 5 a) Immune system is double edged sword. Justify this when immune system goes hyperactive. write on four briefly **10**
- b) Classify various types of transplantations. What are the factors to be considered for organ transplantation? **10**

**Important Note:** Completing your answers, compulsorily draw diagonal cross lines on the remaining blank pages. Revealing of identification, appeal to evaluator will be treated as malpractice.

#### UNIT - IV

- |   |    |   |           |
|---|----|---|-----------|
| 6 | a) | Differentiate between poly clonal and monoclonal antibodies(any five)   | <b>05</b> |
|   | b) | Develop a strategy for the production of antibodies for a specific epitope with neat illustrations and explanation. | <b>10</b> |
|   | c) | What are subunit vaccines? Give examples (any one). Write advantages and disadvantages                              | <b>05</b> |

#### UNIT - V

- |   |    |  |           |
|---|----|--|-----------|
| 7 | a) | Identify a method that use radioactivity but is highly sensitive. With a neat schematic diagram outline principle and method. What are the advantages and disadvantages of this method? (any two each) | <b>10</b> |
|   | b) | This method is based on gel and most widely used for detection of proteins in many research labs. Identify the method, write principle and procedure briefly with neat illustrations.                  | <b>10</b> |

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B.M.S.C.E. - ODD SEM 2022-23