



**MASINDE MULIRO UNIVERSITY OF  
SCIENCE AND TECHNOLOGY  
(MMUST)**

MAIN CAMPUS

**UNIVERSITY EXAMINATIONS**

2021/2022 ACADEMIC YEAR

**SECOND YEAR SECOND SEMESTER EXAMINATIONS**

**FOR THE DEGREE**

**OF**

**BACHELOR OF SCIENCE IN MEDICAL LABORATORY SCIENCES**

**COURSE CODE: BML 226**

**COURSE TITLE: FUNDAMENTAL OF IMMUNOLOGY**

**DATE: 26/04/2022**

**TIME: 8.00 -10.00 AM**

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**INSTRUCTIONS TO CANDIDATES**

- Answer all questions in this paper

TIME: 2 Hours

**SECTION A: 20 MARKS**

1. Which one of the following diseases is considered completely eradicated world-wide?
  - A Measles
  - B Smallpox
  - C Tuberculosis
  - D Cowpox
2. Which of the following is **NOT** a function of antibody?
  - A. Opsonization
  - B. Neutralization
  - C. Phagocytosis
  - D. Complement activation
3. The cells that are involved in antibody production are
  - A. Plasma cells
  - B. B cells
  - C. Neutrophil polymorphonuclear leukocytes
  - D. Basophils
4. The heavy chain to be assembled second during antibody responses are
  - A. IgD
  - B. Macrophages
  - C. IgE
  - D. IgM
5. Three of the statements below are true about the human immune system. Which one is not?
  - A. It can be affected by chemical compounds
  - B. It can train self to react to new threats
  - C. It can protect itself
  - D. It has no errors
6. Below are possible causes of autoimmunity. Which one is not
  - A. It can be due to sequestered antigens release
  - B. It can be due to malnutrition
  - C. It can be due to release of self-reactive clones of lymphocytes
  - D. It could be due to aberrant expression of genes
7. Innate immune responses depends mainly on:
  - A. Granulocytes and Macrophages
  - B. B lymphocytes
  - C. T lymphocytes
  - D. Antibodies
8. Which of the following is the first layer of immune defenses
  - A. Induced innate defenses
  - B. Adaptive immunity
  - C. Immediate innate defenses
  - D. Humoral immunity

9. The heavy chain to be assembled first during antibody responses are
  - A. IgD
  - B. Macrophages
  - C. IgE
  - D. IgM
10. The circulation of a two month old breast-fed baby will contain maternal:
  - A IgA
  - B IgD
  - C IgE
  - D IgG
11. Specific immune response such as antibody production is known as
  - A. Innate immune responses
  - B. Complement immune responses
  - C. Adaptive immune responses
  - D. Cell mediated immune responses
12. The C3 convertase of the classical pathway is:
  - A. C3bBb
  - B. C4bC2b
  - C. C4b3b
  - D. C4bC3bC2b
13. Which of the following statements best describes the major role of NK cells in immunity?
  - A. T cell activation
  - B. Antigen processing and presentation
  - C. Immunosurveillance of cancerous cells and viruses
  - D. Natural protection against microbes
14. The innate cells that have high affinity for IgE are:
  - A. Monocytes
  - B. Mast cells
  - C. Neutrophils
  - D. Eosinophils
15. The mononuclear phagocyte system does not include:
  - A. Monocyte
  - B. Kupffer cells
  - C. Kidney mesangial cells
  - D. Endothelial cells
16. The first cells to arrive at the site of inflammation during inflammatory responses are:
  - A. Plasma cells
  - B. Neutrophils
  - C. Basophils
  - D. Macrophages
17. The spleen is known to trap pathogens in:
  - A. Blood
  - B. Lymph

- C. Epithelial tissues
- D. Respiratory organs

18. The cells that present antigens to Naïve T cells are:

- A. Cytotoxic T cells
- B. Dendritic cells
- C. Mast cells
- D. Neutrophils

19. HIV binds to:

- A. TNF receptors
- B. NF Kappa
- C. CD4
- D. Reverse transcriptase

20. Which of the following is the earliest site of hematopoiesis in the embryo:

- A Bone marrow
- B. Liver
- C Spleen
- D Yolk sac

#### SECTION B: 40 MARKS

1. Define the following terms: a) antigen b) antibody [5 Marks]
2. Describe the occurrence and functions of immunoglobulin A [5 Marks]
3. Outline the characteristics of dendritic cells [5 Marks]
4. Distinguish between primary and secondary lymphoid organs [5 Marks]
5. Explain the pros and cons of attenuated vaccines [5 Marks]
6. Explain the concept of layered immune system in humans [5 Marks]
7. Distinguish between exotoxins and endotoxins [5 Marks]
8. Explain the protective functions of mucus in mucosal epithelia [5 Marks]

#### SECTION C

Answer all questions

1. Describe the structure and function of the thymus [20 Marks]
2. Elucidate the functions of antimicrobial peptides produced by epithelial cells [20 Marks]
3. Explain the biological functions of the complement system [20 Marks]