



KISII UNIVERSITY
UNIVERSITY EXAMINATIONS

SPECIAL/SUPPLEMENTARY EXAMINATIONS
FIRST YEAR EXAMINATION FOR THE AWARD OF THE DEGREE OF
BACHELOR OF SCIENCE IN MEDICAL LABORATORY SCIENCES
FIRST SEMESTER, 2024/2025
(AUGUST, 2025)

MELS 143: IMMUNOLOGY

STREAM: Y1 S1

TIME: 2 HOURS

DAY: MONDAY, 1200-2:00 PM

DATE: 11/08/2025

INSTRUCTIONS

- 1. Do not write anything on this question paper.***
- 2. This paper consists of three sections, A, B and C***

SECTION A; Answer ALL the MCQs in this section. (20 marks)

- Which of these cells belongs to acquired immunity?
 - Neutrophils
 - Mast cells
 - B lymphocytes
 - Eosinophils
 - Basophils
- Humoral immunity is a type of adaptive immunity that results in the circulation of which of the following throughout the blood?
 - Antigens
 - Macrophages
 - Natural killer cells
 - Antibodies
 - Allergens
- Which of the following protects our body against disease-causing pathogens?
 - Respiratory system
 - Immune system
 - Digestive system
 - Nervous system
 - Reproductive system

4. All of the following are true with respect to IgM antibodies EXCEPT which one
- They fix complement
 - They occur on the surface of lymphocytes
 - They predominate in the primary response to antigen
 - They are glycoproteins
 - They mediate allergic reaction
5. One principal function of complement is to
- Inactivate perforins
 - Mediate the release of histamine
 - Bind antibodies attached to cell surfaces and to lyse these cells
 - Phagocytize antigens
 - Cross link allergens
6. Edward Jenner vaccinated against smallpox using:
- Killed smallpox virus
 - Recombinant protein derived from smallpox
 - Toxoid
 - Cowpox
 - cholera
7. Which one of the following statements is true about platelets?
- Important in antigen presentation
 - Important in cellular immunity
 - Important in humoral immunity
 - Important in walling off pathogens
 - Important in fixing complement
6. The major role of the complement system is to work in conjunction with
- Antibodies to lyse cells via the C8 and C9 components
 - The major histocompatibility complex for cell recognition
 - Antibodies to opsonize cells
 - The T-cell receptor for production of lymphokines
 - Antibodies to lyse cells via the perforin molecules
8. Artificially acquired passive immunity refers to immunity from,
- Recognition of an antigen by B cells
 - Injection of antigen in a vaccination
 - IV injection of immunoglobulins
 - Recognition of an antigen by T cells
 - Antibodies production by nursing mothers
9. Which of the following cell types of the innate system does not perform phagocytosis?
- Neutrophils
 - Basophils

- c) Macrophages
 - d) Eosinophils
 - e) Dendritic cells
10. The presence of IgM indicates
- a) Activated B cells
 - b) A recent exposure has taken place
 - c) An allergic reaction is present
 - d) A reaction between mother and fetus across the placenta
 - e) A viral infection that has lasted many months
11. What is the normal immunological role of the CD8+ve T-cell?
- a) Helps B-lymphocytes to develop into plasma cells.
 - b) Kills virus infected cells.
 - c) Secretes antibodies.
 - d) Rejects transplanted tissue.
 - e) Fixes complement
12. B and T cells are produced by stem cells that are formed in:
- a) Bone marrow
 - b) The liver
 - c) The spleen
 - d) The lymph nodes
 - e) Thymus
13. Which of the conserved patterns is unique to viruses detected by pattern recognition receptors (PRRs)
- a) Peptidoglycans
 - b) Lipoteichoic acids
 - c) Lipopolysaccharides
 - d) Nucleic acids
 - e) Flagella
14. **Monocytes differentiate into which kind of phagocytic cells?**
- a) Neutrophil
 - b) B cell
 - c) Macrophage
 - d) T cell
 - e) Basophils
15. T-cell antigen receptors are distinguished from antibodies by which of the following
- a) T-Cell receptors are glycosylated
 - b) T-cell receptors will not interact with free antigen
 - c) T-Cell receptors bind various cytokines
 - d) T-Cell receptors bind complement to lyse cells
 - e) T-cell receptors are mediators of allergic reactions

16. All of the following are true of antigen EXCEPT which one of the following?
- They contain epitopes.
 - They will react with antibodies.
 - They contain antigenic determinants.
 - They can elicit an immune response.
 - They contain paratopes.
17. Which of the following cell types or systems is **not** part of an innate immune response to a pathogen?
- Phagocytes
 - Natural killer cells.
 - The inflammatory response.
 - Cytotoxic T-lymphocytes
 - Beneficial fever
18. Immunological unresponsiveness to self-antigens is called:
- Tolerance
 - Tolerogen
 - Memory
 - Acquired immunity
 - Mimicry
19. Individuals unable to make the J protein found in certain immunoglobulins would be expected to have frequent infections of the
- Brain.
 - Blood.
 - Liver.
 - Pancreas.
 - Intestinal tract
20. Killer T-cells effect their killing by:
- Antibodies with specific recognition capabilities
 - Inserting the complement components C9, into the target cell membrane
 - The T- cell antigen receptor and Class MHC proteins
 - Inserting a pore forming protein called perforin into the target cell membrane'
 - Releasing complement proteins targeting their cell components

SECTION B (Answer all the Structured questions in this section 20 marks)

1. Differentiate between innate and acquired immunity (5marks)
2. List five types of grafts used in tissues and organs transplantation (5marks)
3. Describe how natural killer identifies and kill viruses (5 marks)
4. List five functions of macrophages (5marks)

SECTION C: (Answer question **one compulsory and any other one from the two questions in this section. (Total 30 marks)**

1. Describe how phagocytosis leads to elimination of an exogenous pathogen (15 marks)
2. Explain the manifestation of cardinal signs of inflammation (15 marks)
3. Describe the complement system and its contribution to immune defense. (15 Marks)