



# MERU UNIVERSITY OF SCIENCE AND TECHNOLOGY

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## University Examinations 2023/2024

FIRST YEAR SECOND SEMESTER EXAMINATION FOR THE DEGREE OF BACHELOR  
OF COMMUNITY HEALTH DEVELOPMENT

### CCM 3126: IMMUNOLOGY

DATE: APRIL 2024

TIME: 3 HOURS

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#### INSTRUCTIONS:

Answer *All* questions

Ensure that all your answers are properly numbered

Part I multiple Choice Questions (MCQ): Write the correct answer on the space provided in the answer booklet. Each MCQ is one mark

Part II: Short Answer Questions – Answer questions following each other on the answer booklet

Part III: Long Answer Questions

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#### PART A: SHORT ANSWER QUESTIONS (40 MARKS)

1. Giving examples of cells involved, differentiate between Humoral and cell mediated immunity (6 Marks)
2. The second line immune defense mechanism operates in a well programmed and specialized manner. Briefly discuss the statement (4 Marks)
3. In the event that auto selection in the thymus gland does not happen as it should, the human body suffers different autoimmune diseases. Describe three types of autoimmune diseases (6 Marks)
4. Differentiate between antigenicity and immunogenicity (6 Marks)

5. Describe an immune reaction following a bee sting (6 Marks)
6. Describe what happens during the naturally acquired passive immunity (6 Mark)
7. Describe how macrophages and polymormonuclea cells render protection to the human during phagocytosis (6 Marks)

**LONG ANSWER QUESTIONS (40 Marks)**

1. Describe procedure for Monoclonal antibodies production (10 Marks)
2. Discuss importance of immunization programs in disease prevention (10 Marks)
3. Describe how an inflammatory process works in normalizing the body physiology following accident (10 marks)
4. Describe roles prayed by different types of immunoglobulin molecules in body immune defense (10 Marks)

**PART THREE MCQ 20 MARKS (CHOOSE ONE BEST ANSWER)**

1. Pattern recognition receptors (PRR) include:
  - a. Lectin-like molecules
  - b. Lipoteichoic acid
  - c. LPS
  - d. PAMPs
  - e. Unmethylated CpG sequences
2. The mononuclear phagocyte system does not include:
  - a. Endothelial cells.
  - b. Kidney mesangial cells.
  - c. Kupffer cells.
  - d. Lymph node mcdullary macrophages.
  - e. Monocytes.
3. A polymorphonuclear neutrophil (PMN):
  - a. Is a bone marrow stem cell.

- b. Is closely similar to a mast cell.
  - c. contains microbicidal cytoplasmic granules
  - d. is not a professional phagocytic cell
  - e. Has granules that stain with eosin
4. Plasma cells are a specific type of immune cells that play major roles in Antibody-mediated immunity.

This plasma cell secretes:

- a. Antibody of a single specificity related to that on the surface of the parent B-cell
  - b. Antibody of two antigen specificities
  - c. The antigen it recognizes
  - d. Many different types of antibody
  - e. Lysozyme
5. Neutrophil defensins are:
- a. Anti-toxins.
  - b. Oxygen-dependent.
  - c. Enzymes.
  - d. Glycolipids.
  - e. Peptide antibiotics.
6. Lysozyme:
- a. Is a cytoplasmic organelle.
  - b. Activates complement.
  - c. Is a proteolytic enzyme.
  - d. Splits peptidoglycan.
  - e. Is released by mast cells.
7. Which of the following is not an acute phase protein:
- a. Chondroitin sulfate.
  - b. C-reactive protein.

- c. Fibrinogen.
  - d. Mannose-binding lectin.
  - e. Serum amyloid P component
8. Interferons:
- a. Are divided into 5 main families.
  - b. Are found only in mammalian species.
  - c. Are specific for individual viruses.
  - d. Induce enzyme synthesis in the target cell.
  - e. Only affects infected cells.
9. Natural killer (NK) cells do not:
- a. Contain perforin.
  - b. Contain serine proteases.
  - c. Contain tumor necrosis factor (TNF).
  - d. Kill only by damaging the target cell outer membrane.
  - e. Respond to interferon.
10. Polymorphonuclear neutrophils attack bacteria:
- a. By phagocytosis.
  - b. By secreting complement.
  - c. By secreting interferon.
  - d. Exclusively by oxygen-dependent mechanisms.
  - e. Exclusively by oxygen-independent mechanisms.
11. Acute inflammation can be initiated by:
- a. An increase in vascular permeability.
  - c. Influx of neutrophils.
  - d. Lysozyme.
  - e. Mast cell activation.
12. Clonal selection occurs when antigen is encountered by:

- a. Basophils
  - b. Eosinophils
  - c. Mast cells
  - d. Neutrophils
  - e. T-cells
13. Which of the following statements regarding plasma cells is correct?
- a. Are derived from T-cells
  - b. Develop into B-cells
  - c. Have a highly developed rough endoplasmic reticulum
  - d. Have a thin layer of cytoplasm
  - e. Secrete large amounts of gamma interferon
14. After contact with foreign antigens, body produces specific antibody. These specific are readily detectable in serum following primary contact with antigen after:
- a. 10 min
  - b. 1 h
  - c. 5—7 days
  - d. 3—5 weeks
  - e. Only following a second contact with antigen
15. Adoptive transfer of acquired immune responsiveness involves the transfer of:
- a. Antibody
  - b. Complement
  - c. Phagocytes
  - d. Lymphocytes
  - e. Serum
16. The ability of an organism to protect human bodies from infectious organisms and other materials is known as
- a. Infection

- b. Hypersensitivity
  - c. Immunity
  - d. Allergy
17. The activation process of B cells is by
- a. Complement
  - b. Antigen
  - c. Memory cells
  - d. Antibody
18. Fusion between a tumor cell and a plasma cell creates a
- a. Myeloma
  - b. Hybridoma
  - c. Lymphoplast
  - d. Lymphoma
  - e. Natural killer cell
19. \_\_\_\_\_ is recognized by a single Monoclonal antibody.
- a. Antigen
  - b. Bacterium
  - c. Virus
  - d. B cell
  - e. Epitope
20. Humoral immunity is mainly carried out by while cell-mediated immunity is carried out by
- a. T cells/B cells
  - b. Epitopes/Antigens
  - c. B cells/T cells
  - d. Antibodies/Antigens
  - e. Antibodies/Phagocytes