



# MACHAKOS UNIVERSITY

University Examinations for 2021/2022 Academic Year

SCHOOL OF HEALTH SCIENCES

DEPARTMENT OF PUBLIC AND COMMUNITY HEALTH

SECOND YEAR SECOND SEMESTER EXAMINATION FOR

BACHELOR OF SCIENCE (PUBLIC HEALTH)

HPH 209: IMMUNOLOGY

DATE: 3/6/2022

TIME: 8.30-10.30 AM

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## INSTRUCTIONS:

This paper consists of two sections A and B

### SECTION A

#### Specific Instructions

- This section has one question
- The question is compulsory
- The question is 30 marks

### QUESTION ONE (30 MARKS)

- a) Define the following terms (4 marks)
- Innate immunity
  - Herd immunity
  - Allograft
  - Immunosuppression
- b) Explain the different types of specific immunity (4 marks)
- c) Outline the unique characteristics of the adaptive immunity (4 marks)
- d) Explain the stages of immune response (3 marks)
- e) State the types of T-cells involved in immune responses (4 marks)
- f) Explain 3 (three) organ specific autoimmune diseases (3 marks)

- g) State the consequences of antibody-antigen reactions (3 marks)
- h) Highlight 3 (three) causes of immunosuppression (3 marks)
- i) Explain cold chain system in vaccination programs (2 marks)

## **SECTION B:**

### **Specific Instructions**

- This section has four (4) questions
- Answer any two (2) questions
- Each question is 20 marks

### **QUESTION TWO (20 MARKS)**

- a) Describe the mechanisms involved in the second line immune defenses. (12 marks)
- b) Despite rigorous testing and therapy prior to organ transplant, rejection is a possible outcome. Discuss. (8 marks)

### **QUESTION THREE (20 MARKS)**

- a) Master J develops a blood transfusion reaction during his treatment. Explain the immunologic response he is experiencing giving other examples of this reaction. (10 marks)
- b) The Human Papilloma Virus (HPV) vaccine was recently rolled out in the Kenyan vaccination program. Explain factors that informed the decision. (10 marks)

### **QUESTION FOUR (20 MARKS)**

- a) Immune components play a key role in diagnosis of diseases. Explain the immune reactions triggered in diagnostic assays classifying the immune mediators involved. (10 marks)
- b) Herd immunity play a key role in the dynamics of infectious diseases.
- Define herd immunity (1 mark)
  - The Ministry of Health lifted the mandatory wearing of masks by Kenyans as a COVID-19 containment strategy. Did this have anything to do with herd immunity? Explain (3 marks)
  - Discuss some of the challenges faced by countries in their efforts to attain herd immunity for COVID-19 infections. (6 marks)

**QUESTION FIVE (20 MARKS)**

- a) Ms J's foot is pricked by a nail while she is working her farm. She takes it off and continues with her work. A few hours later her foot swells that she can no longer keep working. Explain the reaction experienced by Ms J and its role in immunity. (10 marks)
- b) Community X stigmatizes a patient suffering from Systemic Lupus Erythromatosus (SLE)
- i. Classify SLE (1 mark)
  - ii. Prepare health talk to community X that will help demystify SLE and foster support system for the patient. (9 marks)