



MACHAKOS UNIVERSITY

University Examinations for 2021/2022

SCHOOL OF HEALTH SCIENCES

DEPARTMENT OF PUBLIC AND COMMUNITY HEALTH

SECOND YEAR FIRST SEMESTER EXAMINATION FOR

BACHELOR OF SCIENCE IN PUBLIC HEALTH

HPH 209: IMMUNOLOGY

DATE: 7/12/2021

TIME: 8.30-10.30 AM

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) Classify the types of immunity (4 marks)
- c) Explain the unique characteristics of the immune response (4 marks)
- d) Explain the contributions of the following to development of immunology; (3 marks)
- Louis Pasteur
 - Elie Metchnikoff
 - Von Behring
- e) Differentiate primary lymphoid organs from secondary lymphoid organs of the immune system (2 marks)

- f) Explain the origin of the cells of the immune system (3 marks)
- g) Explain three organ specific autoimmune diseases (3 marks)
- h) State with examples the types of vaccines (2 marks)
- i) State three causes of immunosuppression (3 marks)
- j) Explain the 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) A patient with burns is exposed to infectious microbes that would otherwise not cause worries or danger to an individual. Classify this type of defense mechanism and describe other examples in the human body. (10 marks)
- b) Describe the cells of the immune system and their roles in immune response. (10 marks)

QUESTION THREE (20 MARKS)

- a) A scorpion bite is fatal to some individuals whereas others only experience soreness at the site of injury. Provide a detailed discussion in this case, classify the type of immune response leading to fatality and other classes of this reaction. (10 marks)
- b) Countries with high COVID-19 vaccination coverage have controlled the disease among their population. Outline:
- How to obtain vaccination coverage of a population (4 marks)
 - The contribution of COVID-19 vaccination coverage on the control of the disease in Kenya (6 marks)

QUESTION FOUR (20 MARKS)

- a) Immune components play a key role in the diagnosis of diseases. Explain the immune reactions triggered in diagnostic assays classifying the immune mediators involved. (10 marks)
- b) Despite the development of vaccines and vaccination globally, vaccine preventable diseases have not been eradicated. Discuss (10 marks)

QUESTION FIVE (20 MARKS)

- a) Describe the mechanism leading to immune complex diseases using the example of a named disease, explain its presentation and possible management. (10 marks)
- b) Explain the potential consequences of antigen-antibody reactions. (10 marks)