



MACHAKOS UNIVERSITY

University Examinations for 2021/2022 Academic Year

SCHOOL OF PURE AND APPLIED SCIENCES

DEPARTMENT OF BIOLOGICAL SCIENCES

**FOURTH YEAR SUPPLEMENTARY/SPECIAL EXAMINATION FOR
BACHELOR OF SCIENCE IN BIOLOGY**

SZL407: Advance Immunology

DATE: 8/3/2023

TIME: 2.00 – 4.00 PM

INSTRUCTIONS

1. Answer Question 1 (compulsory) and **any two** questions
2. Use clean well labelled diagrams wherever appropriate.

QUESTION ONE (30 MARKS)

- a) Describe any two antigen presenting cells (3marks)
- b) With examples describe any two types of committed stem cells (3marks)
- c) Outline the functions of the helper T cells and the suppressor T cells (3marks)
- d) Distinguish any three types of humans immunoglobulins (3marks)
- e) Illustrate the basic structure of an Immunoglobulin (3marks)
- f) Name the cations and the immunoglobulins required in the classical complement pathway (3marks)
- g) Name and describe any three substance that can induce complement activation pathway (3marks)
- h) Briefly describe how tumor cells loss antigen presentation capacity (3marks)
- i) Describe any three characteristics of allergens (3marks)
- j) Describe indirect antigen presentation (3 marks)

QUESTION TWO (20 MARKS)

Illustrate the steps that leads to the production of the high affinity B cells and the long-lived plasma cells in the germinal center of the human tonsils (20 marks)

QUESTION THREE (20 MARKS)

Discuss the function and structures of the following antibodies IgM, IgG, IgE and IgA (20 marks)

QUESTION FOUR (20 MARKS)

Discuss the process that lead to the recruitments of Leucocytes to the site of injury (20 Marks)

QUESTION FIVE (20 MARKS)

Discuss cytokines and their specific roles in determining of immunologicl responses (20marks)