



# MACHAKOS UNIVERSITY

University Examinations 2018/2019

SCHOOL OF PURE AND APPLIED SCIENCES

DEPARTMENT OF BIOLOGICAL SCIENCES

FOURTH YEAR SPECIAL/SUPPLEMENTARY EXAMINATION FOR

BACHELOR OF SCIENCE IN BIOLOGY

SZL 407: ADVANCED IMMUNOLOGY

DATE: 22/7/2019

TIME: 2.00-4.00 PM

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## INSTRUCTIONS

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

## SECTION A

### QUESTION ONE

- a) What are phagocytes and name any two phagocytes that you know (3 marks)
- b) What are stem cells and Name any two types of committed stem cells (3 marks)
- c) Describe briefly a stepwise Mechanisms of helper T cell-mediated activation of B lymphocytes (3 marks)
- d) Define and state the functions of the helper T cells and the suppressor T cells (3 marks)
- e) The the four factors/basis that can help to differentiate the humans immunoglobulins? (3 marks)
- f) Draw and label the basic structure of an Immunoglobulin (3 marks)
- g) Name the cations and the immunoglobulins required in the classical complement pathway (3 marks)
- h) List any SUBSTANCES that can initiate complement activation pathway (3 marks)
- i) Briefly describe how tumor cells loss antigen presentation capacity (3 marks)
- j) Describe at least 6 characteristics of allergens (3 marks)

## **SECTION B**

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

Discuss with the help of a diagram 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

### **QUESTIONS THREE (20 MARKS)**

Describe in details the structural characteristics and functions of the following antibodies a) IgM b) IgG and c) IgA

### **QUESTIONS FOUR (20 MARKS)**

Leucocyte is one of the cells that is recruited to the site of inflammations with the help of cytokines. Discuss the process in details that lead to the recruitments to the site of injury