



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 408 APPLIED IMMUNOLOGY

DATE: 22/7/2019

TIME: 8.30-10.30 AM

INSTRUCTIONS

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

SECTION A

QUESTION ONE

- Describe the Coon's insight and its importance in immunological diagnostics (3 marks)
- Describe the process of P-Nucleotide addition during the rearrangements of the immunogenetics (3 marks)
- Expound SIX factors that can affect immuno- fluorescence staining technique (3 marks)
- Describe the genetic structure of the antibody (3 marks)
- Explain the process of N-Nucleotide addition during deletional rearrangement of the antibody structure (3 marks)
- Compare and contrast the MHCI and MHCII antigen processing pathways (3 marks)
- Describe the application of HLA polymorphism in vaccine design (3 marks)
- Distinguish between haptens and conjugated antigens (3 marks)
- Briefly discuss the requirements for the Mixed Lymphocyte immunological reaction in transplantation (3 marks)
- Define the concept and types of immunological tolerance (3 marks)

SECTION B

QUESTIONS TWO

You have a patient suspected to have contracted a viral infection. According to the epidemiology of an area, strain A and B are the most prevalent viruses. Describe any immunological diagnostic procedure to confirm the strain that the patient might have contracted. (20 marks)

QUESTIONS THREE

A patient is suspected to be suffering from a disease that is caused by a parasite Y that induces the expression of antigen X on the surface of the T lymphocytes. Using Flow cytometry technique discuss how you can confirm the infection. (20 marks)

QUESTIONS FOUR

- a) Discuss how foetus evades implantation rejection (10 marks)
- b) Describe a stepwise mechanism of the use of gene therapy to correct a certain immunological disorder (10 marks)

QUESTION FIVE

- a) Discuss the concept and method of hybridoma technology (10 marks)
- b) Discuss deletional joining as a mechanism that leads to antigenic diversity and recognition. (10 marks)