



MACHAKOS UNIVERSITY

University Examinations for 2019/2020 Academic Year

SCHOOL OF PURE AND APPLIED SCIENCES

DEPARTMENT OF BIOLOGICAL SCIENCES

FOURTH YEAR SECOND SEMESTER EXAMINATION FOR

BACHELOR OF SCIENCE (BIOLOGY)

SZL 408: APPLIED IMMUNOLOGY

DATE: 22/10/2020

TIME: 2:00 – 4:00 PM

INSTRUCTIONS

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

SECTION A: COMPULSORY

QUESTION ONE (30 MARKS)

- | | | |
|------|---|------------|
| a) | Describe the methods used to define MHC supertypes | (3 marks) |
| b) | Describe the principle of indirect immunohistochemistry | (3 marks) |
| c) | Describe the genetic structure of the antibody | (3 marks) |
| d) | Describe the process of P-Nucleotide addition during the deletional joining | (3 marks) |
| e) | Evaluate the importance of the constant fragment of the antibody | (3 marks) |
| f) | Describe two methods of vaccine productions | (3 marks) |
| g) | Describe THREE types of vaccines | (3 marks) |
| h) | Describe the quantification of antibodies based on their differential charges | (6 marks) |
| i) | Explain the importance of the following in immunology: | (3 marks) |
| i) | HAT | |
| ii) | PEG | |
| iii) | Myeloma cells | |
| j) | Outline two types of antibodies | (12 marks) |

SECTION B: ANSWER ANY TWO QUESTIONS (40 MARKS)

QUESTION TWO (20 MARKS)

You have a patient suspected to have contracted a viral infection. According to the epidemiology of the area, strain A and B are the most prevalent viruses in the area. Describe in a step by step any immunological diagnostic procedure that will help you to distinguish the strains that the patient might have contracted.

QUESTION THREE (20 MARKS)

Discuss step by step procedure of competitive indirect ELISA highlighting the basis and principle of each step.

QUESTION FOUR (20 MARKS)

Discuss infectious diseases and the types of vaccines in each case

QUESTION FIVE (20 MARKS)

Discuss the immunogenetics of antibodies biosynthesis