



MACHAKOS UNIVERSITY

University Examinations for 2021/2022 Academic Year

SCHOOL OF PURE AND APPLIED SCIENCES

DEPARTMENT OF BIOLOGICAL SCIENCES

SECOND YEAR FIRST SEMESTER EXAMINATION FOR

BACHELOR OF EDUCATION (SCIENCE)

SBT 202: GENERAL MICROBIOLOGY

DATE: _____

TIME : _____

INSTRUCTIONS

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

SECTION A (COMPULSORY) (30 MARKS)

QUESTION ONE (30 MARKS)

- a) Illustrate an experiment to negate the abiogenesis theory. (3 marks)
- b) Describe the concept of replication in Edward Jenner's experiment. (3 marks)
- c) An emergent microbe is believed to cause disease X, describe the protocol of confirming that disease X is caused by the new microbe. (3 marks)
- d) Describe the non-motility appendages of bacteria. (3 marks)
- e) What is the significance of peptidoglycan in Gram staining? (3 marks)
- f) Describe the protocol of obtaining a pure culture from a mixed culture of bacteria (3 marks)
- g) Describe the process of preparing nutrient agar for growth of bacterial colonies (3 marks)
- h) Describe with an illustration how the pour plate method results in bacterial dilution (3 marks)
- i) After ten dilutions of a blood sample, a lab technologist cultured 0.01ml of the diluted sample on a general-purpose media and observed 150 colonies. Calculate the CFUs (3 marks)

- j) Describe the working of MacConkey agar as a differential media

SECTION B: ANSWER ANY TWO QUESTIONS

QUESTION TWO (20 MARKS)

- a) Discuss the significance of Gram staining protocol in bacteriology (10 marks)
b) Discuss the microbiological techniques (10 marks)

QUESTION THREE (20 MARKS)

- a) Discuss bacterial virulence factors (15 marks)
b) Describe Edward Jenner's experiment (5 marks)

QUESTION FOUR (20 MARKS)

Discuss bacterial virulence factors.

QUESTION FIVE (20 MARKS)

- a) Discuss the three categories of media with two illustrations in each case. (12 marks)
b) Describe the shapes of bacteria and their possible variants. (8 marks)