



# MACHAKOS UNIVERSITY

University Examinations for 2021/2022

SCHOOL OF PURE AND APPLIED SCIENCES

DEPARTMENT OF BIOLOGICAL SCIENCES

SECOND YEAR SUPPLEMENTARY EXAMINATION FOR DEGREE IN

BACHELOR OF SCIENCE IN BIOLOGY

BACHELOR OF EDUCATION SCIENCE

SBT 202 : GENERAL MICROBIOLOGY

DATE: 15/3/2022

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 (30 MARKS)

- a. Describe Koch's postulates. (4 marks)
- b. Distinguish between the following terms
  - i. Incubation and Isolation (2 marks)
  - ii. A true pathogen and an opportunistic pathogen (2 marks)
- c. Explain how and why the temperature of steam can be raised above 100°C. (3 marks)
- d. Explain the Abiogenesis germ theory (3 marks)
- e. Classify germicides based on their effectiveness in destroying microbes in medical settings. (4 marks)
- f. Describe three branches of microbiology (3 marks)
- g. Explain the mode of action of antimicrobial agents on the cell membrane (3 marks)
- h. Outline the contribution of **Louis Pasteur** to the history of microbiology (3 marks)
- i. Describe the route taken by a pathogen up to the time it causes a disease (3 marks)

## SECTION B:

### QUESTION TWO

- Describe the protocol of Gram staining giving the significance of each step (10 marks)
- Discuss the microbiological techniques (10 marks)

**QUESTION THREE**

Discuss bacterial virulence factors (15 marks)

Describe Edward Jenner's experiment (5 marks)

**QUESTION FOUR**

Discuss bacterial virulence factors (20 marks)

**QUESTION FIVE**

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)