



MACHAKOS UNIVERSITY

University Examinations for 2019/2020 Academic Year

SCHOOL OF PURE AND APPLIED SCIENCES

DEPARTMENT OF BIOLOGICAL SCIENCES

SECOND YEAR SECOND SEMESTER EXAMINATION FOR

BACHELOR OF SCIENCE (BIOLOGY)

BACHELOR OF EDUCATION (SCIENCE)

SBT 202: GENERAL MICROBIOLOGY

DATE: 24/11/2020

TIME: 8:30 – 10:30 AM

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) Outline 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 the temperature of steam can be raised above 100°C. (3 marks)
- d) Explain the Abiogenesis germ theory (3 marks)
Classify germicides based on their effectiveness in destroying microbes in medical settings. (4 marks)
- e) Describe three branches of microbiology (3 marks)
- f) Explain the mode of action of antimicrobial agents on the cell membrane (3 marks)
- g) Outline the contribution of **Louis Pasteur** to the history of microbiology (3 marks)
- h) Describe the route taken by a pathogen up to the time it causes a disease (3 marks)

SECTION B: ANSWER ANY TWO QUESTIONS (40 MARKS)

QUESTION TWO (20 MARKS)

- a) Describe the protocol of Gram staining giving the significance of each step (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)

- a) Describe the structure and functioning of the bacterial cell surface appendages (10 marks)
- b) Describe the structure and functioning of the bacterial cell membrane (10 marks)

QUESTION FIVE (20 MARKS)

- a) Discuss the categories of bacterial growth media. (12 marks)
- b) Discuss shapes of bacteria and their possible variants. (8 marks)