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 AGRICULTURAL EDUCATION AND EXTENSION

BACHELOR OF SCIENCE (BIOLOGY)

SBT 412: APPLIED MICROBIOLOGY

DATE: 23/10/2019 **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 three mechanisms of vaccine production (3 marks)

b) Explain the mode of action of antimicrobial agents on the cell wall (3 marks)

c) Explain three advantages of live vaccines (3 marks)

d) Illustrate three advantageous traits of plants resulting from genetic modification (3 marks)

e) Explain the role of a specific microorganism in yogurt production (3 marks)

f) Describe the role of *Saccharomyces cerevisiae* in bread making (3 marks)

g) Explain the factors to consider when choosing an antimicrobial agent (3 marks)

h) Explain the mode of action of radiation in preservation (3 marks)

i) Distinguish between Gram negative and Gram positive cells (3 marks)

j) Explain why Refrigeration is not a method of decontamination. (3 marks)

SECTION B: ANSWER ANY TWO QUESTIONS (40 MARKS)

QUESTION TWO (20 MARKS)

a) Illustrate the typical genetic modification procedure (10 marks)

b) Discuss the development of transgenic variety of wheat by the use of the Agrobacterium mediated gene transfer (10 marks)

QUESTION THREE (20 MARKS)

Compare and contrast the process of beer making and wine making

QUESTION FOUR (20 MARKS)

a) Discuss the role of microorganisms in the nitrogen cycle (10 marks)

b) Discuss the chemical methods of microbial decontamination (10 marks)

QUESTION FIVE (20 MARKS)

Describe the process of industrial waste water treatment