



MACHAKOS UNIVERSITY

University Examinations for 2020/2021 Academic Year

SCHOOL OF PURE AND APPLIED SCIENCES

DEPARTMENT OF BIOLOGICAL SCIENCES

FOURTH YEAR FIRST SEMESTER EXAMINATION FOR

BACHELOR OF SCIENCE IN BIOLOGY

SBT 412: APPLIED MICROBIOLOGY

DATE: 10/8/2021

TIME: 11:00 – 1:00 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) Outline three strategies 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) Describe three advantageous traits of plants resulting from genetic modification (3 marks)
- e) Explain the role of a specific microorganism in yoghurt production (3 marks)
- f) By use of a chemical equation describe the role of *Saccharomyces cerevisiae* in bread making. (3 marks)
- g) Describe global warming with regards to the carbon cycle (3 marks)
- h) Distinguish between biomagnification and bioaccumulation (3 marks)
- i) Describe methods of making cells 'competent' (3 marks)
- j) Refrigeration is not a method of decontamination. Explain (3 marks)

QUESTION TWO

- a) Illustrate the typical genetic modification procedure (10 marks)
- b) Discuss the development of transgenic variety of wheat by the use of *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)

Discuss the role of microorganisms in the nitrogen cycle.

QUESTION FIVE (20 MARKS)

- a) Discuss the process of industrial waste water treatment. (10 marks)
- b) Describe the blue and white screening method of selecting recombinant cells. (10 marks)