



MERU UNIVERSITY OF SCIENCE AND TECHNOLOGY

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University Examinations 2023/2024

FOURTH YEAR SECOND SEMESTER EXAMINATION FOR THE DEGREE OF
BACHELOR OF EDUCATION SCIENCE

SBA 3402: APPLIED MICROBIOLOGY

DATE: APRIL 2024

TIME: 2 HOURS

INSTRUCTIONS: Answer question *one* and any other *two* questions

QUESTION ONE (30 MARKS)

- a) Explain the events that take place in the physiology of bacteria during the death phase of growth (4 marks)
- b) Differentiate between nutrient broth and nutrient agar (4 marks)
- c) Explain the following terms used in vaccine production (4 marks)
 - i. Attenuation
 - ii. Inactivation
- d) Differentiate between bottom fermented beers and top fermented beers (4 marks)
- e) State the principle of the biochemical oxygen demand (BOD) test used in determination of organic matter content in waste waters (4 marks)
- f) Outline some of the advantages of solid state fermentation over submerged liquid fermentation (4 marks)
- g) Explain the killing of microorganism using moist heat at temperatures above 100⁰c (4 marks)

- h) Explain any given contribution of Alexander Fleming to the field of applied microbiology
(2 marks)

QUESTION TWO (20 MARKS)

Discuss methods for determining organic matter content in waste waters

QUESTION THREE (20 MARKS)

Explain the steps involved in the nodulation process during nitrogen fixations

QUESTION FOUR (20 MARKS)

Discuss heat sterilization as a means of reducing and eliminating microorganisms from surfaces/instruments