



MACHAKOS UNIVERSITY

University Examinations 2017/2018

SCHOOL OF PURE AND APPLIED SCIENCES

DEPARTMENT OF BIOLOGICAL SCIENCES

FOURTH YEAR SECOND SEMESTER EXAMINATION FOR
BACHELOR OF SCIENCE IN AGRICULTURAL EDUCATION AND EXTENSION
BACHELOR OF SCIENCE IN BIOLOGY
SBT 412: APPLIED MICROBIOLOGY

DATE: 13/12/2017

TIME: 8.30-10.30 AM

INSTRUCTIONS

Answer Question One and Any Other Two Questions

Use clean well labelled diagrams wherever appropriate.

QUESTION ONE

- Explain the **three** steps involved in detection of pathogenic microbes in water. (3 marks)
- Describe the production of live attenuated vaccines. (3 marks)
- Highlight **three** characteristics of ideal microorganisms used in the production of microbial biomass. (3 marks)
- Describe how the fecal indicator test performed. (3 marks)
- Explain **one** application of biosurfactants. (3 marks)
- Explain **three** roles of fermentation in food industry. (3 marks)
- Highlight **three** advantages of bioleaching. (3 marks)
- Name **three** indicator microbes for heavy metal pollution. (3 marks)
- Explain **three** reasons why organic compounds are more effectively degraded in an environment containing microbial community than in a pure culture of a single organism. (3 marks)
- List down **three** advantages of using *Zymomonas mobilis* over *Saccharomyces cerevisiae* in industrial ethanol production. (3 marks)

SECTION B

QUESTION TWO

Discuss the biological nitrogen fixation. (20 marks)

QUESTION THREE

Explain various methods used in prevention and control of microbial contamination for pharmaceutical products. (20 marks)

QUESTION FOUR

Discuss the waste water treatment process. (20 marks)

QUESTION FIVE

- a) Explain **two** strategies utilized by microbiologists to improve the properties of microbial enzymes. (10 marks)
- b) Discuss the cheese making process. (10 marks)