



JARAMOGI OGINGA ODINGA UNIVERSITY OF SCIENCE AND TECHNOLOGY

SCHOOL OF AGRICULTURAL AND FOOD SCIENCES

**FIRST YEAR SECOND SEMESTER UNIVERSITY EXAMINATION FOR THE DEGREE OF
BACHELOR OF SCIENCE IN HORTICULTURE, ANIMAL SCIENCE AND AGRICULTURAL
EXTENSION AND EDUCATION**

2017/2018 ACADEMIC YEAR

REGULAR

COURSE CODE: AAB 3121

COURSE TITLE: AGRICULTURAL MICROBIOLOGY

EXAM VENUE:

STREAM: BSc. (Horticulture, Animal Science
and Agricultural Extension and Education)

DATE:

EXAM SESSION:

TIME: 2 HOURS

Instructions:

- 1. Answer ALL questions in section A and ANY other 2 Questions in section B.**
- 2. Candidates are advised not to write on question paper.**
- 3. Candidates must hand in their answer booklets to the invigilator while in the examination room.**

SECTION A [30 MARKS]

Answer ANY TWO questions from this Section.

1. Define the term fermentation and state two reasons why microorganisms are the best choice for fermentation (3 marks)
2. Define the terms Phyllosphere, Phylloplane and Rhizosphere (3marks)
3. Identify three plant diseases caused by bacteria (3marks)
4. Outline three effects of freezing on microorganisms (3marks)
5. i. Define agricultural biotechnology (1 mark)
ii. Describe two sub disciplines of agricultural microbiology (2 marks)
6. Make a clearly labeled diagram of a bacteriophage and describe its basic structural features (3marks)
7. Describe and identify the roles of three microbial communities commonly found in the soil (3 marks)
8. Identify three factors that affect nitrification (3 marks)
9. State three detrimental activities of microorganisms in the rhizosphere (3 marks)
10. Differentiate the terms psychrophile, psychrotroph and mesophiles as used in microbiology (3 marks)

SECTION B [40 MARKS]

1. a. Define the term bacterial metabolism (2 marks)
b. Discuss the major types of bacteria based on their metabolism (18 Marks)
2. Using a well labeled flow chart, discuss lytic and lysogenic cycles of a bacteriophage (20 marks)
3. Discuss microbial transformation of carbon, phosphorus and sulphur using flow diagrams where necessary. (20 marks)
4. i. Define food preservation (2 marks)
ii. Discuss the principles of food preservation. (18 marks)