



**MURANG'A UNIVERSITY OF TECHNOLOGY**  
**SCHOOL OF PURE AND APPLIED HEALTH SCIENCES**  
DEPARTMENT OF PHYSICAL AND BIOLOGICAL SCIENCES

UNIVERSITY ORDINARY EXAMINATION

2023/2024 ACADEMIC YEAR

**FIRST YEAR SECOND SEMESTER EXAMINATION FOR BACHELOR OF**

.....

**GAS220: SOIL MICROBIOLOGY**

**DURATION: 2 HOURS**

**INSTRUCTIONS TO CANDIDATES:**

1. Answer question one and any other two questions.
2. Mobile phones are not allowed in the examination room.
3. You are not allowed to write on this examination question paper.

**SECTION A: ANSWER ALL QUESTIONS IN THIS SECTION**

**QUESTION ONE (30 MARKS)**

- a. Explain the role of organic matters in the soil. (6 marks)
- b. Describe two non-biological nitrogen fixation process. (6 marks)
- c. Explain role of bacteria in the soil. (6 marks)
- d. Explain briefly different classes of fungi found in the soil. (6 marks)
- e. Outline the role of soil algae. (6 marks)

**SECTION B – ANSWER ANY TWO QUESTIONS IN THIS SECTION**

**QUESTION TWO (20 MARKS)**

Discuss physical and chemical factors that affect diversity and abundance of soil micro-organisms. (20 marks)

**QUESTION THREE (20 MARKS)**

Describe the biological processes of nitrification and denitrification in nitrogen cycle. (20 marks)

**QUESTION FOUR (20 MARKS)**

Discuss biodegradation and biodegradation in the soil. (20 marks)