



**JARAMOGI OGINGA ODINGA UNIVERSITY OF SCIENCE AND
TECHNOLOGY**

SCHOOL OF AGRICULTURAL AND FOOD SCIENCES

**SECOND YEAR FIRST SEMESTER UNIVERSITY EXAMINATION FOR
THE DEGREE OF BACHELOR OF SCIENCE IN FOOD SECURITY**

2022/2023 ACADEMIC YEAR

REGULAR

COURSE CODE: APB 1201

COURSE TITLE: Agriculture and Environmental Quality

EXAM VENUE:

STREAMS: BSc. Food Security

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 ALL questions from this Section.

1. Define the term soil quality **(2 Marks)**
2. Explain the relationship between soil quality and organic matter **(2 Marks)**
3. Outline the role played by each of the following microorganisms in bioremediation of soil
a) Bacteria **(2 Marks)**
b) AM Fungi **(2 Marks)**
4. Explain the following concepts of an ecosystem **(6 Marks)**
a) Resiliency
b) Efficiency
c) Diversity
5. Explain FIVE benefits of cover crops in crop production **(5 Marks)**
6. Explain FIVE advantages of composting **(5 Marks)**
7. Explain the factors affecting pesticide retention in soils **(6 Marks)**

SECTION B [40 MARKS]

Answer ANY TWO questions from this Section.

8. Discuss the sustainable management strategies that must be deployed to reverse the escalating economic and environmental consequences of conventional agricultural practices. **(20 Marks)**
9. Discuss the mechanisms for increasing carbon sinks and reducing CO₂ and other greenhouse gas emissions in agricultural systems. **(20 Marks)**
10. Discuss the various methods that can be used to minimize nitrate leaching in soil. **(20 Marks)**