



*“Investing in Africa’s future”*

**COLLEGE OF HEALTH, AGRICULTURE AND NATURAL SCIENCES**

**NANE 207: BIOTECHNOLOGY AND THE ENVIRONMENT**

**END OF SECOND SEMESTER FINAL EXAMINATIONS**

**APRIL 2022**

**LECTURER: MR. TABARIRA J.**

**DURATION: 3 HOURS**

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### **INSTRUCTIONS**

Answer any **Four** questions

All questions carry equal marks (25).

DO NOT repeat material.

Write legibly.

Credit will be awarded for logical, systematic and neat presentations

### **Question 1**

- a. Provide a detailed discussion of the factors influencing the effectiveness of microorganisms in bio-waste decomposition. [10]
- b. Outline the major environmental challenges being experienced in your community and suggest appropriate solutions [15]

### **Question 2**

Write brief notes on the following:

- a. Mechanisms of minimizing environmental contamination, [5]
- b. Contribution of Industrial revolution to environmental pollution, [5]
- c. The role of microorganisms in the food processing industry, [5]
- d. Attributes of an ideal biomarker, and [5]
- e. Application of biosensors. [5]

### **Question 3**

- a. Provide a detailed account of the environmental and food security challenges being faced by your local community. [10]
- b. Discuss in support of the notion that, GMO technology will not ensure global food security [15]

### **Question 4**

- a. Give a critical analysis of the relationship between environmental preservation and food security. [15]
- b. Write brief notes on:
  - i. Bio-waste is a resource, [4]
  - ii. Advantages of Bio-pesticides, and [3]
  - iii. Biotic components of the environment. [3]

### **Question 5**

- a. Define the term pollutant, and provide a detailed discussion of the four properties of pollutants [10]
- b. Discuss the critical role(s) microorganisms play in the environment [15]

### **Question 6**

- a. Demonstrate your understanding of the concept 'clean' technology as a pollution control strategy. [5]

- b. Justify why vesicular arbuscular mycorrhiza (VAM) is a highly recommended bio fertilizer in organic farming systems.  
**[10]**
- c. Outline the major causes of food insecurity in developing economies, **[10]**

**End of Examination Paper**