



“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 2023

LECTURER: MR. TABARIRA J.

DURATION: 3 HOURS

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

The timber industry is one of the major economic drivers in Manicaland.

- a. Discuss the environmental challenges associated with the timber industry. [10]
- b. Demonstrate your understanding about the available options to convert sawdust into a resource. [15]

Question 2

Man has been singled out as more highly endowed with wisdom and knowledge than any organism under the earth, but have been noted as being responsible for a number of environmental problems we are facing today.

- a. Outline the possible contributions of man to the environmental challenges facing your community. [15]
- b. Explain the perceived benefits of using bio-fertilizers in crop production systems. [10]

Question 3

Based on your practical visit at the livestock unit at Africa University farm:

- a. Provide a critical analysis of the negative impacts of the waste being generated from the unit. [15]
- b. How can biotechnology be exploited to minimize the level of pollution at the livestock section? [10]

Question 3

- a. Discuss, giving relevant examples the notion that, “microorganism are key drivers to biotechnological innovations”. [15]
- b. Outline the environmental concerns being raised against adopting genetically modified organisms (GMO) in crop production systems. [10]

Question 4

Supposed a fuel tanker has been involved in a road accident and all the 5000 liters of fuel spills on the ground.

- a. Outline the challenges this accident would have caused to the environment. [10]
- b. Explain in detail any three possible options at your disposal to remediate this contaminated piece of land. [15]

Question 5

- a. Make explanatory notes on the following:
 - i. Keys components of the environment, [5]
 - ii. Adsorption pollution control method, and [5]
 - iii. Role of microorganisms in the food industry. [5]
- c. Discuss in detail, the conflicts between increased crop production methodologies and the preservation of the environment. [10]

Question 6

- a. Explain how each of the following factors affects composting process of biowaste.
 - i. Temperature, [3]
 - ii. Moisture content, [3]
 - iii. Particle size, and [3]
 - iv. Nature of the feedstock. [3]
- b. Write brief notes on four possible reasons why biotechnology may not ensure food security in developing countries. [8]
- c. Explain the contribution of Industrial revolution to environmental pollution. [5]

End of Examination Paper