



“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

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. Define the following terms:
 - i. Bio-waste, [1]
 - ii. Bioremediation, [1]
 - iii. Biotechnology, [1]
 - iv. Food security, and [1]
 - v. Organic farming. [1]
- b. Demonstrate your understanding about how organic farming can address the current food security and environmental challenges associated with agricultural production. [15]
- c. Write brief notes on household waste as a resource. [5]

Question 2

- a. Explore the effects of wide adoption and cultivation of genetically modified (GMO) crops to the environment? [12]
- b. Discuss in support of the notion that, there is no waste in nature [8]
- c. Outline the limitations of using bio-pesticides in crop production systems [5]

Question 3

- d. Discuss in detail the role biotechnology can play in alleviating crop production challenges in Sub-Saharan Africa. [10]
- e. Justify the low adoption rate of Bio-fertilizers in most African communities. [10]
- f. Outline the limitations of using bio-herbicides in crop production systems. [5]

Question 4

- a. Differentiate between the paired terms:
 - i. Pollution and pollutant, [2]
 - ii. Dilution and dispersal pollution control, [2]
 - iii. Abiotic component and biotic component, [2]
 - iv. Absorption and adsorption pollution control, and [2]
 - v. Herbicide resistant crop and pest resistant crop [2]

- b. Discuss in detail, the conflicts between increased crop production methodologies and the preservation of the environment and suggest possible solutions [15]

Question 5

- a. Make explanatory notes on the contribution of each of the following factors in the composting process of bio-waste.
- i. Temperature, [3]
 - ii. Accelerants, [3]
 - iii. Moisture content, [3]
 - iv. Particle size, and [3]
 - v. Nature of the feedstock. [3]
- b. Provide an analysis of the environmental health issues being raised against the adoption of GMO technology. [10]

Question 6

- a. Outline environmental challenge in your community and suggest how biotechnology can be harnessed to address each one of them. [15]
- b. Describe the common environmental contaminations associated with livestock production and suggest mitigation strategies. [10]

End of Examination Paper