"Investing in Africa's future"

COLLEGE OF HEALTH, AGRICULTURE AND NATURAL SCIENCES

NANE 217: BIOTECHNOLOGY AND THE ENVIRONMENT

END OF SECOND SEMESTER FINAL EXAMINATIONS

MAY 2021

LECTURER: MR. J. TABARIRA

DURATION: 7 HOURS

INSTRUCTIONS

1. Choose and Answer **ONE** Question Only
2. DO NOT repeat material
3. Credit will be awarded for logical, systematic and neat presentations

Question 1

There are a number of environmental challenges being faced by most developing countries.

In view of the above statement:

a. Discuss environmental challenges in your community. **[25]**
b. Demonstrate your understanding of biotechnological approaches that can be employed to mitigate against some to the above challenges. **[25]**
c. Outline the contributions of man to environmental challenges in your community. **[30]**
d. Discuss giving practical examples major crop production and environmental management conflicts. **[20]**

Question 2

Crop production activities have been singled out as a major contributor of environmental degradation. Adoption of GMO technology is believed will address global food insecurity.

a. Give a detailed account, backed by relevant examples, the negative impacts of crop production to the environment. **[30]**
b. Explain how adoption of GMO technology will address food security and environmental problems in developing economies. **[25]**
c. Discuss in support of the notion that GMO technology is not the answer to global food security and environmental challenges. **[25]**
d. Describe the common environmental contaminations associated with livestock production and suggest how it can be minimized. **[20]**

Question 3

a. A well constructed and managed compost heap will be ready for use in 8 weeks. Mr. Muza was frustrated when his compost was partially decomposed in 15 weeks.
   i. State and explain possible reasons for the failure of Mr. Muza's compost to mature as expected. **[20]**
   ii. Outline biotechnological innovations that Mr. Muza could employ for his compost to mature over a shorter period of time. **[20]**

b. Provide a detail account of the role microorganisms play in the preservation of the environment. **[30]**

c. Demonstrate your understanding of the contribution of microorganisms in crop productivity. **[30]**

END OF EXAMINATION PAPER