

**CHUKA UNIVERSITY**

**THIRD YEAR EXAMINATION BMET335: APPLIED MICROBIOLOGY**

**STREAM: Y3S2 BSc. BIOMEDICAL SCIENCE AND TECHNOLOGY**

**TIME: 2 HOURS**

**INSTRUCTIONS**

- i. Answer Question One and any other Two Questions**
- ii. Do not write on the question paper**

**Question One (30 marks)**

- a. What are the various adaptations that microorganisms undergo in order to survive in their ecologies? (8 marks)
- b. Microorganisms have mutuality relationship with animals. Give any 5 examples. (5 marks)
- c. Discuss briefly the various microorganisms found in soil. ( 6 marks)
- d. Elucidate the challenges encountered in using microorganism in bioremediation. (5 marks)
- e. What are the disadvantages of using microbial pesticides? (6marks)

**Question Two (20 marks)**

- a. Discuss in details the use of biopesticides and their advantages (10 marks)
- b. Discuss in detail the role of micro organisms in the following biogeochemical cycles.
  - i. Carbon cycle (4 mrks)
  - ii. Sulphur cycle (3 marks)
  - iii. Iron cycle (3 marks)

**Question Three (20 marks)**

- a. Genetically modified microorganisms have applications in several fields. Discuss in detail under the following areas of application.
  - i. Agro alimentary (4 marks)
  - ii. Environment (3 marks)
  - iii. Medicine (3 marks)
- b. Discuss the process of cheese production using micro organisms. (10 marks)

**Question Four (20 marks)**

- a. There are several risks associated with use of genetically modified micro organisms. Elucidate. (10marks)
- b. Discuss the use of *Bacillus thuringiensis* and *Bacillus sphaericus* in agriculture (10 marks)