CHUKA UNIVERSITY

THIRD YEAR EXAMINATION BMET222: MICROBIAL PHYSIOLOGY AND GENETICS

STREAM: Y2S2 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. Describe in detail the process of catabolism in microorganisms. (5marks)
b. Describe in detail the carbon and energy requirement of bacteria. (5marks)
c. With the aid of a well labeled diagram, describe briefly the bacterial growth curve. (8 marks)
d. Distinguish between bacterial, fungal and viral genome (7 marks)
e. What is the relationship of the genetic code with proteins? (2 marks)
f. Transposons are jumping genes. Discuss briefly. (3 marks)

Question Two (20 marks)

a. Discuss the process of genetic recombination in bacteria (10 marks)
b. There are two mechanisms of metabolic and genetic regulation. Discuss. (10 marks)

Question Three (20 marks)

a. What is an operon and what does it contain? (5marks)
b. Explain the different types of DNA repair. (5 marks)
c. Discuss the different types of plasmids and their characteristics (10 marks)

Question Four (20 marks)

a. Describe the effects of the following 3 environmental factors on bacterial growth. (10 marks)

i. Temperature (3 marks)

ii. Oxygen (4 marks)

iii. pressure (3 marks)

b. Explain in detail the process of gene transcription in bacterial cells (10 marks)