

CHUKA



UNIVERSITY

**UNIVERSITY EXAMINATIONS**

**EXAMINATION FOR THE AWARD OF DEGREE OF BACHELOR OF SCIENCE IN  
BIOMEDICAL**

**BMET 222: MICROBIAL PHYSIOLOGY AND GENETICS**

**STREAMS: Y2S2**

**TIME: 2 HOURS**

**DAY/DATE: THURSDAY 08/07/2021**

**2.30 P.M – 4.30 P.M**

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**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)
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