

**CHUKA**



**UNIVERSITY**

**UNIVERSITY EXAMINATIONS**

**THIRD YEAR EXAMINATION FOR THE AWARD OF DEGREE OF  
BACHELOR OF SCIENCE IN BIOMEDICAL SCIENCE AND TECHNOLOGY**

**BMET 222: MICROBIAL PHYSIOLOGY AND GENETICS**

**STREAMS: BSC (BMET)**

**TIME: 2 HOURS**

**DAY/DATE: TUESDAY 14/04/2020**

**8.30 AM – 10.30 AM**

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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. Explain briefly the nitrogen requirement in a typical bacteria cell. (5 marks)
- c. Give a detailed definition of generation time in regards to microorganisms. (5 marks)
- d. Describe secondary metabolites and how they are synthesized. (5 marks)
- e. Describe what a bacterial chromosome encompasses. (5marks)
- f. Describe briefly the various types of point mutations that occur within microbial genome. (5 marks)

**Question Two (20 marks)**

- a. Discuss the process of genetic recombination in bacteria. (10 marks)
- b. Give a detailed description of transposons i.e. jumping genes. (10 marks)

**Question Three (20 marks)**

- a. Describe an operon and what it contains. (5marks)

- b. Explain the different types of DNA repair. (5 marks)
- c. Give a detailed description of the entire bacterial growth cycle. (10 marks)

**Question Four (20 marks)**

- a. Describe the effects of the following 3 environmental factors on bacterial growth.
    - 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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