

CHUKA



UNIVERSITY

UNIVERSITY EXAMINATIONS

RESIT/SPECIAL EXAMINATION

EXAMINATION FOR THE AWARD OF DEGREE OF BACHELOR OF SCIENCE IN  
BIOCHEMISTRY

BIOC 307/335: ANTIBIOTICS

STREAMS: BSC BIOCHEMISTRY

TIME: 2 HOURS

DAY/DATE: MONDAY 01/02/2021

8.30 A.M – 10.30 A.M.

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**INSTRUCTION**

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

**Question One (30 marks)**

- a. Explain the difference between bacteriostatic and bactericidal antibiotics. (5 marks)
- b. Explain why antibiotics are not effective against viruses. (4 marks)
- c. Bacterial resistance to antibiotics can arise due to mutations in the bacterial DNA. Explain how these mutations can affect antibiotic action. (5 marks)
- d. Using relevant drug examples, describe the processes affected by bacteriostatic antibiotics. (6 marks)
- e. Describe the genetic mechanism of antibiotic resistance transfer employed by bacteria. (10 marks)

**Question Two (20 marks)**

- a. Describe how broader spectrum of activity is achieved by carbapenem thienamycin. (10marks)
- b. Describe how bacteria mediates antibiotic inactivation by group transfer. (10 marks)

**Question Three (20 marks)**

- a. Describe the mechanism of action of  $\beta$ -lactam antibiotics. (10marks)
- b. Using relevant structural illustration and examples, describe how penicillin improvements have overcome acid instability. (10 marks)

**Question Four (20 marks)**

- a. Describe the various families of bacterial drug efflux transporters. (10 marks)
  - b. Using specific examples describe how antibiotics inhibit protein synthesis in bacteria. (10 marks)
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