

CHUKA UNIVERSITY

THIRD YEAR EXAMINATION BIOC 307: ANTIBIOTICS

STREAM: Y3S2 BSc. BIOCHEMISTRY

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. 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 carbapenemthienamycin. (10marks)
- b. Describe how bacteria mediates antibiotic inactivation by group transfer. (10 marks)

Question Three (20 marks)

- a. Describe the mechanism of action of β -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)

