

CHUKA



UNIVERSITY

UNIVERSITY EXAMINATIONS

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

BIOC 335: ANTIBIOTICS

STREAMS: BSC (BIOCHEMISTRY) Y3S2

TIME: 2 HOURS

DAY/DATE: TUESDAY 09/04/2019

8.30 A.M. – 10.30 A.M.

INSTRUCTIONS:

- **Answer question one and any other two questions**
- **Do not write on the question paper**

QUESTION ONE (30 MARKS)

- (a) Explain the difference between broad spectrum antibiotics and narrow spectrum antimicrobials and provide one example of each. (4 marks)
- (b) Explain why antibiotics are not effective against viruses. (4 marks)
- (c) Using relevant drug examples, describe the processes affected by bacteriostatic antibiotics. (5 marks)
- (d) Bacterial resistance to antibiotics can arise due to mutations in the bacterial DNA. Explain how these mutations can affect antibiotics action. (5 marks)
- (e) Using relevant drug examples, describe the processes affected by bacteriostatic antibiotics. (6 marks)
- (f) Describe the mode of action of bacitracin and explain why it is exclusively used in topical formulations. (6 marks)
- (g) 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*. (10 marks)
- (b) Describe how bacteria mediates antibiotics inactivation by group transfer. (10 marks)

QUESTION THREE (20 MARKS)

- (a) Describe the mechanism of action of β -lactam antibiotics. (10 marks)
- (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 bacteria drug efflux transporters. (10 marks)
- (b) Using specific examples, describe how antibiotics inhibit protein synthesis in bacteria. (10 marks)
-