W1-2-60-1-6

JOMO KENYATTA UNIVERSITY OF AGRICULTURE AND TECHNOLOGY
University Examinations 2019/2020

YEAR I SEMESTER II EXAMINATION FOR THE DEGREE OF MASTER OF SCIENCE IN MEDICAL MICROBIOLOGY

TMM 3104: ANTIMICROBIAL AGENTS

DATE: FEB, 2020 **TIME: 3 HOURS**

INSTRUCTIONS: Answer any FOUR Questions (25 Marks Each)

Question One

a) Discuss the major modes of action of Beta-lactam antibiotics. [10 marks]

b) With examples, discuss how bacteria resist antimicrobials via (i) structure modification of the antimicrobial agent and (ii) hydrolysis of the antimicrobial agents. [15 marks]

Question Two

a) Briefly discuss the mode of action of Tetracycline, chloramphenicol and quinolones. [10 marks]

b) List examples of any two aminoglycosides and two beta-lactam drugs. [5 marks]

c) Discuss the mode of action of any antibacterial agent that acts via metabolic pathway inhibition. [10 marks]

Question Three

a) Giving examples, discuss how bacteria resist antimicrobials via Target modification. [10 marks]

b) Explain the meaning of the following; [15 marks]

I. Extended spectrum Beta-lactamases
II. Extended Ring Beta-lactams
III. Extended spectrum Beta-lactams

Question Four

With examples and illustration where applicable, explain how bacteria resist drugs that target the ribosomes. [25 marks]

Question Five

a) Draw the general structure of a class 1 integron and discuss why this genetic element together with the Tn21 are the most important elements in the dissemination of anti microbial resistance genes. [15 marks]

b) Outline how you can set up a test for ESBLs and show how you would identify the ESBL phenotype. [10 marks]

Question Six

a) Discuss the role of ISCR elements in antimicrobial resistance. [5 marks]

b) Using a table, how you would identify isolates carrying various β – *lactamases* based on their AST results. [15 marks]

c) List 5 integron cassettes and the resistances they encode. [5 marks]