"Investing in Africa's Future"

COLLEGE OF HEALTH, AGRICULTURE AND NATURAL SCIENCES

DEPARTMENT OF BIOMEDICAL AND LABORATORY SCIENCES

BACHELOR OF MEDICAL LABORATORY SCIENCES HONOURS

END OF SEMESTER FINAL EXAMINATIONS

NSLS204: BACTERIOLOGY

LECTURER: Mr Z CHIWODZA

DURATION: 5 HOURS

DATE: 26 NOVEMBER 2021

INSTRUCTIONS

Write your candidate number on your answer sheets.

There are 3 questions in this exam. Answer any **ONE** question of your choice.

Each full question carries **100 marks**

Submit your answer scripts as **pdf** documents through Moodle **ONLY**.

Use the following specifications in your answer scripts:

Font: Times New Roman

Font size: 12

Line spacing: 2.0
Credit will be given for logical, systematic and neat presentations.

Question 1

a) Discuss how TB can be prevented in Low to Medium Income Countries (10 marks)

b) Describe and explain two laboratory testing methods for Tuberculosis as recommended by the World Health Organisation (20 marks)

c) Describe the infection process for TB in a human being. (30 marks)

d) A 30-year old male presents to the Out patients department with a sore throat. Conventional culture methods have failed to identify the cause of the sore throat. Discuss in detail three other methods you may use to identify the cause of the sore throat. (40 marks)

Question 2

a) Describe the anatomy and physiology of *Escherichia coli* that make it pathogenic. (20 marks)

b) A stool sample is brought to your laboratory from a 5-year old boy. Discuss what media and other growth conditions you would need to isolate and identify the different pathogenic bacteria that may be causing the acute gastroenteritis (30 marks)

c) Upon antimicrobial susceptibility testing you discover that a *Klebsiella pneumoniae* isolate is resistant to Cefpodoxime. Explain the implications of this resistance and how you would further identify the mechanism of resistance displayed by the organism. (10 marks)

d) Discuss the methods with which bacteria gain resistance to antibiotics and the methods of prevention of resistance. (40 marks)

Question 3.

A young girl presents to the hospital with fever and constipation. The clinician is suspecting that it is a bacterial infection.

a) Discuss the possible bacterial causes of this illness and your samples of choice. (5 marks)

b) Briefly describe the laboratory diagnostic procedure for any one of the samples you listed above. (10 marks)

c) Discuss the epidemiology and pathogenesis of one possible bacterial cause of the illness you have stated. (25 marks)

d) Given that the bacteria is spread through the feacal oral route, discuss the infection prevention and control measures that should put be in place in the ward, laboratory and community from which this girl came. (60 marks)

THE END