



MACHAKOS UNIVERSITY

University Examinations for 2020/2021 Academic Year

SCHOOL OF PURE AND APPLIED SCIENCES

DEPARTMENT OF BIOLOGICAL SCIENCES

FOURTH YEAR FIRST SEMESTER EXAMINATION FOR

BACHELOR OF SCIENCE (BIOLOGY)

SBT 414 : MEDICAL MICROBIOLOGY

DATE: 9/8/2021

TIME: 11:00 - 1:00 PM

INSTRUCTIONS

1. Answer Question 1 (compulsory) and **any two** questions in Section B.
2. Use clean well labelled diagrams wherever appropriate.

SECTION A (COMPULSORY)

QUESTION ONE (30 MARKS)

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|----|--|-----------|
| a) | Distinguish between inoculation and incubation | (3 marks) |
| b) | Outline the virulence factors of <i>Staphylococcus aureus</i> | (3 marks) |
| c) | Describe 'host range' in microbiology | (3 marks) |
| d) | Explain the action of antimicrobial drugs on nucleic acid synthesis | (3 marks) |
| e) | Describe three mechanisms of acquisition of antimicrobial resistance genes | (3 marks) |
| f) | Explain the urinogenital portal of entry of pathogens | (3 marks) |
| g) | Distinguish true pathogens from opportunistic pathogens | (3 marks) |
| h) | Describe how the MIC of an antibiotic can be obtained | (3 marks) |
| i) | Explain the use of blood agar in diagnosis of Streptococcal infections | (3 marks) |
| j) | Describe the use of three non-culture techniques in diagnosis of <i>Salmonella</i> | (3 marks) |

SECTION B: ANSWER ANY OTHER TWO QUESTIONS

QUESTION TWO (20 MARKS)

Discuss the role of acquired drug resistance in natural selection of microbes.

QUESTION THREE (20 MARKS)

Discuss the HIV under the following sub headings

- a) Pathogenesis and Diagnosis (10 marks)
- b) Epidemiology and Treatment (10 marks)

QUESTION FOUR (20 MARKS)

Discuss five mechanisms of drug resistance .

QUESTION FIVE (20 MARKS)

- a) Discuss three categories of microbial virulence factors (15 marks)
- b) Distinguish the physical and chemical host defense mechanisms (5 marks)