



# MACHAKOS UNIVERSITY

University Examinations for 2021/2022 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: 25/8/2022

TIME: 11.00-1.00 PM

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## INSTRUCTIONS

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

## SECTION A

### QUESTION ONE (30 MARKS)

- |    |   |           |
|----|---|-----------|
| a) | Describe briefly the process of infection                               | (3 marks) |
| b) | Outline the virulence factors of <i>Staphylococcus aureus</i>           | (3 marks) |
| c) | Describe the term 'host range' in microbiology                          | (3 marks) |
| d) | Explain the action of antimicrobial drugs on the cell membrane          | (3 marks) |
| e) | Describe three methods of disease diagnosis through direct examination  | (3 marks) |
| f) | Explain the respiratory portal of entry of pathogens                    | (3 marks) |
| g) | Distinguish true pathogens from opportunistic pathogens                 | (3 marks) |
| h) | Describe the disc diffusion method for testing antimicrobial resistance | (3 marks) |
| i) | Distinguish between incidence and prevalence of disease                 | (3 marks) |
| j) | Describe the three lines of defence used by hosts against pathogens     | (3 marks) |

## SECTION B

### QUESTION TWO (20 MARKS)

Discuss five mechanisms of drug resistance

**QUESTION THREE (20 MARKS)**

Discuss the:

- a) Infection cycle of a virus (12 marks)
- b) Synthesis of virus-specific mRNA (8 marks)

**QUESTION FOUR (20 MARKS)**

Discuss the process of management of a specific clinical sample

**QUESTION FIVE (20 MARKS)**

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