



# MACHAKOS UNIVERSITY

University Examinations for 2021/2022

SCHOOL OF PURE AND APPLIED SCIENCES

DEPARTMENT OF BIOLOGICAL SCIENCES

FOURTH YEAR SUPPLEMENTARY/SPECIAL EXAMINATION FOR

BACHELOR OF SCIENCE IN BIOLOGY

SBT 414 : MEDICAL MICROBIOLOGY

DATE: 16/3/2022

TIME : 8:30 – 10:30 AM

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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 1

- i. Distinguish between inoculation and incubation (3 marks)
- ii. Outline the virulence factors of *Staphylococcus aureus* (3 marks)
- iii. A virus is neither eukaryotic nor prokaryotic. Explain (3 marks)
- iv. Explain the action of antimicrobial drugs on the cell wall (3 marks)
- v. Distinguish between broad spectrum and narrow spectrum antibiotics (3 marks)
- vi. Explain the respiratory portal of entry of pathogens (3 marks)
- vii. Relate the structure of the cell wall to the outcomes of Gram staining (3 marks)
- viii. Explain the role of Mannitol salt agar as a differential media (3 marks)
- ix. Explain significance of subculturing in microbial investigations. (3 marks)
- x. Distinguish true pathogens from opportunistic pathogens (3 marks)

## SECTION B

### QUESTION 2

- a. Discuss three categories of media for bacterial cultivation in the lab (15 Marks)
- b. Explain the process of characterization of *Salmonella spp* from a sewage water sample

(5 Marks)

### **QUESTION 3**

Discuss the HIV virus under the following sub headings

- a. Pathogenesis (5 marks)
- b. Diagnosis (5 marks)
- c. Epidemiology (5 marks)
- d. Treatment (5 marks)

### **QUESTION 4**

Discuss five specific mechanisms of drug resistance (20 marks)

### **QUESTION 5**

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