



MACHAKOS UNIVERSITY

University Examinations for 2020/2021 Academic Year

SCHOOL OF PURE AND APPLIED SCIENCES

DEPARTMENT OF BIOLOGICAL SCIENCES

THIRD YEAR FIRST SEMESTER EXAMINATION FOR

BACHELOR OF SCIENCE (BIOLOGY)

SZL 316: PRINCIPLES OF MEDICAL MICROBIOLOGY

DATE: 11/8/2021

TIME: 8:30 – 10:30 AM

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)

- a) Describe the working of MacConkey agar (3 marks)
- b) Explain how you can obtain a pure culture of bacteria “A” from a sample with mixed cultures (3 marks)
- c) Explain the use of genetic probes in pathogen identification (3 marks)
- d) Explain the route taken by a drug in order to be effective (3 marks)
- e) Describe virulence factors of *Staphylococcus aureus* (3 marks)
- f) Compare and contrast a biological vector and a mechanical vector (3 marks)
- g) Highlight Koch’s postulates (3 marks)
- h) Describe PCR as a diagnostic technique (3 marks)
- i) Distinguish between a selective and an enriched media (3 marks)
- j) Explain the preparation of solid media from broth media (3 marks)

SECTION B: ANSWER ANY OTHER TWO QUESTIONS

QUESTION TWO (20 MARKS)

Discuss physical and immunologic methods of pathogen diagnosis and identification.

QUESTION THREE (20 MARKS)

Discuss modes of action of antimicrobial drugs

QUESTION FOUR (20 MARKS)

- a) Describe the process of infection by viral pathogens (8 marks)
- b) Discuss *Shigella spp* under the following sub-headings (12 marks)
 - i. Morphology and identification
 - ii. Pathogenicity
 - iii. Epidemiology

QUESTION FIVE (20 MARKS)

- a) Describe the Gram staining protocol (10 marks)
- b) Discuss the stages of microbial investigation (10 marks)