



MACHAKOS UNIVERSITY

University Examinations for 2021/2022

SCHOOL OF PURE AND APPLIED SCIENCES

DEPARTMENT OF BIOLOGICAL SCIENCES

THIRD YEAR SUPPLEMENTARY EXAMINATION FOR
BACHELOR OF SCIENCE IN BIOLOGY

SZL 316: PRINCIPLES OF MEDICAL MICROBIOLOGY

DATE: 16/3/2022

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

Question 1

- i. Describe the working of MacConkey agar as a differential media (3 marks)
- ii. Explain how you can obtain a pure culture of bacteria A from a sample with mixed cultures (3 marks)
- iii. Explain the use of genetic probes in pathogen identification (3 marks)
- iv. Explain the route taken by a drug in order to be effective (3 marks)
- v. Distinguish between prevalence and incidence in epidemiological studies (3 marks)
- vi. Compare and contrast a biological vector and a mechanical vector (3 marks)
- vii. Highlight Koch's postulates (3 marks)
- viii. With a well labelled diagram, describe the basic structure of a virus (3 marks)
- ix. Distinguish between a selective and an enriched media (3 marks)
- x. Explain the preparation of solid media from broth media (3 marks)

SECTION B

QUESTION 2

Discuss physical and immunologic methods of pathogen diagnosis and identification (20 Marks)

QUESTION 3

Discuss modes of action of antimicrobial drugs (20 Marks)

QUESTION 4

- 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 5

- a. Describe the Gram staining protocol [8 marks]
- b. Discuss the 6 “I”s of microbial investigation [12 marks]