



**MERU UNIVERSITY OF SCIENCE AND TECHNOLOGY**  
P.O. Box 972-60200 – Meru-Kenya  
Tel: +254(0) 799 529 958, +254(0) 799 529 959, + 254 (0) 712 524 293,  
Website: [info@must.ac.ke](mailto:info@must.ac.ke) Email: [info@must.ac.ke](mailto:info@must.ac.ke)

---

**University Examinations 2023/2024**

FIRST YEAR FIRST SEMESTER EXAMINATION FOR THE DEGREE OF MASTER OF  
SCIENCE IN MOLECULAR BIOLOGY

**SZE 5102: MOLECULAR BACTERIOLOGY**

**DATE: DECEMBER 2023**

**TIME: 3 HOURS**

**INSTRUCTIONS:** Answer question *one* and any other *two* questions

---

**QUESTION ONE (20 MARKS)**

- a) Discuss Koch's molecular postulates as put forth by Stanley Falkow in 1988 (5 marks)
- b) Discuss mechanisms of cellular movement in eukaryotic and prokaryotic (5 marks)
- c) Discuss the cytoplasmic membrane and its functions (5 marks)
- d) Discuss the general structure of a peptidoglycan (5 marks)

**QUESTION TWO (20 MARKS)**

Discuss in details the principles of bacterial metabolism and how it affects humans

(20 marks)



MUST is ISO 9001:2015 and



ISO/IEC 27001:2013 CERTIFIED

### **QUESTION THREE (20 MARKS)**

Discuss any for types of mutations that would occur in bacteria (20 marks)

### **QUESTION FOUR (20 MARKS)**

- a) Discuss any four cloning vectors (10 marks)
- b) Describe using diagrams how EcoR1 and ligase enzymes produce Rdna molecules (10 marks)



**MUST is ISO 9001:2015 and**



**ISO/IEC 27001:2013 CERTIFIED**