



# MERU UNIVERSITY OF SCIENCE AND TECHNOLOGY

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## University Examinations 2023/2024

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

**SZE 5151: GENOMICS, PROTEOMICS, METABOLIMICS AND TRANSCRIPTIONS**

DATE: APRIL 2024

TIME: 3 HOURS

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

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### QUESTION ONE (30 MARKS)

- a) Explain the following terms (6 marks)
  - i. Sequence homology
  - ii. Linkage analysis
- b) Explain the applications of differential gene expression analysis (7 marks)
- c) Describe the principle of two next generation sequencing platforms (7 marks)

### QUESTION TWO (20 MARKS)

Discuss the lab methods used to analyse the expression of single genes to whole genomes

### QUESTION THREE (20 MARKS)

Discuss the mass spectrometry workflow and its applications

**QUESTION FOUR (20 MARKS)**

Discuss the applications of metabolomics