



# MERU UNIVERSITY OF SCIENCE AND TECHNOLOGY

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## University Examinations 2022/2023

SECOND YEAR FIRST SEMESTER SPECIAL/SUPPLEMENTARY EXAMINATION FOR  
THE DEGREE OF BACHELOR OF SCIENCE IN BIOCHEMISTRY

SECOND YEAR FIRST SEMESTER SPECIAL/SUPPLEMENTARY EXAMINATION FOR  
THE DEGREE OF BACHELOR OF SCIENCE IN BIOTECHNOLOGY

### SHC 3203: LABORATORY TECHNIQUES

DATE: AUGUST 2023

TIME: 2 HOURS

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

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#### QUESTION ONE (30 MARKS)

- a) (i) show how 4ml of 50Mm Nacl solution is prepared from a 2M Nacl stock solution (2 marks)
  - (ii) Express 2.5M NaOH as percent solution (2 marks)
  - b) Outline the major factors to consider when disposing off laboratory waste material (5 marks)
  - c) Explain briefly the storage of light sensitive reagents in the laboratory (2 marks)
  - d) Elaborate troubleshooting of a pH meter (4 marks)
  - e) Outline the non-negotiable laboratory rules (4 marks)
  - f) Differentiate linear and serial dilutions (2 marks)
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ISO/IEC 27001:2013 CERTIFIED

Page 1

- g) Outline the major factors to consider when storing materials reagents in the laboratory (3 marks)
- h) Explain the following terms:
- (i) Buffer capacity (2 marks)
  - (ii) Standard (2 marks)
- i) Outline types of fire extinguishers and their applications (2 marks)

**QUESTION TWO (20 MARKS)**

- a) Discuss factors to consider when choosing an analytical method (8 marks)
- b) Illustrate and describe the components of a pH Meter (12 marks)

**QUESTION THREE (20 MARKS)**

Discuss five protein properties exploited during protein purification technique (20 marks)

**QUESTION FOUR (20 MARKS)**

- a) Describe the different components of a spectrophotometer (10 marks)
- b) Discuss agarose gel electrophoresis (10 marks)

