



# MERU UNIVERSITY OF SCIENCE AND TECHNOLOGY

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## University Examinations 2022/2023

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

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

### SHC 3302: INTEGRATED BIOCHEMICAL TECHNIQUES II

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) Describe briefly isoelectric focussing (5 marks)
  - b) Differentiate between stacking and resolving gels (3 marks)
  - c) Distinguish between capillary transfer and electroblotting used in western blotting (4 marks)
  - d) Differentiate between kinetic and fixed time enzyme assays (4 marks)
  - e) Describe how to determine the molecular weight of an unknown nucleic acid sample in agarose gel electrophoresis (3 marks)
  - f) Describe briefly Native-PAGE (5 marks)
  - g) Explain the purpose of the following:
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MUST is ISO 9001:2015 and



ISO/IEC 27001:2013 CERTIFIED

Page 1

- (i) Coomassie blue (2 marks)
- (ii) Methylene bis-acrylamide (2 marks)
- h) Outline the advantages and disadvantages of SDS-PAGE (2 marks)

**QUESTION TWO (20 MARKS)**

- a) Describe pulse field electrophoresis (10 marks)
- b) Discuss paper electrophoresis (10 marks)

**QUESTION THREE (20 MARKS)**

Describe agarose gel electrophoresis under the following subtopics

- (i) Agarose gel electrophoresis apparatus and reagents (7 marks)
- (ii) Preparation and running of the gel (8 marks)
- (iii) Quantification of nucleic acids (5 marks)

**QUESTION FOUR (20 MARKS)**

Discuss in detail the steps involved in tissue preparation for microscopic examination

(20 marks)

