



# 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

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

### SHC 3352: RECOMBINANT DNA TECHNOLOGY

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 the components of a polymerase chain reaction mixture (6 marks)
- b) Explain the screening of DNA libraries using a specific example (4 marks)
- c) Explain DNA- Protein ways of interaction in organisms (4 marks)
- d) Outline the characteristic attribute of protein-protein interaction (6 marks)
- e) Discuss a protein expression system used in recombinant DNA technology (4 marks)
- f) Discuss the exceptions of Mendelian rules of segregation, independent assortment and dominance in genetics (4 marks)
- g) State the systems of classification of Restriction endonucleases (2 marks)

#### QUESTION TWO (20 MARKS)

- a) Discuss the purification of plasmid DNA in DNA cloning process (10 marks)



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b) Discuss the steps in Polymerase chain reaction cycle (10 marks)

**QUESTION THREE (20 MARKS)**

Discuss the application of recombinant DNA technology in agriculture (20 marks)

**QUESTION FOUR (20 MARKS)**

Discuss plasmids as tool for creating recombinant DNA organism (20 marks)

