



MERU UNIVERSITY OF SCIENCE AND TECHNOLOGY

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University Examinations 2023/2024

FOURTH YEAR SECOND SEMESTER EXAMINATION FOR THE DEGREE OF
BACHELOR OF SCIENCE IN BIOTECHNOLOGY

SHC 3452: MEDICAL BIOTECHNOLOGY

DATE: APRIL 2024

TIME: 2 HOURS

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

QUESTION ONE (30 MARKS)

- Describe the advantages of using bacteriophage lambda as a cloning vehicle (6 marks)
- A 20 base primer has a 60% G + C content. What will be the T_m content and a 2⁰C T_m for A+T content and a 4⁰C T_m for G+C content (4 marks)
- Outline the limitations associated with northern blotting (4 marks)
- Contrast between a cDNA library and genomic library (4 marks)
- Differentiate between transversion and transitions point mutations with appropriate illustrations (4 marks)
- Explain the limitations which may prevent *E. coli* from expressing a foreign gene (4 Marks)
- Write short notes on EcoRI (4 marks)

QUESTION TWO: (20 MARKS)

Discuss in detail the general procedure for southern blotting (20 marks)

QUESTION THREE: (20 MARKS)

- i. Describe the basic steps in making (8 marks)
- ii. Classify plasmids based on the main characteristic genes (12 marks)

QUESTION FOUR: (20 MARKS)

Discuss ethical issues that arise from recombinant DNA on the issues based on scientific evidence (20 marks)