



KISII UNIVERSITY
UNIVERSITY EXAMINATIONS

**FOURTH YEAR EXAMINATION FOR THE AWARD OF THE DEGREE OF
BACHELOR OF SCIENCE IN LABORATORY TECHNOLOGY
FIRST SEMESTER 2021/2022
(FEBRUARY-JUNE, 2022)**

BSLT 442: ADVANCED GENETIC ENGINEERING

STREAM: Y4 S1

TIME: 2 HOURS

DAY: MONDAY, 12.00 P M – 2.00 P M

DATE: 16/05/2022

INSTRUCTIONS:

- 1. Do not write anything on this question paper.**
- 2. Answer ALL Questions in section A (Compulsory) and any other TWO Questions in section B.**

SECTION A: ANSWER ALL QUESTIONS.

1. State the roles of SDS and chilled ethanol in DNA isolation. (2 marks)
2. Differentiate between genetic and physical mapping. (2 marks)
3. Write short notes on type I restriction endonucleases. (4 marks)
4. Compare and contrast between viral and non-viral methods of human gene transfer. (5 marks)
5. Explain the applications of micro array technology. (5 marks)
6. Explain the various steps involved in RNA isolation. (6 marks)
7. Explain electroporation as a transformation technique. (6 marks)
8. PCR is a revolutionary technique that promises to replace gene cloning for many of the objectives. Comment with help of suitable examples. (6 marks)
9. Write short notes on bacteriophage as a vector. (4 marks)

SECTION B: ANSWER ANY TWO QUESTIONS.

10. a) Describe in detail the techniques of colony hybridization. (8 marks)
b) Explain DNA fingerprinting technique in detail. (7 marks)
11. a) Explain the process for production of any one recombinant protein. (8 marks)
b) Discuss in detail the DNA chip technology. (7 marks)
12. Explain in detail the process of human gene therapy with examples of human diseases target. (15 marks)