

CHUKA



UNIVERSITY

UNIVERSITY EXAMINATIONS

**FOURTH YEAR EXAMINATION FOR THE AWARD OF
DEGREE OF BACHELOR OF SCIENCE**

BIOC 436: APPLIED BIOTECHNOLOGY

STREAMS: Y4S1

TIME: 2 HOURS

DAY/DATE : WEDNESDAY 22 /09/ 2021

11.30 AM – 1.30 PM

INSTRUCTIONS TO CANDIDATES:

- Answer Question One and any other Two Questions.
- DO NOT WRITE ANYTHING on the question paper.

QUESTION ONE (Compulsory) 30 Marks

- a) Define SNPs as applied in genetic markers and state its applications in biotechnology. [7 Marks]
- b) Compare and contrast Southern blotting and Northern Blotting. [5 Marks]
- c) Justify why enzyme immobilization is important in applied biotechnology. [5 Marks]
- d) Explain transformation by electroporation [5 Marks]
- e) Define the following terms:
- (i) Descriptive ethics
 - (ii) Normative ethics
- f) Distinguish between the following terms as used in cell and tissue culture. [4 Marks]
- (i) Totipotent and pluripotent cells
 - (ii) Primary and secondary culture

QUESTION TWO (20 MARKS)

- a) Explain how modern applied biotechnology has influenced agriculture and health sectors in the world. [10 Marks]
- b) Describe entrapment as a method of enzyme immobilization highlighting its strengths and limitations used in applied biotechnology. [10 Marks]

QUESTION THREE (20 MARKS)

- a) Explain briefly how Restriction Fragment Length Polymorphisms (RFLPs) are applied in biotechnology. [5 Marks]
- b) Describe in details the steps in somatic hybridization. [10 Marks]
- c) Explain the application of biotechnology In space [5 Marks]

QUESTION FOUR (20 MARKS)

- a) Explain the ecological biosafety implications of biotechnology on biodiversity. [5 Marks]
 - b) Explain how plant tissue culture is performed in the laboratory. [10 Marks]
 - c) A sterile environment is in tissue culture experiments. Explain how this is achieved. [5 Marks]
-