CHUKA   **UNIVERSITY**

UNIVERSITY EXAMINATIONS

EXAMINATION FOR THE AWARD OF DEGREE OF BACHELOR OF SCIENCE IN

BIOC 452: DNA TECHNOLOGY

STREAMS: **TIME: 2 HOURS**

DAY/DATE: WEDNESDAY 4/12/2019   **2.30 P.M – 4.30 P.M**

INSTRUCTIONS
Answer question one and any other two questions
Do not write on the question paper

QUESTION ONE (30MARKS)

(a) State six main reasons for genetically engineering plants.   [6 marks]

(b) A gene might be 1/1,000,000 of the genome, and therefore determining it in the genome has often been termed as looking for a pin in a haystack. Describe the three basic approaches applied to determine a gene.   [3 marks]

(c) Explain the basic functional requirements of type II restriction enzymes.   [5 marks]

(d) What are the differences between genomic and complimentary DNA libraries? How do you create and screen for these libraries?   [8 marks]

(e) Explain the meaning of the following terms: [8 marks]

    (i)   Recombinant DNA technology

    (ii)   Cloning a gene

    (iii)   Competent cells

    (iv)   Constitutive promoter

    (v)   DNA typing (DNA fingerprinting)

QUESTION TWO 20 MARKS

(a) Name two proteins that are produced at industrial scale for therapeutic purposes through recombinant DNA technology.   [2 marks]

(b) Describe in details the process of recombinant DNA technology to produce desired

protein.   [18 marks]

QUESTION THREE 20 MARKS

(a) Explain the strategies used in identifying and selecting transformed cells during the

transformation experiments.   [8 marks]

(b) Manipulation and modulation of genes expression is a product of many factors. Highlight

the main five factors involved in these processes.   [12 marks]

QUESTION FOUR (20 MARKS)

(a) Discuss the process of genetic transformation of plant using plasmid of the

Agrobacterium tumafaciens.   [15 marks]

(b) List five vectors used to express gene in genetic engineering.   [5 marks]