CHUKA  **UNIVERSITY**

UNIVERSITY EXAMINATIONS

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

BIOC 409: DNA TECHNOLOGY

STREAMS: BSC (BIOC) Y4S1 **TIME: 2 HOURS**

DAY/DATE: MONDAY 10/12/2018 **2.30 PM – 4.30 PM**

INSTRUCTIONS:

- **Answer Question One and any other Two Questions**
- **Do not write on the question paper**

Question One (30 marks)

(a) Distinguish giving examples the difference between Isocaudomers and Isoschizomers restriction endonucleases. [4 marks]

(b) discuss screening a phage DNA library using membrane-hybridization assay. [8 marks]

(c) Explain the difference between genomic library and cDNA library. [2 marks]

(d) Explain the production of recombinant vaccinia viruses expressing hepatitis B immunogenic protein. [6 marks]

(e) Describe the manual and automated Sanger di-deoxy chain-termination sequencing of the DNA. [10 marks]

Question Two (20 Marks)

(a) Discuss the production of recombination insulin. [18 marks]

(b) Explain two advantages of recombinant vaccines. [2 marks]

Question Three (20 Marks)

(a) Describe the production of transgenic tomato plants with delayed fruit ripening. [10 marks]

(b) Using specific examples, describe different types of vectors used in rDNA technology. [10 marks]

Question Four (20 Marks)

(a) A biotechnologist has in his lab a gene of interested already digested with HaeIII restriction enzyme. He wants to clone the gene using a plamid P^{UC18} as a cloning vector and Ecoli DH5 α as the host cell. The BamHI is available in the lab. Discuss the strategies for cloning such gene [12 marks]

(b) Discuss screening for the recombinant Bacteria using blue-white strategy from example in question four (a) above. [8 marks]
