

CHUKA



UNIVERSITY

UNIVERSITY EXAMINATIONS

FIRST YEAR EXAMINATION FOR THE AWARD OF DEGREE
OF BACHELOR OF SCIENCE IN BIOCHEMISTRY

BIOC 409: DNA TECHNOLOGY

STREAMS: BIOC Y4S1

TIME: 2 HOURS

DAY/DATE: FRIDAY 8/12/2017

8.30 A.M - 10.30 A.M.

INSTRUCTIONS:

- Answer Question ONE and any other TWO Questions
- Do not write anything on the question paper

QUESTION ONE

- (a) Explain the difference between cloning and expression vectors. [2 Marks]
- (b) Describe the properties that the vector must possess to perform its functions as a cloning vector. [2 Marks]
- (c) Give four types of cloning vectors in DNA technology. [8 Marks]
- (d) Discuss the polymerase chain reaction. Name two applications of PCR. [8 Marks]
- (e) Describe the manual and automated Sanger di-deoxy chain-termination sequencing of the DNA. [10 Marks]

QUESTION TWO

Describe the production of transgenic tomato plants with delayed fruit ripening. [20 Marks]

QUESTION THREE

- (a) Discuss cloning of a foreign gene of interest using a plasmid P^{UC18} as a cloning vector in Ecoli DH5 α as the host cell. [10 Marks]
- (b) Discuss screening for recombinant Bacteria using antibiotic resistance marker strategy. [10 Marks]

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QUESTION FOUR

- (a) Explain the difference between genomic library and cDNA library. [2 Marks]
- (b) Discuss the production of cDNA library. [10 Marks]
- (c) Explain the application of southern blotting in detection of a specific gene of interest in DNA samples. [8 Marks]

QUESTION FIVE

- (a) Discuss the production of recombinant insulin. [18 Marks]
 - (b) Explain two advantages of recombinant vaccines. [2 Marks]
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