

CHUKA



UNIVERSITY

UNIVERSITY EXAMINATIONS

EXAMINATION FOR THE AWARD OF DEGREE OF SCIENCE IN BIOCHEMISTRY

BIOC 350: BIOCHEMISTRY OF NUCLEIC ACIDS

STREAMS: BSC (BIOC)

TIME: 2 HOURS

DAY/DATE: FRIDAY 26/03/2021

8.30 A.M. – 10.30 A.M.

INSTRUCTIONS:

- Answer question ONE and any other TWO questions
- Do not write on the question paper

QUESTION ONE (30 MARKS)

- (a) Describe the different forms of DNA [5 marks]
- (b) Describe two disorders associated with impaired packaging of DNA [5 marks]
- (c) Explain the roles of DNA polymerases involved in the replication of bacterial genome. [5 marks]
- (d) Describe the structure of E.coli origin of replication (ori C). [7 marks]
- (e) Explain the different ways through which DNA damage can occur [8 marks]

QUESTION TWO (20 MARKS)

- (a) Explain the different forms of genetic recombination [10 marks]
- (b) Describe the secondary structure of tRNA and give the roles of the various features [10 marks]

QUESTION THREE (20 MARKS)

- (a) Briefly describe the events that can occur when two parental strands exchange portions as a result of DNA splicing [10 marks]
- (b) A medical report described a patient as having degenerative changes in the eyes and skin as well as neural collapse. Describe what this could be attributed to. [10 marks]

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**QUESTION FOUR (20 MARKS)**

- (a) Describe how protein biosynthesis occurs in prokaryotes [10 marks]
- (b) Explain the steps involved in DNA lagging strand synthesis [10 marks]
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