CHUKA UNIVERSITY

UNIVERSITY EXAMINATIONS

EXAMINATION FOR THE AWARD OF DEGREE OF BACHELOR OF SCIENCE IN AGRICULTURAL EDUCATION, BACHELOR OF SCIENCE IN AGRICULTURE, BACHELOR OF SCIENCE IN FOOD SCIENCE AND TECHNOLOGY

BIOC 200: INTRODUCTORY BIOCHEMISTRY

STREAMS: BSC (AGED, AGRI, FOST) **TIME: 2 HOURS**

DAY/DATE: TUESDAY 14/04/2020 **11.30 AM – 1.30 PM**

INSTRUCTIONS:

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

QUESTION ONE (30 MARKS)

(a) Differentiate between amylose and amylopectin. [2 marks]

(b) Outline four roles of enzyme cofactors. [4 marks]

(c) Describe light phase of photosynthesis, highlighting its role in plant metabolism. [9 marks]

(d) Draw the structure of the following sugars:

(i) α-D Fructose [2 marks]

(ii) Lactose [2 marks]

(e) Describe causes and prevention of rancidity in fats. [5 marks]

(f) Explain how amino acids are catabolized in the body. [6 marks]

QUESTION TWO (20 MARKS)

(a) Using structural and chemical formulae, discuss the reactions of citric acid cycle. [10 marks]

(b) Describe amino acid classification based on properties of side chain (R group) [10 marks]

QUESTION THREEE (20 MARKS)

(a) Deoxyribonucleic acid (DNA) is the genetic code that determines all the characteristics of living things.

(i) Draw structures of pyrimidine bases found in DNA. [4 marks]

(ii) Describe secondary structure of DNA as proposed by Watson and Crick in 1953. [7 marks]

(b) Using chemical structures, describe the occurrence and chemistry of four structural polysaccharides. [9 marks]

QUESTION FOUR (20 MARKS)

(a) Conjugated proteins are sub-classified according to the prosthetic group they contain. Discuss major functions of conjugated proteins in the body. [10 marks]

(b) Describe mitochondrial chemiosmotic synthesis of ATP and explain how the process can be chemically inhibited. [10 marks]
