



THE CATHOLIC UNIVERSITY OF EASTERN AFRICA

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MAIN EXAMINATION

SEPTEMBER – DECEMBER 2019 TRIMESTER

FACULTY OF SCIENCE

DEPARTMENT OF BIOLOGY

REGULAR PROGRAMME

BIO 106: BIOCHEMISTRY (SUPP)

Date: DECEMBER 2019

Duration: 2 Hours

INSTRUCTIONS: Answer Question ONE and any other TWO Questions

- Q1. (a) (i) Differentiate between the following terms as used in biochemistry
- a) Ionic and covalent bonds **(2marks)**
 - b) Endergonic and exergonic reactions **(2marks)**
 - c) Isomer and aldehyde **(2marks)**
- (ii) Illustrate the structures of the following saccharides **(2marks)**
- a) Glucose
 - b) Fructose
- (iii) Explain how you can synthesize a maltose biomolecule **(2marks)**
- (b) (i) What is, galactosemia? **(2marks)**
- (ii) How would you identify a reducing sugar in the laboratory **(2marks)**
- (iii) Briefly outline six types of proteins and their functions **(6marks)**
- (c) (i) List three properties of bases **(3marks)**
- (ii) What is buffer capacity? **(2marks)**
- (iii) What are, the chemical properties of water **(5marks)**
- Q2. Discuss the non-covalent interactions in biomolecules **(20marks)**

- Q3. (i) Describe six ways in which proteins can be denatured (6marks)
(ii) Name four biological effects of prostaglandins (4marks)
(iii) Discuss briefly the various polysaccharides and their functions. (10marks)
- Q4. (i) Illustrate and explain the Zwitterion nature of amino acids (6marks)
(ii) Explain the information nucleotide sequence can give (4marks)
(iii) With illustrations, explain the effects of both PH and temperature on enzyme function (10marks)
- Q5. (i) Briefly describe three types of steroids (6marks)
(ii) Outline two types of lipoproteins (4marks)
(iii) Discuss the functions of the following cell organelles (10marks)
- a) Mitochondrion
 - b) Ribosome
 - c) Nucleus
 - d) Cell membrane
 - e) Golgi bodies

END