



THE CATHOLIC UNIVERSITY OF EASTERN AFRICA

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MAIN EXAMINATION

AUGUST – DECEMBER 2017 TRIMESTER

FACULTY OF SCIENCE

DEPARTMENT OF BIOLOGY

REGULAR PROGRAMME

BIO 106: GENERAL BIOCHEMISTRY I

Date: DECEMBER 2017

Duration: 2 Hours

INSTRUCTIONS: Answer Question ONE and any other TWO Questions

- Q1. a) Discuss in detail functions of the following organelles cell membrane, centrioles, smooth endoplasmic reticulum, chloroplast, golgi bodies **(5 marks)**
- b) Describe the role of enzymes as catalysts in cellular chemical reactions. **(4 marks)**
- c) Differentiate endergonic from exergonic chemical reactions **(2 marks)**
- d) Where do glycolysis, the Krebs cycle, and oxidative phosphorylation take place in the cell? **(3 marks)**
- e) Briefly discuss the impact of changes in both temperature and pH on enzyme function **(4 marks)**
- f) Define term chiral compound and give an example **(2marks)**
- g) Illustrate and explain the zwitterion nature of amino acids **(6 marks)**
- h) Explain information the nucleotide sequence can give **(4 marks)**

- Q2. a) List and define the six classes of enzymes identified by the International Union of Biochemistry and in each case give an example **(12 marks)**
- b) Explain how scurvy develops due to defective collagen **(8marks)**
- Q3. Discuss four levels of protein structure. Name the non-covalent interactions that are responsible for each level of structure. **(20 marks)**
- Q4. a) Explain the role Watson–Crick and Chargaff played in relation to DNA structure understanding **(6 marks)**
- b) Differentiate nucleoside from nucleotide and give examples **(4 marks)**
- c) Discuss five functions of lipids **(10 marks)**
- Q5. a) Describe the basis of lipid classification **(6 marks)**
- b) Explain what is meant by the term denaturation and list the ways to denature a protein **(4 marks)**
- c) Describe starch structure and significance of branching **(10 marks)**

END