



# THE CATHOLIC UNIVERSITY OF EASTERN AFRICA

**A. M. E. C. E. A**

**MAIN EXAMINATION**

**AUGUST - DECEMBER 2015 TRIMESTER**

**FACULTY OF SCIENCE**

**DEPARTMENT OF BIOLOGY**

**REGULAR PROGRAMME**

**BIO 106: GENERAL BIOCHEMISTRY**

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**Date: DECEMBER 2015**

**Duration: 2 Hours**

**INSTRUCTIONS: Answer Question ONE and ANY other THREE Questions**

- Q1. a) What are THREE biological functions mediated by proteins. **(3 marks)**
- b) Explain THREE diseases affecting collagen protein. **(3 marks)**
- c) List TWO methods that can be used in study of tertiary proteins. **(2 marks)**
- d) What is a buffer ? How does it work? What compounds act as buffers in cells? **(3 marks)**
- e) Define an essential fatty acid and give TWO examples. **(3 marks)**
- f) Discuss FOUR functions of oligosaccharides on proteins. **(4 marks)**
- g) Describe FIVE functions mediated by lipids. **(5 marks)**
- h) Draw a generic L -  $\alpha$  - amino acid using the fischer convention. **(5 marks)**
- i) Define or explain the following terms  
Antiparallel  
Complimentary base pairing. **(2 marks)**

- Q2. a) Which are the TWO phases of glycolysis? Describe each in details. **(15 marks)**
- b) Define protein denaturation which FOUR factors can cause protein denaturation? **(6 marks)**
- Q3. a) Indicate which of the following are purine or pyrimidine bases, nucleosides or nucleotides. **(8 marks)**
- b) Discuss THREE important fibrous proteins exhibiting secondary structure. **(12 marks)**
- Q4. a) Explain FOUR things nucleic acid sequence provides. **(8 marks)**
- b) Discuss FOUR biological roles of cholesterol. **(8 marks)**
- c) Describe FOUR way lipids due to amphipathic nature orient themselves at oil water interfaces. **(4 marks)**

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