



SOUTH EASTERN KENYA UNIVERSITY

UNIVERSITY EXAMINATIONS 2017/2018

FIRST SEMESTER EXAMINATIONS FOR THE DEGREE OF BACHELOR OF SCIENCE IN PUBLIC HEALTH; DEGREE OF BACHELOR OF SCIENCE IN FISHERIES MANAGEMENT & AQUACULTURE TECHNOLOGY; DEGREE OF BACHELOR OF SCIENCE IN APPLIED AQUATIC SCIENCES; DEGREE OF BACHELOR OF SCIENCE IN BIOLOGY; DEGREE OF BACHELOR OF SCIENCE IN EDUCATION; DEGREE OF BACHELOR OF ENVIRONMENT AND CONSERVATION STUDIES

ABC 105/BCH 108: INTRODUCTION TO BIOCHEMISTRY

DATE: 11TH DECEMBER, 2017 TIME: 10.30-12.30 P.M

INSTRUCTIONS TO CANDIDATES

- (a) Answer **ALL** the Questions in Section A
- (b) Answer **ANY TWO** Questions in Section B
- (c) Illustrate your answers with well labeled diagrams where appropriate

Section A (30 Marks)

1.
 - a) Calculate the pH of a solution that has a H^+ concentration of 1.50×10^{-5} mol/L.
(1 mark)
 - b) Calculate the pH of the buffer containing 0.020 mol of lactic acid ($CH_3CH(OH)COOH$) ($pK_a = 3.86$) and 0.03 mol of sodium lactate per litre. (1 mark)
 - c) Draw and label the tripeptide formed from valine, tyrosine and phenylalanine in this order. (4 marks)
2. Describe briefly **four (4)** crucial roles of proteins in all biological processes. (4 marks)
3. Name the **three** major size classes of carbohydrates giving two example of each. (6 marks)
4.
 - a) State the function of fatty acid synthesis. (1 mark)

- b) Name the location where this process occurs? **(1 mark)**
- c) Name the major complication the process faces and how it is overcome? **(2 marks)**
5. State the role of the golgi bodies in eukaryotic cells. **(3 marks)**
6. State the role of binding energy in catalysis. **(3 marks)**

Section B (40 Marks)

7. Discuss the classification of amino acids. **(20 marks)**
8. Describe aerobic glycolysis. **(20 marks)**
- 9.
- a) Describe and derive the ion product of water. **(10 marks)**
- b) The dissociation constant is normally used to assess the degree of ionization (describes Acid strength). Calculate the degree of ionization of 1.5 M $\text{CH}_3\text{CH}_2\text{COOH}$ (propionic acid) using its K'_a value of 1.35×10^{-5} . **(10 Marks)**
10. Describe the carnitine shuttle. **(20 marks)**