

**CHUKA**



**UNIVERSITY**

**RESIT/ SPECIAL EXAMINATIONS**

**EXAMINATION FOR THE AWARD OF  
DIPLOMA IN ANIMAL HEALTH AND PRODUCTION**

**BIOC 0113: BASIC BIOCHEMISTRY**

**STREAMS: DIP (ANHE)**

**TIME: 2 HOURS**

**DAY/DATE: THURSDAY 26/07/2018**

**11.30 AM – 1.30 PM**

**INSTRUCTIONS:**

**ANSWER ALL QUESTIONS**

**QUESTION ONE (30 MARKS)**

- (a) Differentiate between eukaryotic and prokaryotic cells. [4 marks]
- (b) Differentiate between essential and non-essential fatty acids. [4 marks]
- (c) Illustrate the general structure of amino acids. [2 marks]
- (d) State two roles of citric acid cycle. [2 marks]
- (e) Illustrate the formation of the following [4 marks]
  - (i) Haworth structure of ribose
  - (ii)  $\alpha-1, \beta-2-i$  glycosidic bond in sucrose
- (f) Explain the roles of carbohydrates in biological system. [8 marks]
- (g) Explain the three different types of RNA [6 marks]

**QUESTION TWO (20 MARKS)**

- (a) Illustrate the double helix structure of DNA giving its importance. [10 marks]
- (b) Explain the difference between DNA and RNA [10 marks]

**QUESTION THREE (20 MARKS)**

- (a) Discuss the 4 levels of structural organization of proteins. [8 marks]
- (b) In isomerization of dihydroxyacetone phosphate (DHAP) to glyceraldehydes 3-phosphate (G-3-P), at equilibrium, the ratio of glyceraldehydes 3-phosphate to dihydroxyacetone phosphate is 0.0675 at  $25^{\circ}\text{C}$  (298k) and  $P^{\text{h}}$  7.0. Calculate the standard free energy for this reaction. [4 marks]
- (c) Explain 4 functions of proteins in biological systems. [8 marks]
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