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CHUKA



UNIVERSITY

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**UNIVERSITY EXAMINATIONS**

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

**BIOC 00113: INTRODUCTION TO GENERAL BIOCHEMISTRY**

**STREAMS:**

**TIME: 2 HOURS**

**DAY/DATE: FRIDAY 12/04/2019**

**8.30 A.M – 10 .30 A.M**

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**INSTRUCTIONS**

**Answer question one and any other two questions**

**Do not write anything on the question paper**

1. (a) Define biochemistry and state some of its major achievements to science and medicine. [4 marks]
- (b) Nutritional disorders associated with both forage and feed consumption can have a large impact on the profitability of animal products. Discuss any (4) types of ruminant nutritional disorders. [8 marks]
- (c) Describe structural hierarchy in the molecular organization of cells. [3 marks]
- (d) Define the following terms:
  - (i) Enantiomers
  - (ii) Chiral centre
  - (iii) Diastereoisomers
- (e) Differentiate between essential and non essential amino acids giving examples. [3 marks]
- (f) Define vitamins and outline their classification giving examples. [3 marks]
- (g) Describe the 2 types of fatty acids giving examples of each. [2 marks]
- (h) Giving examples, distinguish between nucleotide and nucleoside. [2 marks]

- (i) Lactose is a disaccharide sugar of milk and other dairy products. Using lactose as an example, explain the glycosidic linkage that joins monosaccharides to form disaccharides. [2 marks]
2. (a) Discuss the various levels of protein structure. [10 marks]  
(b) Describe the formation of peptide bond and give its characteristics. [4 marks]  
(c) Describe the significance of protein in an animal body. [6 marks]
3. (a) Outline the functions of nucleotides. [4 marks]  
(c) Describe the biological functions of lipids. [8 marks]  
(b) Differentiate between RNA and DNA [5 marks]  
(d) The simplest lipids constructed from fatty acids are the triacylglycerols, also referred to as triglycerides, fats, or neutral fats. Draw their general structure showing their formation. [3 marks]
4. (a) Give the medical and biological importance of carbohydrates. [10 marks]  
(b) Draw the Fischer projections formulae of the following monosaccharides. [4 marks]
- marks]
- (i) D-Glucose  
(ii) D-Ribose
- (c) Briefly describe the following qualitative analysis of carbohydrates. [6 marks]  
(i) Benedict's test  
(ii) Iodine test
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