

CHUKA



UNIVERSITY

UNIVERSITY EXAMINATIONS

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

BIOC 00113: BASIC BIOCHEMISTRY

STREAMS: CERT (ANHE)

TIME: 2 HOURS

DAY/DATE: TUESDAY 5/07/2016

8.30 AM – 10.30 AM

INSTRUCTIONS:

Answer ALL Questions in Question One and any other Two

Question One (30 marks)

- (a) Define the following terms [5 marks]
- (i) Catabolism
 - (ii) An essential amino acid
 - (iii) Mutation
- (b) Outline functions of carbohydrates. [5 marks]
- (c) Draw the following structures [4 marks]
- (i) α -D-glucose
 - (ii) Open chain of galactose
 - (iii) Maltose
- (d) With examples, distinguish heteroglycans and homoglycans biomolecules. [3 marks]
- (e) Distinguish epimer and an enantiomer using glucose molecule. [6 marks]
- (f) Give a balanced net equation for overall glycolysis. [2 marks]
- (g) Explain causes of mutation in an organism. [3 marks]
- (h) State two functions of biochemistry. [2 marks]

Question Two (20 marks)

- (a) For each of the following enzymes, write a structural equation and the type of reaction catalysed: [5 marks]
- (i) Pyruvate kinase
 - (ii) Hexokinase
 - (iii) Phosphoglycerate mutase
 - (iv) Lactate dehydrogenase
 - (v) Enolase
- (b) Explain the classification of vitamins with appropriate examples. [4 marks]
- (c) State types of RNA and outline their functions. [3 marks]
- (d) What are lipids? [1 mark]
- (e) Draw the structure of triglyceride. [2 marks]
- (f) Explain the deficiency if the following minerals in livestock rations [5 marks]
- (i) Calcium
 - (ii) Magnesium
 - (iii) Phosphorous
 - (iv) Sodium

Question Three (20 Marks)

- (a) Briefly describe classification of carbohydrates. [8 marks]
- (b) Distinguish amylase, amylopectin and glucogen. [4 marks]
- (c) Explain the four levels of proteins. [8 marks]

Question Four (20 marks)

- (a) Differentiate between nucleotide and nucleoside. [2 marks]
- (b) Distinguish nucleic acids. [5 marks]
- (c) State five functions of nucleotides. [5 marks]
- (d) To which category of amino acids do the following belong? [8 marks]
- (i) Glutamate
 - (ii) Arginine

- (iii) Histidine
 - (iv) Tyrosine
 - (v) Cysteine and state their properties.
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