

CHUKA



UNIVERSITY

UNIVERSITY EXAMINATIONS

EXAMINATION FOR THE AWARD OF DIPLOMA IN ANIMAL HEALTH AND PRODUCTION

BIOC 0113: BASIC BIOCHEMISTRY

STREAMS: DIP. ANHE

TIME: 2 HOURS

DAY/DATE: MONDAY 15/4/2019

11.30 A.M. – 1.30 P.M.

INSTRUCTIONS:

- Answer question ONE and any other TWO questions
- Do not write on the question paper

QUESTION ONE

- a) Define the following terms as used in Biochemistry and state their significance (3 marks)
- Metabolism
  - Enzyme
- b) The foods of ruminants, forages and fibrous roughages, consist mainly of  $\beta$ -linked polysaccharides such as cellulose, which cannot be broken down by mammalian digestive enzymes. Briefly describe the general digestion of food in ruminants. (9 marks)
- c) Differentiate between the following: (4 marks)
- Anabolism and catabolism
  - Exergonic and endergonic reactions
- d) Outline 6 biological functions of lipids (3 marks)
- e) Differentiate between a nucleoside and a nucleotide and give an example of each. (2 marks)
- f) Describe the fates of pyruvate. (6 marks)
- g) Outline the various functions of proteins. (3 marks)

QUESTION TWO

- a) Using structural formulae, describe the reactions in glycolysis. (10 marks)
- b) Describe how enzymes catalyze chemical reactions. (10 marks)

QUESTION THREE

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- a) Using structural formulae, describe the basic steps of  $\beta$ -oxidation pathway of saturated fatty acids. (7 marks)
- b)
- i. Define the digestibility of a food as used in animal nutrition. (1 mark)
  - ii. Discuss (6) factors affecting digestibility of a food in ruminants and non-ruminant animals. (12 marks)

**QUESTION FOUR**

- a) Draw the structure of ATP and explain how it is utilized in energy coupling links reactions in the cell. (10 marks)
- b) Enzymes are essentially proteins with large molecular weight. Using hexokinase gene as an example, describe gene expression. (10 marks)
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