

CHUKA



UNIVERSITY

UNIVERSITY EXAMINATIONS

EXAMINATION FOR THE AWARD OF CERTIFICATE IN ANIMAL SCIENCE

BIOC 00113: INTRODUCTION TO BIOCHEMISTRY

STREAMS: CERT. ANSC

TIME: 2 HOURS

DAY/DATE: WEDNESDAY 16/04/2025

8.30 A.M. – 10.30 A.M.

INSTRUCTIONS

- Answer question one and any other two questions
- Do not write on the question paper

SECTION A.

QUESTION 1 (30 Mark)

- Give 3 achievements of biochemistry in cell science and medicine. (3 marks)
- State 2 organic constituents that are found in the cell cytoplasm. (2 marks)
- State 3 properties of monosaccharides. (3 marks)
- Briefly explain 3 different types of RNA. (3 marks)
- Describe two differences between DNA and RNA. (4 marks)
- Classify amino acids based on their reaction in solution and give one example from each category. (6 marks)
- State two factors that determine effectiveness of a buffer solution. (2 marks)
- Outline 4 important physiological buffers. (4 marks)
- Outline 3 major roles of water in biological system. (3 marks)

SECTION B.

Answer any two questions

QUESTION 2 (20 Marks)

- a) State three classifications of proteins and give examples of each. (6 marks)
- b) Explain the 4 levels of structural organization of proteins. (8 marks)
- c) Outline 2 ways by which protein can be denatured. (2 marks)
- d) Amino acid molecules can be covalently joined by a peptide bond to form a peptide. Illustrate with a diagram the formation of a dipeptide. (4 marks)

Question 3 (20 marks)

Glycolysis consists of ten successive steps, which are divided into two phases. Discuss the successive steps of glycolysis pathways. (20 marks)

Question 4. (20 marks)

- a) Explain how lipids are digested, absorbed, and metabolized for energy production and storage. (10 marks)
 - b) State three classifications of lipids and give examples of each. (6 marks)
 - c) Define β -oxidation and explain its significance in metabolism. (4 marks)
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