

CHUKA

UNIVERSITY



UNIVERSITY EXAMINATIONS

EXAMINATION FOR THE AWARD OF BACHELOR OF SCIENCE IN
BIOCHEMISTRY

BIOC 220: BASIC METABOLISM I

STREAMS: BSC. BIOC

TIME: 2 HOURS

DAY/DATE: MONDAY 14/04/2025

11.30 A.M. – 1.30 P.M.

INSTRUCTIONS

- Answer Questions ONE and any other TWO Questions

QUESTION ONE (COMPULSORY) (30 MARKS)

- Describe the *de novo* synthesis of glycogen. (5 marks)
- Explain the biochemical basis of ‘muscle pull’ observed during intense exercise and how the body resolves the condition. (6 marks)
- Mention the cause and symptoms of lactose intolerance. (6 marks)
- Explain the link between impaired glucose uptake and Type I diabetes mellitus. (8 marks)
- Describe using biochemical structures, the oxidative phase of the pentose phosphate pathway. (5 marks)

QUESTION TWO (20 MARKS)

- Illustrate the glycolytic pathway. (10 marks)
- Describe how insulin, glucagon and epinephrine controls glycogen metabolism. (10 marks)

QUESTION THREE (20 MARKS)

- Describe the Krebs’s cycle and give its significance (10 marks)

- b) Describe the electron transport chain. (10 marks)

QUESTION FOUR (20 MARKS)

- a) Describe the non- cyclic photophosphorylation pathway of the light reactions of photosynthesis (6 marks)
- b) Explain how products and reactants shift in the pentose phosphate pathway depending on the metabolic needs of the participating cell or tissue. (10 marks)
- c) Explain the cause and symptoms of favism. (4 marks)
-