NATIONAL UNIVERSITY OF SCIENCE AND TECHNOLOGY

FACULTY OF APPLIED SCIENCES

BACHELOR OF SCIENCE HONOURS DEGREE EXAMINATIONS

DEPARTMENT OF APPLIED BIOLOGY AND BIOCHEMISTRY

THEORY: METABOLIC PROCESSES I SBB 2102

DECEMBER 2004

$2^{1/2}$ HOURS (100 marks)

INSTRUCTIONS

Answer **Four (4)** questions. Each question carries 25 marks.
Where a question contains subdivisions, the mark value for each subdivision is given in brackets.
Illustrate your answers where appropriate with large, clearly labelled diagrams.

1. a) Describe the synthesis and degradation of glycogen in the liver. (15 marks)

   b) Describe the mechanism of regulation of glycogen synthesis by epinephrine and insulin. (10 marks)

2. Give a detailed account of the regulation of pyruvate carboxylase in order to modulate the TCA cycle.

3. A triacyl glycerol is released from the adipose tissue into the circulation. Provide a detailed account of how and where this fatty acid will be converted to carbon dioxide.

4. a) Describe the de novo synthesis of palmitic acid from carbon dioxide. (15 marks)

   b) Explain how this can be converted to linolenic acid. (10 marks)

5. Describe in detail how the reducing equivalents generated in the TCA cycle are used to produce ATP in the electron transport chain.

6. Give an overview of the pathways of glucose metabolism during conditions of adequate feeding and during starvation.

END OF QUESTION PAPER

odd no's