

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 ILSBB 2212

MAY 2005

3 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 answer where appropriate with large, clearly labelled diagrams.

1. a) Describe the synthesis of cholesterol from acetyl CoA. (10 marks)
b) Describe the conversion of cholesterol to various bile acids in mammals (15 marks)
2. a) Give an overview of protein synthesis starting with the coding sequence of DNA (20 marks)
b) Show how various antibiotics can affect this process (5 marks)
3. Due to inheritance a number of inborn errors arise in intermediary metabolism. Describe, giving examples the inborn errors of amino acid, urea cycle and nucleotide metabolism indicating the exact cause of the metabolic disorder.
4. Describe the biosynthesis and degradation of adenine in the mammalian cell
5. a) The Human Immunodeficiency Virus leads to AIDS and is lethal. Describe the replication of this virus in mammalian cells. (10 marks)
b) Explain the biochemical basis of the two major targets of chemotherapy against this infection. (15 marks)
6. Acetyl Co A plays a central role in intermediary metabolism in the mammalian cell. Explain this statement using fully labeled schematic diagrams and name the important enzymes.

END OF EXAMINATION