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 II SBB2212

MAY 2003

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 answer where appropriate with large, clearly labelled diagrams.

1. Outline the biosynthetic pathway for cholesterol from acetate and show and explain the points of control in this pathway and with a brief reference to cholesterol uptake via Low Density Lipoproteins (LDL).

2. Explain with formulae, the origins and functions of ketone bodies in normal body function, and explain how is this distorted in certain stress or pathological conditions.

3. Discuss the key role of cholesterol in the biogenesis of steroid hormones, giving outline sketches of the pathways involved with respect to particular body tissues.

4. Outline the functions of ribosomes in protein biosynthesis with respect to their interaction with mRNA and tRNA.

5. Explain with diagrams how steroids and related synthetic compounds can regulate protein biosynthesis.

6. Explain why the urea cycle is such a key pathway in mammalian amino acid biochemistry, giving an outline of the pathway and possible regulatory points.

7. Discuss the generation of biologically active amines from the essential aromatic amino acids.

8. Describe the condition of acute intermittent porphyria and explain where the condition arises within the haem biosynthetic process.

END OF EXAMINATION

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