NATIONAL UNIVERISTY OF SCIENCE AND TECHNOLOGY

FACULTY OF MEDICINE

BACHELOR OF MEDICINE AND BACHELOR OF SURGERY DEGREE PART 2 EXAMINATIONS

MBM 2101 : SYNTHESIS OF BIOMOLECULES

DATE : MAY 2006

TIME : 3 HOURS

Instructions to Candidates

Answer all questions

SECTION A

1. Clearly outline fatty acid synthesis, its control and the common related diseases. (20)

2. Write an essay on gluconeogenesis and its control. (20)

SECTION B

3. Explain glycogen degradation, and highlight **one** glycogen storage disease. (4)

4. Highlight the difference between covalent modification and allosteric activation or inhibition of enzymes. (2)

5. Clearly outline the Cori cycle and highlight its importance. (3)

6. What are the common precursors in the biosythesis of triacylglycerols and major phospholipids. (2)

7. Write short notes on the following:

   (a) congenital erythropoietic porphyria (3)
   (b) acute intermittent porphyria. (3)

8. Why do mammals reduce bliverdin to bilirubin? (2)

9. Explain how glutathione serves as a sulfhydryl buffer and as an amino acid transporter. (5)

10. Clearly outline how bile salts are derived from cholesterol. (2)

11. How does the absence of the low density lipoprotein receptor lead to atheroscierosis? (4)

12. State the differences between cerebrosides and gangliosides. (2)

13. What is the structural backbone of the following:

   a) triacylglycerols. (1)
   b) sphingolipids? (1)

14. Briefly, describe the ***denovo*** synthesis of phosphoglycerides. (4)

15. Show the reactions involved in the biosynthesis of the following amino acids:

   a) alanine (1)
   b) aspartate (1)
   c) asparagine (2)
   d) tyrosine. (2)

16. How is amino acid biosynthesis is regulated? (4)

17. What are the products of pyrimidine degradation? (3)

18. Write short notes on the following:

   a) Lesch-Nyhan syndrome (3)
   b) gout (3)
   c) recycling of purine bases. (3)

END OF EXAMINATION