

**NATIONAL UNIVERSITY OF SCIENCE AND TECHNOLOGY**

**FACULTY OF MEDICINE**

**MEDICAL SCHOOL**

**BACHELOR OF MEDICINE AND BACHELOR OF SURGERY DEGREE**  
**PART I EXAMINATIONS**

**(MCM 1201) : DIGESTION & NUTRIENT METABOLISM**

**DATE : DECEMBER 2005**

**TIME : 3 HOURS**

**Instructions to Candidates**

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**SECTION A**

1. Give a detailed account of the digestion and absorption of carbohydrates. Clearly, outline the carbohydrate malabsorption syndromes. (20)
  2. Outline the major components of the respiratory assembly and explain the effects of cyanide and rotenone on ATP generation. (20)
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**SECTION B**

1. Explain the following energy terms,
  - a) resting metabolic rate (2)
  - b) thermic effect of food. (3)
  - c) thermic effect of exercise (2)
2. What cells of the body secrete intrinsic factor and what is the function of this factor? (3)
3. Explain hypercellular obesity. (1)

4. In young children, what is the cardinal feature in each of the following:-
- a) nutritional marasmus (1)
  - b) kwashiorkor (1)
  - c) mild to moderate protein energy malnutrition (PEM) (1)
5. Explain why immunoglobulin G levels are high in all the conditions in question 4 above. (1)
6. Explain how iodine deficiency results in the formation of a goitre. (3)
7. Identify the major fractions of calcium distribution in the body. (3)
8. Briefly, explain the secretion of ptyalin. (3)
9. How is bile concentrated in the gall bladder? (3)
10. Name the precursor compounds of vitamins D3 and D2 respectively. (2)
11. Explain the term "critical micelle concentration" in digestion. (2)
12. Identify the major regulatory step of glycolysis and explain its regulation. (6)
13. A child that was born with an inherited deficiency of pyruvate dehydrogenase exhibited acidosis. Initial treatment was with bicarbonate and thiamin. However, acidosis persisted. Finally, treatment was changed to lipoic acid and that was successful.
- a) Explain the acidosis. (3)
  - b) What is the rationale for treating with thiamin and bicarbonate? (4)
  - c) Explain the rationale for treating with lipoic acid. (3)
14. What is the biochemical explanation of the toxicity of the following compounds:
- a) ammonia (4)
  - b) monofluoroacetate? (5)
15. Explain the role of carnitine in  $\beta$ -oxidation of free fatty acids. (5)

**END OF EXAMINATION**