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FACULTY OF MEDICINE, UNIVERSITY OF JAFFNA, SRI LANKA  
SECOND EXAMINATION FOR MEDICAL DEGREES-AUGUST 2009

BIOCHEMISTRY PAPER II

Date: 18 .08.2009

Time: 9.00-12.00

(3 hours)

Answer all six questions

Marks allotted to each part are indicated in brackets.

1.
  - 1.1 Explain how the free energy charge controls glycolysis? (35 Marks)
  - 1.2 Show schematically how the glycogenolysis is controlled? (35 Marks)
  - 1.3 Explain how fructose is metabolized in liver and extrahepatic tissues. (30 Marks)
  
2.
  - 2.1 Explain how fatty acid oxidation and breakdown are reciprocally controlled in the adipocytes. (40 Marks)
  - 2.2 'Fasting increases ketogenesis'. Explain. (30 Marks)
  - 2.3 Show diagrammatically, how the ketone bodies are oxidized in the extrahepatic tissues. (30 Marks)
  
3.
  - 3.1
    - 3.1.1 Explain why  $\beta$ - thalassemia is more prevalent than  $\alpha$ -thalassemia. (30 Marks)
    - 3.1.2 What changes would you expect in the serum and urine, with regard to bile salts and bile pigment levels of that of a  $\beta$ -thalassemia patient? Explain. (25 Marks)
  - 3.2 Explain the biochemical basis of the treatment of a patient with Parkinson's disease. (25 Marks)
  - 3.3 How the mitochondrial ATP synthesis is self-regulated? (20 Marks)

4. 4.1 Explain the biochemical basis for the following conditions:
- 4.1.1 A pregnant lady suffers from megaloblastic anemia without neurological disorder. (30 Marks)
  - 4.1.2 Vitamin K deficiency causes an increase in blood clotting time. (20 Marks)
- 4.2 Explain how the following conditions aggravate gout.
- 4.2.1 Excessive alcohol intake (25 Marks)
  - 4.2.2 Starvation (25 Marks)
5. 5.1 5.1.1 What is antibody diversity? (10 Marks)
- 5.1.2 Explain the significance of polyclonal antibody formation. (40 Marks)
- 5.2 Show how the electrophoretic pattern of serum proteins is altered in
- 5.2.1 Nephrotic syndrome (25 Marks)
  - 5.2.2 Multiple myeloma (25 Marks)
6. 6.1 Discuss the nutritional requirements of a pregnant mother. (30 Marks)
- 6.2 Give the biochemical tests that can be performed in a pregnant woman to confirm iron deficiency anaemia. (30 Marks)
- 6.3 What dietary and life style modification advices would you give for a 40 year old man with increased blood cholesterol and triacylglycerol levels? (40 Marks)

