



FACULTY OF MEDICINE, UNIVERSITY OF RUHUNA
Second Examination for Medical Degrees – July 2012
Biochemistry Paper II

Tuesday 17th July 2012

2.00 p.m. – 5.00 p.m.

Answer All Six Questions.

(Three hours)

Answer each question in a separate book.

Marks allocated to each part of a question are shown within parenthesis.

1. An obese 45-year-old man who smokes 20 cigarettes a day was referred to the lipid clinic. His lipid profile and fasting plasma glucose concentration are given below.

		Reference range
Triglycerides	315 mg/dL	<200 mg/dL
Total cholesterol	265 mg/dL	<200 mg/dL
HDL cholesterol	33 mg/dL	> 35 mg/dL
Fasting plasma glucose	135 mg/dL	<126 mg/dL

- 1.1 List the cardiovascular risk factors of this patient. (20 marks)
- 1.2 State the lifestyle changes that you would advise to this patient. (20 marks)
- 1.3 Explain the dietary advice you would give to this patient. (30 marks)
- 1.4 Explain hypertriglyceridaemia in the above patient in biochemical terms. (30 marks)

2.

- 2.1 Explain how membrane phospholipids participate in
- 2.1.1 intracellular signaling. (25 marks)
- 2.1.2 the immediate hypersensitivity reaction. (25 marks)
- 2.2 Explain the importance of the following in amino nitrogen transport in plasma.
- 2.2.1 Alanine (25 marks)
- 2.2.2 Glutamine (25 marks)

3. Explain the biochemical basis for the following.

- 3.1 Estimation of random blood glucose concentration of a patient with diabetes mellitus admitted to an emergency care unit in an unconscious state. (40 marks)
- 3.2 Estimation of serum C-reactive protein concentration in a neonate suffering from a bacterial infection. (30 marks)
- 3.3 Performance of PCR in the diagnosis of HIV infection. (30 marks)

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4. Discuss the biochemical significance of estimating the following.
- 4.1 Serum thyroid stimulating hormone (TSH) concentration (25 marks)
 - 4.2 Serum alkaline phosphatase concentration (25 marks)
 - 4.3 Plasma albumin concentration (25 marks)
 - 4.4 Serum bilirubin concentration (25 marks)
5. Explain the biochemical basis for the following.
- 5.1 Reduced work capacity in iron deficiency anaemia. (25 marks)
 - 5.2 Neuropathy in thiamin deficiency. (25 marks)
 - 5.3 Use of 6-mercaptopurine in cancer chemotherapy. (25 marks)
 - 5.4 Vitamins E and C act together in defence mechanisms of the body. (25 marks)
- 6.
- 6.1 The present WHO/FAO recommended level of protein intake for a 60 kg pregnant woman is 51 g of good quality protein per day. Explain the basis on which this recommendation is made. (50 marks)
 - 6.2 Describe the factors that determine the quality of a dietary protein and describe one method for assaying protein quality. (50 marks)
