



FACULTY OF MEDICINE, UNIVERSITY OF RUHUNA  
Second Examination for Medical Degrees – July 2013  
Biochemistry Paper II

Tuesday 2<sup>nd</sup> July 2013

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.

1.0 A 32 year-old man was admitted to an emergency therapeutic unit with a myocardial infarction. He had a strong family history of coronary heart disease. On examination he had xanthomata on the tendons of the hands and thickened Achilles tendons.

Lipid studies were performed six weeks after the stress from the myocardial infarction was settled.

The patient was subsequently diagnosed as having familial hypercholesterolaemia, an autosomal dominant condition characterized by a decreased number of LDL receptors. His lipid values became normal after six months of strict dietary control and statin treatment.

- 1.1 Describe the method that is used to determine the distribution of lipids in plasma. (20 Marks)
- 1.2 Describe the biochemical events that lead to hypercholesterolaemia in this patient. (50 Marks)
- 1.3 Explain the biochemical basis for the reduction of lipid values in the patient by statin treatment and dietary manipulation. (30 Marks)

2.0 Explain the following.

- 2.1 Measurement of the prothrombin time provides information about the synthetic function of the liver. (25 Marks)
- 2.2 Carboxypeptidase-G<sub>2</sub> is used in methotrexate rescue in cancer patients. (25 Marks)
- 2.3 Aspirin is used as an anti-inflammatory drug. (25 Marks)
- 2.4 Immobilised enzymes are used in diagnosis and therapy. (25 Marks)

3.0 3.1 Explain the biochemical significance of the following.

- 3.1.1 Performance of immunoelectrophoresis test in paraproteinemia. (25 Marks)
- 3.1.2 Estimation of serum urea and creatinine concentrations to assess renal function. (25 Marks)

3.2 Explain the biochemical basis of the following.

- 3.2.1 Hypoglycaemia in a child with galactosaemia. (25 Marks)
- 3.2.2 Hyperammonaemia in a chronic alcohol user. (25 Marks)

