



**UNIVERSITY OF RUHUNA, FACULTY OF MEDICINE,
Second Examination for Medical Degrees – June 2009**

BIOCHEMISTRY PAPER II

Thursday 18th June 2009

2.00 p.m. – 5.00 p.m.

Answer All Six Questions.

(3 hours)

Answer each question in a separate book.

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

1. Following biochemical investigations were performed on a 55 year old male patient with suspected liver pathology.

Serum bilirubin concentration	(15 marks)
Prothrombin time	(15 marks)
Serum albumin concentration	(10 marks)
Serum concentrations of ALT, AST and γ -GT	(45 marks)
Serum α - fetoprotein concentration	(15 marks)

State the biochemical rationale behind each of the above tests.

2. 2.1 Give the biochemical basis for the complications of diabetes mellitus related to vision. (50 marks)
- 2.2 Explain how triglyceride metabolism in the adipose tissue is affected in untreated diabetes mellitus. (50 marks)
3. 3.1 List the vitamins that are important for energy metabolism. (20 marks)
- 3.2 State the consequences of deficiencies of the vitamins listed in 3.1. (20 marks)
- 3.3 Give one reaction where each of the vitamins stated in 3.1 participate. (60 marks)

Please turn over

4. 4.1 Explain the effect of the following on protein biosynthesis.
- 4.1.1 Streptomycin (25 marks)
 - 4.1.2 Diphtheria toxin (25 marks)
- 4.2 Describe the functions of the following.
- 4.2.1 Immunoglobulin E (IgE) (25 marks)
 - 4.2.2 Plasma haptoglobin (25 marks)
5. Give the biochemical basis of the following.
- 5.1 HbS (β^6 Glu \rightarrow Val) but not HbC (β^6 Glu \rightarrow Lys) causes sickling of red blood cells. (25 marks)
 - 5.2 Allopurinol relieves pain in gouty patients. (25 marks)
 - 5.3 Estimation of serum TSH helps in the diagnosis of hypothyroidism. (25 marks)
 - 5.4 Fiber is an important component in the diet. (25 marks)
6. 6.1 Calculate the recommended allowance of protein for the following individuals.
(Use net protein utilization (NPU) as 70.)
- 6.1.1 A menstruating woman of 45kg body weight. (20 marks)
 - 6.1.2 A lactating woman of 55kg of body weight. (20 marks)
- 6.2 State the factors that may lead to malnutrition in a child during the weaning period. (30 marks)
- 6.3 State how the nutritional status of a pre school child could be assessed. (30 marks)
