



FACULTY OF MEDICINE, UNIVERSITY OF RUHUNA, Galle
Second Examination for Medical Degrees July/August 2004
BIOCHEMISTRY PAPER II

Wednesday 28th July 2004

2.00 p.m. – 5.00 p.m.
(3 hours)

Answer all six questions.

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

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1. 1.1 Explain the likely effects of the following dietary deficiencies on cell membrane function.
 - 1.1.1 Poly-unsaturated fatty acids (PUFA). (15 marks)
 - 1.1.2 Antioxidants. (15 marks)
 - 1.2 State the major functions of apolipoproteins giving one example for each. (40 marks)
 - 1.3 List the tests that are useful in the diagnosis of hyperlipoproteinaemias. (30 marks)
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2. 2.1 Explain the mechanisms that lead to the synthesis of acute phase proteins. (30 marks)
 - 2.2 Discuss the functions of haptoglobin, α_1 -antitrypsin and C-reactive protein. (30 marks)
 - 2.3 Give biochemical explanations for the use of following enzymes as therapeutic agents.
 - 2.3.1 Streptokinase. (20 marks)
 - 2.3.2 Asparaginase. (20 marks)

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3. Explain the following.
- 3.1 Certain group II hormones activate phospholipase-C to form second messengers. *(50 marks)*
- 3.2 The genetic defect of pyruvate kinase enzyme affects the metabolism and function of the red blood cell. *(50 marks)*
4. Give biochemical explanations for the following.
- 4.1 Paper chromatography may be used to diagnose phenylketonuria. *(25 marks)*
- 4.2 A chronic alcoholic develops hyperammonaemia. *(25 marks)*
- 4.3 Cardiac troponin T (cTn T) is a sensitive marker of myocardial infarction. *(25 marks)*
- 4.4 Plasma glucose concentration did not increase after the administration of glucagon. *(25 marks)*
5. 5.1 A 24 year- old male medical student weighing 50kg consumes a diet containing 400g carbohydrate, 35g protein and 75g fat daily. Comment on the adequacy of energy and protein in his diet. *(40 marks)*
- 5.2 Explain the following.
- 5.2.1 Retinoic acid is a transcriptional regulator in target tissues. *(30 marks)*
- 5.2.2. Detectable amounts of Hb F was found in the blood of a severely anaemic patient. *(30 marks)*
6. Explain the biochemical basis of the following.
- 6.1 A two year old child with recurrent attacks of diarrhoea given "rice gruel" as the only source of food for a long period developed severe protein energy malnutrition. *(25 marks)*
- 6.2 Fibre is an important component of the diet. *(25 marks)*
- 6.3 Incidence of infections is lower among breast fed babies than those given cows milk preparations. *(25 marks)*
- 6.4 Microcytic, hypochromic anaemia is common among pregnant women in Sri Lanka. *(25 marks)*