

UNIVERSITY OF JAFFNA, SRI LANKA.
FACULTY OF MEDICINE
FIRST EXAMINATION FOR MEDICAL DEGREES -JULY 2016



BIOCHEMISTRY PAPER II

Date: 12.07.2016

Time: 3 Hours

Answer all TEN questions.

Answer Part A and Part B in separate Answer Books.

Marks allotted to each part are given in brackets.

PART A

1. 1.1 Explain how glycolysis is controlled at phosphofructokinase step. **(45 Marks)**
 1.2 Explain the importance of pentose phosphate pathway. **(35 Marks)**
 1.3 Explain how insulin increases the glucose transport into muscle cells. **(20 Marks)**

2. 2.1 Explain how untreated diabetic patients develop keto -acidosis. **(50 Marks)**
 2.2 Explain the changes in plasma cholesterol level of diabetic patients with reasons. **(30 Marks)**
 2.3 Diagrammatically show how the plasma lipid profile of a diabetic patient differs from that of a normal person. **(20 Marks)**

3. 3.1 α -Thalassemia is rarer than β - Thalassaemia. Explain. **(30 Marks)**
 3.2 Explain the biochemical basis of the type of jaundice that would occur in β -Thalassemic patients. **(35 Marks)**
 3.3 Explain the tests which you would perform in the serum and urine to confirm the changes in different types of bilirubin levels of β -Thalassemic patients. **(35 Marks)**

4. 4.1 Explain how dietary iron is absorbed, transported and stored. **(30 Marks)**
 4.2 Explain how TSH controls the thyroid hormone synthesis and blood thyroid hormone level. **(40 Marks)**
 4.3 Detoxification of steroidal drugs requires cytochrome P₄₅₀. Explain with a diagram. **(30 Marks)**

5. 5.1 Write short notes on
 5.1.1 Alkaptonuria. **(25 Marks)**
 5.1.2 Maple syrup urine disease. **(25 Marks)**
 5.1.3 Homocystinuria Type I. **(25 Marks)**

- 5.2 Considering the serum isoenzyme levels of creatine kinase and lactate dehydrogenase explain how you would rule out the occurrence of myocardial infarction? **(25 Marks)**

PART B

6. 6.1 6.1.1 List two diseases caused by vitamin A deficiency. **(10 Marks)**
6.1.2 Explain the biochemical reasons for one of the diseases mentioned **Section 6.1.1.** **(30 Marks)**
- 6.2 6.2.1 What is folate trap? Explain the biochemical basis. **(30 Marks)**
6.2.2 Give the biochemical functions of vitamin B₆. **(30 Marks)**
7. 7.1 Draw the serum protein electrophoretic pattern of a multiple myeloma patient and compare it with that of a normal person. Explain the differences in the electrophoretic pattern. **(50 Marks)**
7.2 Show how HIV infection could affect the production of immunoglobulins? **(50 Marks)**
8. 8.1 Describe any two mechanisms of DNA repair. **(35 Marks)**
8.2 Explain how haem biosynthesis is controlled at gene level. **(35 Marks)**
8.3 Explain how the oral rehydration solution containing glucose and sodium chloride could benefit diarrheal patients. **(30 Marks)**
9. 9.1 Men who drink alcohol, particularly beer, may increase their chances of developing gout. Explain. **(40 Marks)**
9.2 Fat malabsorption is improved by the use of coconut oil. Explain. **(35 Marks)**
9.3 List the types and functions of plasma proteins. **(25 Marks)**
10. A 40-year-old healthy farmer weighing 60kg with 160cm height daily consuming 50g mixed protein maintained steady body weight.
10.1 Comment on his nitrogen equilibrium and daily urea excretion by kidney. **(30 Marks)**
10.2 To have steady body weight, how many grams of carbohydrate and fat would have been consumed by him? **(30 Marks)**
10.3 Prepare a day's menu considering him as a non-vegetarian and indicate the important nutrients present in the said menu. **(40 Marks)**

