

UNIVERSITY OF JAFFNA, SRI LANKA
FACULTY OF MEDICINE
FIRST EXAMINATION FOR MEDICAL DEGREES - OCTOBER 2019

BIOCHEMISTRY PAPER II

Date: 15.10.2019

Time: 3 Hours

Answer all 10 questions.

Marks allotted to each part are indicated in brackets.

Answer Each Question on Separate Answer Book.

1. An obese middle – aged man passing urine frequently lost his weight. His fasting blood sample was analysed and the following results were obtained.

Plasma Biochemical	Results	Normal Range
Glucose	260 mg/L	Expected to know
Total Cholesterol	400 mg/dL	200-239 mg/dL
Triacylglycerol	300 mg/L	Less than 150 mg / dL
Urea	40 mg/dL	7-20 mg / dL

- 1.1 Give reasons for the changes in the above said four biochemical levels. **(70 Marks)**
- 1.2 Explain with reasons for him to lose weight. **(30 Marks)**

2. 2.1 Give the nutritional deficiencies that may cause Homocystinuria with reasons. (30 Marks)
- 2.2 Give the enzymatic defects that may cause Homocystinuria with reasons. (50 Marks)
- 2.3 What are the consequences of having elevated plasma homocysteine level? (20 Marks)
3. 3.1 List the major lipoproteins which would appear in the plasma of a normal individual after 14 hours of fasting. (10 Marks)
- 3.2 Diagrammatically show how the above said lipoproteins are associated with each other during their metabolism. (60 Marks)
- 3.3 How would the inclusion of EPA (Eicosa Pentaenoic Acid) in the diet of a myocardial infarct patient help to reduce further heart attack. (30 Marks)
4. 4.1 Give the biochemical basis for the complications that occur in β -thalassemia. (35 Marks)
- 4.2 Which fraction of serum bilirubin is elevated in β -thalassemia? (10 Marks)
- 4.2.1 Give reasons for the elevation of the said fraction of bilirubin. (20 Marks)
- 4.2.2 What tests may have to be carried out with serum & urine to confirm the said type of hyperbilirubinemia? (30 Marks)
5. 5.1 Explain the
- 5.1.1 causes of iron deficiency anaemia. (40 Marks)
- 5.1.2 role of chromium in modulating the function of insulin. (20 Marks)
- 5.2 Cytosolic NADH transported to mitochondrial matrix by glycerol shuttle and oxidised in respiratory chain gives 2ATP. Explain. (40 Marks)

6. Explain the biochemical basis of
- 6.1 renal rickets. (50 Marks)
- 6.2 night blindness in liver cirrhosis patients. (50 Marks)
7. 7.1 Explain the genetic and biochemical basis of "Hereditary Non polyposis colorectal cancer". (50 Marks)
- 7.2 Explain the therapeutic applications of enzyme inhibition to control the rate of cell proliferation, by giving two examples. (50 Marks)
8. 8.1 What is self-tolerance in immune response? (10 Marks)
- 8.2 Explain the biochemical basis of the following conditions.
- 8.2.1 Penicillin is allergic to some individuals. (30 Marks)
- 8.2.2 Streptococcus infection and rheumatic heart fever. (20 Marks)
- 8.2.3 Hashimoto's thyroiditis. (40 Marks)
9. Explain the biochemical basis of hyperuricemia, which can result from
- 9.1 inherited abnormalities. (70 Marks)
- 9.2 conditions causing reduced excretion (30 Marks)

10. 10.1 Give the biochemical uniqueness of human milk related to
- 10.1.1 colostrum. (10 Marks)
 - 10.1.2 amino acid composition. (10 Marks)
 - 10.1.3 lipid composition. (10 Marks)
 - 10.1.4 host resistant factors. (10 Marks)
- 10.2 Calculate Total Energy Expenditure (TEE) of a 40 year sedentary man. His body weight is 60kg and height is 160cm (20 Marks)
- 10.3 Give dietary advice to the above man if his fasting blood glucose level is 115mg/dl. (40 Marks)