

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 than150 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)

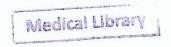
1.2 Explain with reasons for him to lose weight.

(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)
- 3.1 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)

10.1 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)