



UNIVERSITY OF JAFFNA, SRI LANKA  
FACULTY OF MEDICINE

FIRST EXAMINATION FOR MEDICAL DEGREES- AUGUST 2019

**BIOCHEMISTRY PAPER II**

23<sup>rd</sup> August 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. A 56-year-old salesman feels dizzy while standing for a long period. He developed a foul smelling wound in the foot. He consulted a surgeon due to the delayed wound healing. History was taken and he was requested to take few tests. He stated that, he has been urinating frequently for past three years. His BMI was 32 kg/m<sup>2</sup> and his fasting blood glucose was 340mg/dL
  - 1.1 What could be the problem in this patient? **(10 Marks)**
  - 1.2 Give reasons for the sign and symptoms he had. **(50 Marks)**
  - 1.3 Draw the expected electrophoretic pattern of the lipid profile of this person and compare it with that of a normal person. Explain the alteration in the lipid profile of this patient. **(40 Marks)**
  
2. Give the biochemical basis of the followings:
  - 2.1 L-Glutamate dehydrogenase activity is controlled by energy charge of the cells. **(40 Marks)**
  - 2.2 Homocysteine is atherogenic. **(30 Marks)**
  - 2.3 Homocystinuria type III. **(30 Marks)**

3. 3.1 3.1.1 Explain the role of lung, liver and kidney in the maintenance of blood pH. **(45 Marks)**
- 3.1.2 Explain how the above said organs alter their metabolic activities under ketoacidosis. **(25 Marks)**
- 3.2 Give the advantages of having lipoprotein lipase in heart muscles with lower Km than that in adipocytes. **(30 Marks)**
4. 4.1 4.1.1 Give the biochemical basis of neonatal jaundice. **(35 Marks)**
- 4.1.2 Give reasons for the elevation in the particular type of bilirubin in the neonates. **(30 Marks)**
- 4.2 Prostacyclin and thromboxane are antagonistic in action. Explain. **(35 Marks)**
5. 5.1 Explain how the dietary iron is assimilated & transported to the tissues and excreted. **(40 Marks)**
- 5.2 Elaborate how selenium is useful and acts synergistically with vitamin E. **(35 Marks)**
- 5.3 Explain the uses of measurements of the activities of transaminases under different disease conditions. **(25 Marks)**



6. 6.1 Explain the biochemical functions of Vitamin A. (45 Marks)
- 6.2 Explain the role of ascorbic acid in wound healing. (25 Marks)
- 6.3 Cytochrome P450 is important for the detoxification of some drugs. (30 Marks)
7. 7.1 Explain the biochemical basis of the followings:
- 7.1.1 Methotrexate is a cancer chemotherapeutic agent (45 Marks)
- 7.1.2 Ethanol inhibits methanol metabolism. (30 Marks)
- 7.2 "SLGT-2 inhibitor is used to treat diabetes mellitus patients" Explain. (25 Marks)
8. 8.1 Show how dietary triglycerides are digested and absorbed? (40 Marks)
- 8.2 Diagrammatically show the organization of histones and DNA in nucleosomes. (20 Marks)
- 8.3 Explain how cholesterol biosynthesis is controlled at the gene level. (40 Marks)
9. 9.1 Give reasons for the following complications in Multiple myeloma patients.
- 9.1.1 Anaemia (30 Marks)
- 9.1.2 Repeated infections (30 Marks)
- 9.2 Why does von Gierke disease cause hyperuricemia? (40 Marks)



10. 10.1 Weight, height and waist circumference of a 50-year-old sedentary male were 100 kg, 160 cm and 105cm respectively.

10.1.1 Comment on his anthropometric measurements. (20 Marks)

10.1.2 Comment on his body mass index. (20 Marks)

10.1.3 How would you advise him to have normal body weight? (30 Marks)

10.2 Give the advantages of breastfeeding. (30 Marks)

