



UNIVERSITY OF JAFFNA, SRI LANKA
FIRST YEAR SECOND SEMESTER EXAMINATION IN BScHonsMLS
MLSBM 1262-BIOCHEMISTRY FOR MLS II

PAPER II

Date: 22.06.2023

Duration: 2 Hours

Answer all the Six Questions.

Answer each Part in Separate Answer Books.

PART A

1. 1.1 Explain how the Pyruvate Dehydrogenase (PDH) is controlled under fed and starving conditions. **(30 Marks)**
- 1.2 Explain how the PDH step is bypassed in gluconeogenesis. **(25 Marks)**
- 1.3 List the three irreversible steps of citric acid cycle. **(15 Marks)**
- 1.4 Explain with a diagram how the glycogenolysis is controlled. **(30 Marks)**

2. 2.1 Give the expected fasting blood glucose ranges of a
 - 2.1.1 normal person **(10 Marks)**
 - 2.1.2 diabetic **(10 Marks)**
 - 2.1.3 prediabetic **(10 Marks)**
- 2.2 List the hormones, which regulate the blood glucose level. **(20 Marks)**
- 2.3 Explain how the above said hormones maintain blood glucose level. **(40 Marks)**
- 2.4 Name the test that is specifically used for blood glucose estimation. **(10 Marks)**

3. 3.1 List the factors that influence the blood cholesterol level. **(20 Marks)**
- 3.2 List the different lipoproteins that transport cholesterol in the blood. **(20 Marks)**
- 3.3 Diagrammatically show how the cholesterol is transported from liver to extrahepatic tissues. **(40 Marks)**
- 3.4 Explain the biochemical basis of the reduction in blood cholesterol level by statin. **(20 Marks)**

4. 4.1 List the ketone bodies. (15 Marks)
- 4.2 Outline the pathways which lead to the formation ketone bodies. (25 Marks)
- 4.3 List the conditions which lead to increased ketone body formation. (15 Marks)
- 4.4 Explain why the ketone body formation is elevated under the above mentioned conditions. (35 Marks)
- 4.5 Name two methods which are used to detect urinary ketone bodies. (10 Marks)
5. 5.1 5.1.1 Name three different sources of blood ammonia. (10 Marks)
- 5.1.2 Explain how ammonia is detoxified in brain. (25 Marks)
- 5.1.3 Show diagrammatically how the amino nitrogen formed in the muscles is transported to the liver. (25 Marks)
- 5.2 A mother complained that her child was mentally retarded for the chronological age and was extremely irritable. The blood phenylalanine level was elevated, and the urine contained phenyl pyruvate.
- 5.2.1 Suggest the probable defect in the child. (10 Marks)
- 5.2.2 Explain the probable causes for the above said condition. (30 Marks)

PART B

6. 6.1 6.1.1 Diagrammatically show and explain the “flow of genetic information” (20 Marks)
- 6.1.2 Show the steps involved in DNA mismatch repair. (30 Marks)
- 6.2 6.2.1 Explain how von Gierke’s disease causes hyperuricaemia. (30 Marks)
- 6.2.2 Allopurinol is used to treat gouty patients. Explain. (20 Marks)