UNIVERSITY OF JAFFNA, SRI LANKA

FACULTY OF ALLIED HEALTH SCIENCES

FIRST YEAR FIRST SEMESTER EXAMINATION IN BScHons (MLS) 2023

MLSBM 1262–BIOCHEMISTRY FOR MEDICAL LABORATORY SCIENCES- II

(14th and 15th Batches)

PAPER II

Date: 2 3 JUN 2025 **Time: 2 Hours**

ANSWER ALL SIX QUESTIONS ON SEPARATE ANSWER BOOK.

1. **1.1** List three main purposes of gluconeogenesis. **(15 Marks)**
   1.2 List two organs that are involved with gluconeogenesis. **(10 Marks)**
   1.3 List four different types of gluconeogenic substrates **(20 Marks)**
   1.4 List 3 hormones that influence gluconeogenesis. **(15 Marks)**
   1.5 List the steps in which gluconeogenesis and glycolysis differ. **(15 Marks)**
   1.6 Explain how the glycolysis and gluconeogenesis are reciprocally controlled. **(25 Marks)**

2. **2.1** List the three main different types of diabetes mellitus. **(15 Marks)**
   2.2 Give reasons for the occurrence of the above types of diabetes mellitus. **(30 Marks)**
   2.3 List four possible tests that could be carried out in blood to confirm that an individual is diabetic. **(20 Marks)**
   2.4 Give the expected aimed lower limits of blood glucose level of a diabetic patient that could be obtained in the tests mentioned in Section 2.3. **(20 Marks)**
   2.5 Give the principle of the method that is used to measure the blood glucose level. **(15 Marks)**

3. 3.1 List the ketone bodies. **(15 Marks)**

3.2 List two organs that cannot use ketone bodies. **(10 Marks)**

3.3 Diagrammatically show the two pathways through which the ketone bodies are

3.3.1 synthesised. **(25 Marks)**

3.3.2 utilised. **(25 Marks)**

3.4 Name the two tests that are used to detect ketone bodies in the urine. **(10 Marks)**

3.5 Give the steps involved in one of the above-named tests that is used to detect ketone bodies in urine. **(15 Marks)**

4. 4.1 Explain with a diagram how the fats absorbed into the enterocytes are

4.1.1 incorporated into chylomicron in the enterocytes. **(25 Marks)**

4.1.2 distributed to different organs in the body by chylomicron. **(25 Marks)**

4.2 **4.2.1** List the conditions that can lead to increased blood ammonia level. **(10 Marks)**

4.2.2 Write down the reactions and the respective organ/s in which the detoxification of ammonia is taking place. **(40 Marks)**

5. 5.1 **5.1.1** List two transaminases that are useful to confirm myocardial infarction and liver diseases. **(10 Marks)**

5.1.2 Diagrammatically show the steps catalysed by the above-mentioned enzymes with their cofactors. **(30 Marks)**

5.1.3 Give the principle and the steps involved in the estimation of one of the above-mentioned transaminases in the laboratory. **(30 Marks)**

5.2 **5.2.1** Name the enzyme that is defective in Lesch Nyhan syndrome. **(05 Marks)**

5.2.2 Diagrammatically show the reaction catalysed by the enzyme mentioned in **5.2.1.** **(10 Marks)**

5.2.3 List the consequences of the deficiency of the enzyme mentioned in **5.2.1.** **(15 Marks)**

6. **6.1** List the proteins and enzymes that are involved in replication of the flow of genetic information in a eukaryotic cell. **(30 Marks)**

6.2 Explain the steps involved in the replication with a diagram and describe the functions of the above-mentioned proteins and enzymes in replication. **(50 Marks)**

6.3 List the different steps of transcription. **(20 Marks)**