

UNIVERSITY OF JAFFNA, SRI LANKA

FIRST YEAR SECOND SEMESTER EXAMINATION IN BScHons (MLS) -2022

MLSBM 1262 –BIOCHEMISTRY FOR MEDICAL LABORATORY SCIENCES- II

(14<sup>th</sup> and 15<sup>th</sup> Batches)

PAPER II

Date 18.06.2024

Time: 2 Hours

ANSWER ALL SIX QUESTIONS ON SEPARATE ANSWER BOOK.

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

Plasma Biochemical	Results	Normal Range
Glucose (mg/L)	360	Expected to know
Total Cholesterol (mg/L)	340	200-239
Triacylglycerol (mg/L)	300	<150
Urea (mg/L)	40	7-20

- 1.1 List the hormones which would have brought the above changes in the blood parameters. (20 Marks)
- 1.2 Give reasons for the changes in the levels of
- 1.2.1 glucose (20 Marks)
  - 1.2.2 total cholesterol (10 Marks)
  - 1.2.3 triacylglycerol (10 Marks)
  - 1.2.4 urea (20 Marks)
- 1.4 Explain with biochemical reasons for his loss of weight. (20 Marks)

100

2. 2.1 Name **the test** to confirm that a pregnant woman is diabetic. (10 Marks)
- 2.2 List the steps to be taken to prepare the patient prior and on the day to perform the test mentioned in **Section 2.1**. (15 Marks)
- 2.3 List the steps of carrying out the test mentioned in **Section 2.1**. (15 Marks)
- 2.4 List the hormones which would lead to gestational diabetes. (15 Marks)
- 2.5 Explain how the hormones mentioned in **Section 2.4** would lead to gestational diabetes? (30 Marks)
- 2.6 Give the principle of a test to confirm the excretion of glucose in urine. (15 Marks)
3. 3.1 List the ketone bodies. (10 Marks)
- 3.2 List the conditions leading to elevated blood ketone body level. (10 Marks)
- 3.3 Diagrammatically show the **two pathways** in which ketone bodies are
- 3.3.1 synthesised. (30 Marks)
- 3.3.2 utilised. (20 Marks)
- 3.4 List the tissue/tissues which cannot utilise ketone bodies. (10 Marks)
- 3.5 3.5.1 Name two tests to identify ketone bodies in the urine. (10 Marks)
- 3.5.2 Give the procedure of one of the methods mentioned in **Section 3.5.1**. (10 Marks)
4. 4.1 Diagrammatically show the formation and catabolism of VLDL. (50 Marks)
- 4.2 Compare the serum electrophoretic patterns of the plasma lipoproteins patterns of a patient with hypercholesterolemia and normal triacylglycerol level with that of a normal person. (20 Marks)
- 4.3 Hyperactivity of HGPRTase causes hyperuricaemia. Explain. (30 Marks)
5. 5.1 List the probable enzyme/ cofactor defect/s causing phenylketonuria. (30 Marks)
- 5.2 Give the metabolic pathway of phenylalanine with the enzymes and the cofactors. (50 Marks)
- 5.3 How would phenyl pyruvic acid be detected in urine? (20 Marks)

**6. 6.1** With regard to DNA replication

**6.1.1** list the

**6.1.1.1** proteins involved

**(10 Marks)**

**6.1.1.2** enzymes involved.

**(20 Marks)**

**6.1.2** explain the steps of DNA replication.

**(50 Marks)**

**6.2** Write short notes on maple syrup urine disease.

**(30 Marks)**