



FACULTY OF ALLIED HEALTH SCIENCES, UNIVERSITY OF RUHUNA  
 Department of Medical Laboratory Science  
 Re-sit Examination – Year End Examination – Year 1 – April 2023  
 MLS 1102 Cell Biology and Biochemistry (SEQ)

Date: 10<sup>th</sup> April 2023

Time: 9.00 a.m. -11.00 a.m.

Duration: Two hours

Answer any **four** questions only

Index Number: .....

01

1.1

- 1.1.1 Define gluconeogenesis. (10 marks)
- 1.1.2 State **two** glucogenic tissues in the body. (10 marks)
- 1.1.3 State **three** precursors for gluconeogenesis. (15 marks)
- 1.1.4 Explain the metabolic significance of gluconeogenesis. (30 marks)

1.2 Explain the biochemical basis for the occurrence of hypoglycemia in acute alcohol toxicity. (35 marks)

02. Write short notes on the following

- 2.1 Electron transport chain. (25 marks)
- 2.2 Urea cycle. (25 marks)
- 2.3 Post-prandial blood glucose regulation. (25 marks)
- 2.4 Post-transcriptional modifications of the eukaryotic mRNA. (25 marks)

03.

3.1

- 3.1.1 List **four** biological functions of calcium. (20 marks)
- 3.1.2 List **four** rich dietary sources of calcium. (10 marks)
- 3.1.3 Briefly explain the factors affecting calcium absorption. (30 marks)

3.2

- 3.2.1 Explain the biochemical basis for the recommendation of Zn supplements for post-surgical patients. (30 marks)
- 3.2.2 List **four** thyroid function tests. (10 marks)

04.

4.1 Classify the vitamins based on their solubility in water giving examples.

(15 marks)

4.2. Name the active form and state the functions of the following vitamins/provitamin.

4.2.1. Thiamin

(10 marks)

4.2.2. Vitamin E

(15 marks)

4.2.3. Folic acid

(10 marks)

4.3. Explain the following statements.

4.3.1. Role of vitamin D in calcium homeostasis.

(10 marks)

4.3.2. 1mg of vitamin K is administered (i.m.) to all newborn babies.

(20 marks)

4.3.3. An adult who is bedridden and on anti-epileptic therapy develops osteomalacia.

(20 marks)

05.

5.1 What are essential fatty acids? give **two** examples?

(20 marks)

5.2 What is beta-oxidation ( $\beta$ -oxidation) of fatty acids?

(10 marks)

5.3 Briefly describe the importance and the process of transporting long chain fatty acids (LCFA) into the mitochondria.

(20 marks)

5.4 Write short notes on following,

5.4.1 Development of ketoacidosis from prolonged ketosis.

(25 marks)

5.4.2 Development of fatty liver in a chronic alcohol user.

(25 marks)

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