



FACULTY OF ALLIED HEALTH SCIENCES
UNIVERSITY OF RUHUNA
Department of Medical Laboratory Science



Year End Examination, Year 1 - 10th Batch - 2019
Cell Biology and Biochemistry (MLS 1102) – SEQ

Thursday 07th February 2019

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

Duration: 2 hours

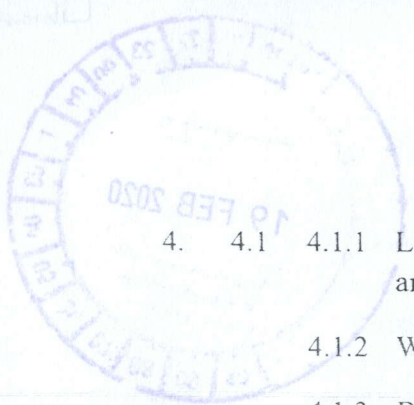
Answer any **four** questions.

Index Number:

1. Explain the following. (92)
 - 1.1 Occurrence of hypoglycaemia in glucose 6-phosphatase enzyme deficiency (25 marks)
 - 1.2 The activity of pentose phosphate pathway is high in red blood cells. (25 marks)
 - 1.3 Intake of dietary protein is restricted in liver diseases. (25 marks)
 - 1.4 Importance of the analysis of serum enzymes in clinical diagnosis. (25 marks)

2.
 - 2.1 Describe the antioxidant properties of the following vitamins.
 - 2.1.1 Vitamin C (10 marks)
 - 2.1.2 Vitamin E (10 marks)
 - 2.2 Briefly explain the following.
 - 2.2.1 Role of vitamin D in calcium homeostasis. (15 marks)
 - 2.2.2 Vitamin B₁₂ deficiency is masked by folate therapy. (15 marks)
 - 2.3
 - 2.3.1 Name **two** tissues where gluconeogenesis occurs in the body. (10 marks)
 - 2.3.2 List **four** substrates that are used for gluconeogenesis. (10 marks)
 - 2.3.3 What is the metabolic significance of gluconeogenesis? (30 marks)

3. Write short notes on the following.
 - 3.1 Mechanism of action of cholera toxin. (25 marks)
 - 3.2 Importance of parathyroid hormone in the regulation of serum calcium concentration. (25 marks)
 - 3.3 Fluoride in the maintenance of dental health. (25 marks)
 - 3.4 Post-transcriptional modifications of eukaryotic mRNA and their significance. (25 marks)



4. 4.1 4.1.1 List the factors that affect the blood cholesterol concentration in an individual. (10 marks)
- 4.1.2 What is fatty liver? (05 marks)
- 4.1.3 Briefly explain the conditions in which fatty liver is produced in the body. (35 marks)
- 4.2 4.2.1 What is meant by the *de novo* synthesis of purine nucleotides? (10 marks)
- 4.2.2 List **three** amino acids involved in the *de novo* synthesis of purines? (10 marks)
- 4.2.3 Explain the development of hyperuricemia in hypoxanthine - guanine phosphoribosyltransferase (HGPRT) enzyme deficiency. (30 marks)
5. 5.1 Write **two** main functions of iron in the body (10 marks)
- 5.2 Discuss the factors that affect iron absorption in the body. (20 marks)
- 5.3 What are the main causes for iron deficiency anemia? (20 marks)
- 5.4 Write **two** causes for iron overload. (10 marks)
- 5.5 Explain the significance of measuring serum ferritin concentration. (40 marks)
