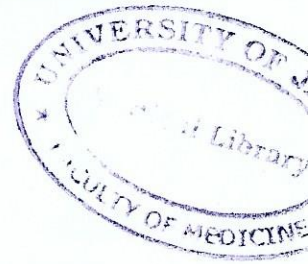


UNIVERSITY OF JAFFNA, SRI LANKA
First Year Second Semester Examination in
BScHons (Medical Laboratory Sciences) - 2020



MLSBM 1262 – BIOCHEMISTRY FOR MEDICAL LABORATORY SCIENCES II

PAPER II

05.09.2022

Time: 2 hours

Answer All Questions.

Answer each question in Separate Answer Books.

1. 1.1 List the causes for the development of Type 1 diabetes mellitus. (20 Marks)
- 1.2 Explain how the above said causes are leading to Type 1 diabetes mellitus. (60 Marks)
- 1.3 Give the expected fasting and postprandial blood glucose and glycosylated haemoglobin in Type 1 diabetes mellitus patients. (20 Marks)

2. 2.1 A labourer aged 45 years had collapsed while working and was admitted to the hospital. Analysis of his blood revealed 82 mmol/L alcohol (legal Limit for motor car drivers is 17.4mmol/L), 2.8 mmol/ L glucose (normal blood glucose is 3.3-8.4 mmol/L) and 2.8 mmol/L lactate (normal blood lactate 3.3-8.4 mmol/L). Explain, the occurrence of hypoglycaemia in this patient. (55 Marks)
- 2.2 Give the biochemical basic of the following conditions and explain the complication arising from the biochemical defect/s.
 - 2.2.1. Galactosemia (25 Marks)
 - 2.2.2. Lactose intolerance (20 Marks)

Allied Health Sciences

3. 3.1 Name the plasma lipoprotein/s which is/are rich in
- 3.1.1 Cholesterol
 - 3.1.2 Triacylglycerol
 - 3.1.3 Apoproteins **(25 Marks)**
- 3.2 List the apoproteins and their functions. **(25 Marks)**
- 3.3 Show diagrammatically the metabolism of HDL. **(50 Marks)**
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4. 4.1 List the principal hormones, which influence the breakdown of triacylglycerol in adipocytes. **(20 Marks)**
- 4.2 Show schematically how the above said hormones increase lipolysis in adipocytes. **(60 Marks)**
- 4.3 Indicate in your **scheme given for 4.2**
- 4.3.1. activation of an enzyme by covalent modification
 - 4.3.2. allosteric activation of an enzyme **(20 Marks)**
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5. 5.1 Skin of a 13 year old boy was very sensitive on exposure to sunlight. His skin fibroblast cell culture was UV irradiated and the extracted DNA had abnormally high percentage of thymine dimers.
- 5.1.1 What is the probable defect in this boy? **(10 Marks)**
 - 5.1.2 Diagrammatically show how intra-chain thymine dimers in DNA are repaired in a normal individual? **(30 Marks)**
 - 5.1.3 Summarise the mechanisms involved in the causation of the disease? **(15 Marks)**
- 5.2 A male child had mental retardation and extremely aggressive behaviour that lead to self-mutilation. The serum uric acid level was elevated with increased PRPP amidotranferase activity.
- 5.2.1 Give the probable defect in this child. **(10 Marks)**
 - 5.2.2 Explain the biochemical basis and the complications which can arise due to the above mentioned condition. **(35 Marks)**

6. 6.1 Name three different sources of blood ammonia? (15 Marks)
- 6.2 Show diagrammatically how the ammonia from alanine can get into citrulline. (45 Marks)
- 6.3 Schematically show the amino acids which predominate in the blood and explain why they are altered
- 6.3.1 during the first two hours after a meal.
- 6.3.2 about 12 hours after the last meal. (40 Marks)