



UNIVERSITY OF JAFFNA
FACULTY OF ALLIED HEALTH SCIENCES
SECOND YEAR SECOND SEMESTER EXAMINATION IN BScHons (MLS) -2021
MLSCB 2235 CLINICAL BIOCHEMISTRY I
PAPER II

Date:14.08.2023

Time: 2 Hours

ANSWER ALL SIX QUESTIONS.

ANSWER EACH QUESTION IN SEPARATE ANSWER BOOK

1.

1.1 A 45- year-old woman with a perimenopausal excessive menstruation history, presented with shortness of breath on exertion and was found to be pale on examination. Her Haemoglobin concentration was 6.0 g/dL.

1.1.1 Mention the most possible deficiency that had caused this anaemia. (05 marks)

1.1.2 List three (03) other components in Full blood count report that will show changes in this condition and mention the possible changes. (15 marks)

1.1.3 List Four (04) blood tests that will be done in Chemical Pathology laboratory to estimate the possible deficiency mentioned in 1.1 and briefly explain changes you will expect in each of them. (20 marks)

She was treated with oral and intravenous (IV) replacement of the deficient component for 3 months. She later on defaulted clinic follow up and started to buy the medicines over the counter and continued to take the tablets for 3 years. She became ill and was found to have high level of the component she had taken for long.

1.1.4 Mention the name of this condition. (05 marks)

1.1.5 List one (01) cutaneous manifestation of this condition. (05 marks)

1.2 A 34 -year-old pregnant lady was advised to do Oral Glucose Tolerance Test (OGTT) at the clinic. Explain the patient preparation, procedure of the test, sample type, sample collection container for this test. (50 marks)

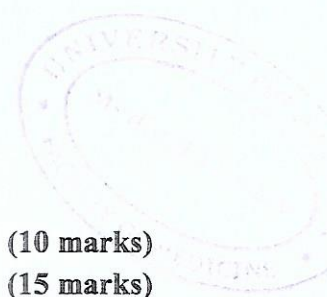
2. Cardiac biomarkers are usually used in clinical practice to identify cardiac ischaemia and for risk stratification in coronary heart disease.

2.1 Mention three (03) cardiac biomarkers (other than troponin) used in early days in acute coronary syndrome. (05 marks)

2.2 Briefly explain the principle of cardiac troponin measurement. (20 marks)

2.3 List four (04) conditions other than acute coronary syndrome where cardiac troponins are elevated. (10 marks)

- 2.4 Mention the reasons for variation in sensitivity, specificity and precision of different commercial troponin assays. (20 marks)
- 2.5 List two (02) recommendations that need to be met for high sensitivity troponin assays. (10 marks)
- 2.6 Discuss the advantages and disadvantages of high sensitivity troponin assay against the conventional troponin assay. (35 marks)
3. Buffering system in the body is important to maintain the homeostasis.
- 3.1 Explain the term buffer. (10 marks)
- 3.2 List five (05) buffering systems in the body. (20 marks)
- 3.3 Mention the normal pH of the blood. (05 marks)
- 3.4 Mention the name and the formula used to calculate pH of a buffer system in the body. (15 marks)
- 3.5 List three (03) mechanisms by which there is net gain in Hydrogen ions in the body. (15 marks)
- 3.6 List Four (04) causes for metabolic acidosis. (20 marks)
- 3.7 List two (02) blood tests that can be done to assess the blood acid base balance, and explain the three (03) components that are needed to assess the acid base balance of one of the tests mentioned. (15 marks)
4. You have been asked to advice a kidney donor on 24 hours urine collection for creatinine clearance.
- 4.1 Explain how you will advice on the 24 hours collection of urine. (40 marks)
- 4.2 The results of the analysis done is given below.
- Serum creatinine = 100 umoles/ L
- Urine creatinine = 10,324 umoles/L
- 24 hours urine volume = 2022 mL
- 4.2.1 Explain how you will measure the 24 hours urine brought by the patient, in your laboratory. (10 marks)
- 4.2.2 List two (02) methods used in the clinical laboratory to measure serum creatinine level in serum (10 marks)
- 4.2.3 How is the serum creatinine method modified to suit urine creatinine method (10 marks)
- 4.2.4. Give the equation used to measure 24 hours creatinine clearance and Calculate the 24 hours creatinine clearance in this patient. (20 marks)
- 4.2.5 His height is 170 cm and weight is 80 kg. Calculate the corrected creatinine clearance in this patient. (10 marks)



5. A 55- year -old man was admitted to the hospital with jaundice.
- 5.1 Briefly explain the term jaundice. (10 marks)
 - 5.2 List the three (03) types of jaundice. (15 marks)
 - 5.3 List two (02) causes each for the 03 types of jaundiced mentioned in 5.2. (15 marks)
 - 5.4 Briefly explain five (05) tests each and expected findings which will differentiate the three types of jaundice. (30 marks)
 - 5.5 Discuss the patient preparation, precautions to be taken while collecting sample (other than general phlebotomy procedure) container used for serum ammonia test. (30 marks)
6. A blood sample sent from a 50-year-old alcoholic man with severe abdominal pain was found to be milky after centrifugation.
- 6.1 Mention one (01) common reason for milky serum. (05 marks)
 - 6.2 Mention the underlying condition that caused this milky serum in this patient. (10 marks)
 - 6.3 Give one (01) other reason for getting milky serum sample in a baby and how can you give advice to prevent it. (10 marks)
 - 6.4 Name two (02) analytes that can get interfered by milky serum and indicate the expected changes in each one of them. (20 marks)
 - 6.5 Mention one (01) process that can be carried out in the laboratory to prevent this milky serum interfering with the analyte assay mentioned in 6.4. (15 marks)
 - 6.6 Explain briefly the principles of the methods mentioned for the two analytes given in 6.4. (40 marks)