

THE OPEN UNIVERSITY OF SRI LANKA
FACULTY OF HEALTH SCIENCES
DEPARTMENT OF MEDICAL LABORATORY SCIENCES
ACADEMIC YEAR 2024/2025 – SEMESTER I

BACHELOR OF MEDICAL LABORATORY SCIENCES HONOURS

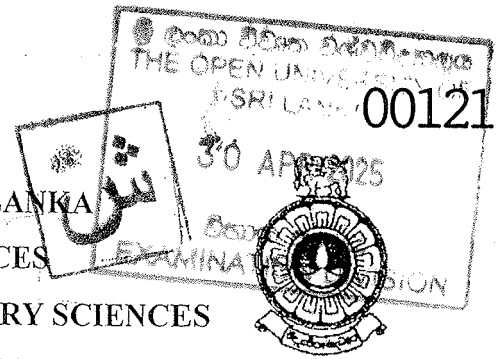
MDU6503 – CLINICAL BIOCHEMISTRY III

FINAL EXAMINATION

DURATION: 03 HOURS

DATE: 30th April 2025

TIME: 1.30 PM – 4.30 PM



Part B: Structured Essay Questions (40 marks)

Q1. Renal function tests performed by measuring levels of substances in blood and urine, to evaluate how well the kidneys are functioning.

1.1. a) List two (02) instances where urea in blood is elevated without any obvious renal pathology. (01 Marks)

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b) List two methods for urea assay. (01 Marks)

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1.2 a) State the principle of the Jaffe reaction used for creatinine assay. (02 Marks)

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b) Discuss the precautions taken to minimize the interferences in the Jaffe reaction. (03 Marks)

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1.3 What is the significance of the urine albumin-to-creatinine ratio (ACR) in the early detection of kidney disease in diabetic patients? (02 Marks)

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1.4. What additional information are needed to calculate eGFR using serum creatinine by the CKD EPI equation? (01 Marks)

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(Total 10 marks)

Q2. Liver function tests, including bilirubin levels in blood are biochemical tests used to assess the health of the liver.

2.1. Compare conjugated bilirubin and unconjugated bilirubin. (02 Marks)

Unconjugated bilirubin	Conjugated bilirubin

2.2. Name a method used to analyze bilirubin in blood. (01 Marks)

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2.3 State the three types of jaundice. Mention the significance of measuring serum and urine bilirubin to diagnose the above three types. (06 Marks)

Types of jaundice	Reason	Serum Bilirubin	Urine Bilirubin

2.4. Mention the precautions to take during sample collection and transport for bilirubin

.....(01 Marks)

(Total 10 marks)

Q3. A 37-year -old woman presented with facial puffiness and lethargy for the past 3 months. Her thyroid profile is as follows.

ft4 <4 pmol/l (8 – 22)

TSH >100 mIU/l (0.3 – 4.0)

3.1 a) What is the diagnosis? (0.5 Marks)

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b) What is the specimen of choice for this test? (0.5 Marks)

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3.2 What actions would you take if these results were from a pregnant mother at 8 weeks of gestation? (02 Marks)

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3.3 a) Explain how samples are collected for serum cortisol assay. (02 Marks)

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b) List two (02) conditions which will result in elevated serum cortisol levels. (01 Mark)

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3.4. a) List four (04) hormones related to female reproduction system. (01 Marks)

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b) Briefly describe changes in hormones mentioned in '3.4 a' during the menstrual cycle.

(03 Marks)

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(Total 10 marks)

Q4. A tumor marker is a substance measured in body fluids to obtain information related to cancer.

4.1 Classify tumor markers and provide one example for each category. (02 Marks)

Tumor markers	Example

4.2 List four (04) tumor markers and the specific organ for which the tumor you mentioned is used in detecting the presence of cancer. (04 Marks)

Diseased organs	Tumor markers

4.3 List water soluble vitamins. (02 Marks)

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4.4 List four (04) main functions of vitamin E. (02 Marks)

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(Total 10 Marks)

Part C: Essay Question. (30 marks)**Question 01**

- a) Outline the laboratory investigations performed in a patient with suspected bone disease.
- b) Describe the pre-analytical factors that should be considered when collecting specimens for the tests mentioned in 1.a. (15 Marks)

Question 02

- a) List the cardiac markers used in the diagnosis of acute myocardial infarction.
- b) Explain the time intervals the cardiac markers mentioned in '2 a' appear in blood (if required use a diagram). (15 Marks)

(Total 30 Marks)

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