



UNIVERSITY EXAMINATIONS

FOURTH YEAR EXAMINATION FOR THE AWARD OF DEGREE OF BACHELOR OF SCIENCE IN BIOCHEMISTRY

BIOC 417: MEDICAL BIOCHEMISTRY II

STREAMS: Bsc. BIOC

TIME: 2 HOURS

DAY/DATE: FRIDAY 12/4/2024

2.30 P.M. –4.30 P.M.

INSTRUCTIONS:

- i) Answer Question ONE and any TWO Questions
- ii) Do not write on the question paper

QUESTION ONE (30 MARKS)

(a) Define the following disease conditions indicating the cause for each.

- (i). Microalbuminuria
- (ii). Phenylketonuria
- (iii). Isovaleric Acidemia (2 x 3marks)

(b) The following laboratory results were obtained from a 20-year-old university student who consulted the Student Health Service because of fatigue and lack of appetite. She adds that she recently noted that her sclera appears some what yellowish and that her urine has become dark.

Laboratory Results:

Analysis	Observations
ALT	Elevated
AST	Elevated
Alkaline phosphate	Minimally elevated
LDH	Elevated
Serum bilirubin	5mg/dL
Urine bilirubion	Increased
Hepatitis A antibody (IgG)	Negative

Hepatitis A antibody (IgM)	Positive
Hepatitis B surface antigen	Negative
Hepatitis B surface antibody	Negative
Hepatitis C antibody	negative

- i) What is the most likely diagnosis? (2 marks)
 - ii) What additional factors in the patient’s history should be sought? (3 marks)
 - iii) What is the prognosis? (3 marks)
 - iv) Give reasons for observed LDH and ALT elevation (3 marks)
- (c) Citing examples, explain the precautions necessary for selecting and collecting specimen properly and carefully for clinical biochemistry examination. (4 marks)
- (d) List major biochemical changes which may occur in blood specimens stored at room temperature. (4 marks)
- (e) Outline clinical tests used to diagnose myocardial infarction. (5 marks)

QUESTION TWO (20 MARKS)

- (a) Discuss biochemical basis and clinical diagnosis of sickle cell anaemia. (10 marks)
- (b) Outline the techniques of blood compatibility testing. (10 marks)

QUESTION THREE (20 MARKS)

- (a) Explain the analytical methods for urea determination in clinical biochemistry laboratory. (10 marks)
- (b) Under what conditions are serum levels of urea elevated in human? (10 marks)

QUESTION FOUR (20 MARKS)

- (a) Discuss the causes, diagnosis and management of venous thromboembolism. (10 marks)
- (b) Discuss different types of electrophoresis and their application in clinical biochemistry. (10 marks)

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