



KENYATTA UNIVERSITY
EXAMINATION FOR THE DEGREE OF BACHELOR OF SCIENCE
(MEDICAL LABORATORY SCIENCE)
HML 414: CLINICAL CHEMISTRY II

1ST SEMESTER 2022/2023

TIME: 2 HRS

INSTRUCTIONS

SECTION A: ANSWER ALL QUESTIONS: (4 MARKS EACH)

1. Fill in the blanks. (4 marks)

Enzyme	Isoenzymes	Organ of origin
Alkaline phosphatase		
Lactate dehydrogenase		

2. Outline differences between direct and indirect bilirubin. (4 marks)
3. a) Define Bence Jones proteins (1 mark)
- b) Describe the tests for detection of Bence Jones proteins in urine. (3 marks)
4. Define the following terms mentioning one example for each condition in acid base disturbance:
- a) Metabolic acidosis
- b) Respiratory acidosis
- c) Metabolic alkalosis
- d) Respiratory alkalosis (4 marks)
5. Urine may take abnormal colours due to the presence of various substances. Outline the clinically induced abnormal colours of urine stating the substances involved in each. (4 marks)

SECTION B: ANSWER ANY ONE QUESTION: (20 MARKS EACH)

6. Use a well labeled diagram to describe the formation of Bilirubin showing points that can lead to altered clinical conditions. (20 marks)

7. a) Discuss the following terms:

i) Anuria

ii) Polyuria

iii) Uraemia

iv) Hyperkalaemia

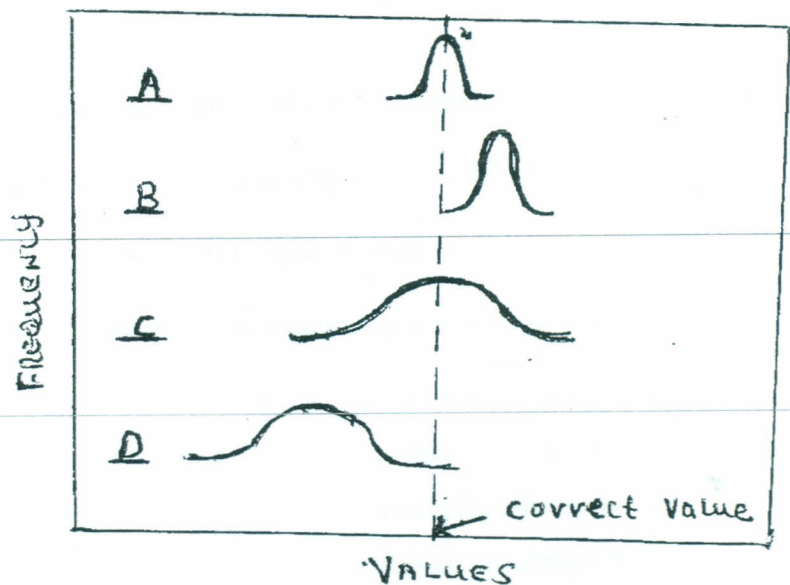
v) Ketonuria.

(10 marks)

b) Give a brief account on how to perform an Oral Glucose Tolerance Test (OGTT) of a 45 year old male patient. (10 marks)

SECTION C:

ANSWER ALL QUESTIONS BY INDICATING THE CORRECT ANSWER ON THE ANSWER BOOKLET. (1/2 MARK EACH)



In the figure above, curves A, B, C and D are plotted from groups of data obtained from analyzing a single lot of control serum. Group A shows:

- a) the data are widely scattered and the mean is not near the correct value. This indicates a lack of both precision and accuracy
- b) the data are spread over a wide range of values indicating poor precision. However, since the mean value coincides with the correct value, the overall accuracy is good.
- c) data which are tightly grouped with the mean lying on the correct value. Therefore, these results are both accurate and precise.
- d) the grouping is also good but since the mean is not close to the correct value, the accuracy is poor.

2. A control in clinical chemistry is:-

- a) Same as a standard solution
- b) A solution of known range
- c) A solution of known dilution
- d) A solution used to calibrate a machine

3. Which of the following analytes is not assayed in the Renal Function tests?

- a) Blood urea nitrogen.
- b) Electrolytes.
- c) Creatinine.
- d) Total protein

4. Markers of cardiac diseases is/are:

- a) Lipase
- b) Alkaline phosphatase
- c) Amylase
- d) Creatine kinase

5. Purine nucleosides include:

- a) Adenine and Guanine.
- b) Cytosine and Thymine.
- c) Adenine and Uracil.
- d) Cytosine and Guanine.

11. All the following are isoenzymes of creatinine kinase **EXCEPT**:

- a) BB
- b) MB
- c) B
- d) MM

12. Salivary amylase is also referred to as:

- a) Amylum
- b) Proteinase
- c) Diastase
- d) Trypsin

13. Which cholesterol is also referred to as the GOOD CHOLESTEROL?

- a) LDL
- b) Triglycerides
- c) VLDL
- d) HDL

14. Which of the following reference range is correct ?

- a) HDL-C 1.3-3.4 mmol/l
- b) Total cholesterol 3.6-5.2 mmol/l
- c) LDL-C 1.0-2.0 mmol/l
- d) Triglycerides 2.0-3.7 mmol/l

15. A deficiency in phenylalanine hydroxylase results in the disease:

- a) phenylketonuria (PKU).
- b) Alkaptonuria.
- c) Maple syrup urine disease.
- d) Hunter's disease.

6. In obstructive jaundice:

- a) Total bilirubin is high
- b) Direct bilirubin is low
- c) Indirect bilirubin is high
- d) Bilirubin in urine is absent.

7. What are the reference ranges for serum calcium?

- a) 2.2-2.7 mmol/l
- b) 8.5-10.5 mmol/l
- c) 4.8-5.5 mmol/l
- d) 0.5-1.5 mmol/l

8. In the estimation of serum calcium by the Clark and Collip method, which of the following statement is false:

- a) Ammonium oxalate is used.
- b) Calcium ions reacted with Arsenazo III in an acidic medium.
- c) Potassium permanganate solution is used.
- d) A faint pink colour forms which persists.

9. Which of the following statement is false about Respiratory Acidosis?

- a) pH is low.
- b) PaCO₂ is normal.
- c) PaCO₂ is elevated.
- d) HCO₃⁻ is normal.

10. What are the reference ranges of serum Potassium in adults?

- a) 3.5-5.0 mmol/l
- b) 96-106 mmol/l
- c) 23-29 mmol/l
- d) 2.5-3.0 mmol/l