

**CHUKA**

**UNIVERSITY**



**UNIVERSITY EXAMINATIONS**

**EXAMINATION FOR THE AWARD OF DEGREE OF BACHELOR OF  
SCIENCE IN NURSING (UPGRADING)**

**NURU 123: CLINICAL CHEMISTRY**

**STREAMS: BSc. Nursing (Upgrading)**

**TIME: 2 HOURS**

**DAY/DATE: MONDAY 27/09/2021**

**8.30 A.M. – 10.30 A.M.**

**INSTRUCTIONS:**

- Do not write anything on the question paper.
- Mobile phones and any other reference materials are **NOT** allowed in the examination room.
- The paper has three (3) Sections. **ALL** the questions are compulsory
- Your answers for Section A (MCQs) should be on the first page of the answer Booklet.
- Number **ALL** your answers and indicate the order of appearance in the space provided in the cover page of the examination answer booklet.

**SECTION A: MULTIPLE CHOICE QUESTIONS (20 Marks)**

1. Separation of lipoproteins is best done using:
  - a) Electrophoresis
  - b) Paper chromatography
  - c) Enzymatic method
  - d) Radio-immuno assay
2. A test was carried out on the same specimen and returned the same results. The quality depicted by this test is:
  - a) Sensitivity
  - b) Specificity
  - c) Accuracy
  - d) Precision

3. A blood sample is centrifuged to get plasma. This process of sample handling is called:
  - a) Analysis
  - b) Processing
  - c) Accession
  - d) Sublimation
4. Heparin is the most commonly used anti-coagulant. It is found in \_\_\_\_\_ top tubes.
  - a) Gray
  - b) Red
  - c) Green
  - d) Tiger
5. The most important urinary buffer is:
  - a) Monohydrogen phosphate
  - b) Dihydrogen phosphate
  - c) Ammonia
  - d) Bicarbonate
6. Which of the following chemicals is a base?
  - a) Magnesium sulphate
  - b) Aluminium hydroxide
  - c) Hydrogen chloride
  - d) Potassium chloride
7. Correction of respiratory acidosis include:
  - a) Excretion of hydrogen
  - b) Retention of bicarbonate
  - c) Hypoventilation
  - d) Hyperventilation
8. Distribution of water from the interstitial to the intracellular compartment is influenced by:
  - a) Extra cellular [Na<sup>+</sup>]
  - b) Intra cellular [Na<sup>+</sup>]
  - c) Hydrostatic pressure
  - d) Oncotic pressure
9. In isotonic water loss:

- a) Plasma sodium is elevated
  - b) Plasma urea is elevated
  - c) Hematocrit is reduced
  - d) Ammonia levels are low
10. Hypokalemia is likely to occur in:
- a) Diabetes mellitus
  - b) Respiratory acidosis
  - c) Transfusion of stored blood
  - d) Diarrhea and vomiting
11. A disadvantage of using urea in determining GFR is that it is:
- a) Protein bound
  - b) Freely filtered
  - c) Difficult to measure
  - d) Lacks a constant endogenous production rate
12. A blood sample was collected from a patient with acute renal failure. The likely finding in this sample would be:
- a) Decreased urea and creatinine levels
  - b) Increased pH
  - c) Decreased potassium levels
  - d) Increased plasma proteins
13. Which of the following is likely to cause osmotic diuresis?
- a) Glucose
  - b) Potassium
  - c) Calcium
  - d) Amino acids
14. Causes of conjugated hyperbilirubinemia include:
- a) RBC hemolysis
  - b) Deficiency of UDP-Glucuronyl transferase
  - c) Biliary obstruction
  - d) Prematurity
15. The bile acids likely to be elevated in the blood due to acute hepatitis are:

- a) Lithocholate, chenodeoxycholate
  - b) Deoxycholate, chenodeoxycholate
  - c) Chenodeoxycholate, cholate
  - d) Lithocholate, deoxycholate
16. Plasma specific enzymes include:
- a) Clotting factors, complement
  - b) Pancreatic lipase, pseudocholinesterase
  - c) Alanine transaminase, Aspartate transaminase
  - d) Pseudocholinesterase, creatine kinase
17. Cardiac enzymes include:
- a) Alanine transaminase, Aspartate transaminase
  - b) Lactate Dehydrogenase, Gamma Glutamyl transpeptidase
  - c) Creatine kinase, Aspartate transaminase
  - d) Lactate Dehydrogenase, alkaline phosphatase
18. Cortisol increases blood glucose levels by inducing:
- a) Glycogenolysis
  - b) Protein catabolism
  - c) Glycogenesis
  - d) Lipolysis
19. The lipoprotein with the highest triglyceride level is:
- a) Chylomicron
  - b) LDL
  - c) HDL
  - d) VLDL
20. In a patient with coronary artery disease due to atherosclerosis:
- a) Both LDL and HDL are elevated
  - b) Both LDL and HDL are reduced
  - c) LDL is elevated, HDL is reduced
  - d) LDL is reduced, HDL is elevated

**SECTIONB: SHORT ANSWER QUESTIONS (35 Marks)**

1. A blood gas analysis returned the following results: pH-7.6; SBC-30 mmol/L; pCO<sub>2</sub>-6kpa.
  - a) Identify the acid base disorder giving a reason for your answer [1 marks]
  - b) State four (4) possible causes of this condition [4 marks]
2. Outline four (4) causes of hypertonic water imbalance [4 marks]
3. State five (5) biochemical test carried out on a urine specimen [5 marks]
4. Explain three (3) characteristics of enzymes [6 marks]
5. State five (5) liver function tests carried out in patient with liver cirrhosis indicating the outcome of each [5 marks]
6. Enumerate five (5) indications of a lipid profile [5 marks]
7. Outline five (5) biochemical features of a patient with diabetic keto-acidosis coma[5 marks]

**SECTION C: LONG ANSWER QUESTIONS (15 Marks)**

1. Biochemical test results may be different from the patient's clinical condition. This may be attributed either to a wrong diagnosis, sampling errors or variations.
    - a) State five (5) principles of sample collection you would adhere to when collecting a specimen for biochemical tests to prevent pre-analytic errors [5 marks]
    - b) Explain giving examples five (5) possible causes of biochemical test variations [10 marks]
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