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) Aluminiun 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+]
   b) Intra cellular [Na+]
   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 dieresis?
    a) Glucose
    b) Potassium
    c) Calcium
    d) Amino acids
14. Causes of conjugated hypebilirubinemia include:
    a) RBC hemolysis
    b) Deficiency of UDP-Glucoronyl 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 trasnspeptidase
    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; pCO2-6kpa.
   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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