

**CHUKA**



**UNIVERSITY**

**UNIVERSITY EXAMINATIONS**

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

**NURU 123: CLINICAL CHEMISTRY**

**STREAMS: BSC (NURS) UPG YIT3**

**TIME: 2 HOURS**

**DAY/DATE: THURSDAY 17/12/2020**

**8.30 AM – 10.30 AM**

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**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. The most appropriate biochemical technique of analyzing serum proteins is:
  - a) Paper chromatography
  - b) Electrophoresis
  - c) Enzymatic
  - d) Colorimetric
2. Gray top tubes are usually used for collecting a blood specimen for analysing:
  - a) Potassium
  - b) Sodium
  - c) Glucose
  - d) Proteins
3. The pH of body fluids is stabilized by buffer systems. The most effective buffer system at physiological pH is:
  - a) Bicarbonate

- b) Protein
  - c) Phosphate
  - d) Hemoglobin
4. The greatest buffering capacity at physiological pH would be provided by protein rich in which of the following amino acid:
- a) Lysine
  - b) Aspartic acid
  - c) Leucine
  - d) Histidine
5. Which of the following laboratory results indicates compensated metabolic alkalosis:
- a) High pCO<sub>2</sub>, normal bicarbonate, high pH
  - b) Low pCO<sub>2</sub>, low bicarbonate, low pH
  - c) High pCO<sub>2</sub>, normal bicarbonate, low pH
  - d) High pCO<sub>2</sub>, high bicarbonate, high Ph
6. Renal glutaminase activity is increased in:
- a) Respiratory alkalosis
  - b) Respiratory acidosis
  - c) Metabolic alkalosis
  - d) Hypokalemia
7. Atherogenic lipoprotein phenotype(ALP) is a collection of which lipoprotein abnormality:
- a) Low HDL, High LDL, High triglycerides
  - b) Low HDL, high LDL, normal triglycerides
  - c) High HDL, High LDL, high triglycerides
  - d) Low HDL, Low LDL, high triglycerides
8. Which of the following is true concerning plasma lipoproteins:
- a) Have a hydrophobic core of phospholipids and free cholesterol
  - b) Have a hydrophilic core of triacylglycerol and cholesterol esters
  - c) Have a hydrophobic core of triglycerides and cholesterol esters
  - d) Have a hydrophobic core of phospholipids and apolipoproteins
9. Cholesterol and fatty acids absorbed from the intestinal lumen are packaged into:
- a) Chylomicrons, HDL
  - b) Chylomicrons, VLDL
  - c) HDL, LDL
  - d) VLDL, HDL

10. The lipoprotein with the highest percentage of cholesterol is:
- a) HDL
  - b) VLDL
  - c) LDL
  - d) Chylomicrons
11. A major stimulus of antidiuretic hormone release is:
- a) A rise in potassium levels in the ICF
  - b) Increase in ECF water levels
  - c) Stimulation of baroreceptors
  - d) Increase in plasma osmolarity
12. The most prevalent anion in the intracellular fluid is:
- a) Potassium
  - b) Chloride
  - c) Sodium
  - d) Phosphate
13. Hypokalemia is likely to be associated with:
- a) Rhabdomyolysis
  - b) Prolonged stress
  - c) Addison's disease
  - d) Metabolic acidosis
14. Approximately one third of the body water exists in which fluid compartment:
- a) Intracellular fluid
  - b) Blood
  - c) Extracellular fluid
  - d) Transcellular fluid
15. The interstitial fluid is generally poor while plasma is generally rich in:
- a) Hydrogen ions
  - b) Sodium ions
  - c) Protein
  - d) Carbohydrates
16. Which of the following is likely to be encountered in acute renal failure:
- a) Hypokalemia
  - b) Metabolic alkalosis
  - c) Uremia

d) Hyonatremia

17. Pyruvate dehydrogenase requires which of the following cofactors:

- a) Thiamine(vitamin B1)
- b) Pyridoxine(Vitamin B6)
- c) Biotin
- d) Lipoamide

18. Secreted enzymes include:

- a) Lactate dehydrogenase, acid phosphatase
- b) Pseudocholinesterase, alkaline phosphatase
- c) Pseudocholinesterase, lipase
- d) Amylase, lipase

19. The most dominant lactate dehydrogenase in the serum is:

- a) LD1
- b) LD2
- c) LD3
- d) LD4

20. Absence of urine urobilinogen is indicative of:

- a) Biliary obstruction
- b) Increased bilirubin conjugation
- c) Increased re-uptake of bile
- d) Dubin –Johnson syndrome

**SECTION B: SHORT ANSWER QUESTIONS (35Marks)**

1. State five (5) measures you will take during sample collection and transport to minimize sampling errors [5 marks]
2. Outline four(4) factors that are considered during sample collection to ensure appropriate specimen is collected [4 marks]
3. Explain three(3) lipid transport processes in the plasma [6 marks]
4. Compare and contrast hypotonic and isotonic water loss [5 marks]
5. A laboratory result returned the following results: pH-7.0, pCO<sub>2</sub>-10, pO<sub>2</sub>-3, SBC-24. Enumerate five(5) possible causes of this condition [5 marks]
6. State five(5) indications of a renal function test [5 marks]

7. Outline five(5) factors that may cause raised bilirubin levels in the blood [5 marks]

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

A 35 year lady is brought to the emergency department in unconscious state. Immediately a blood sugar test is done which indicates a reading of 30 mmol/L. A diagnosis of Diabetic coma is made.

- a) Distinguish between type I and type II diabetes mellitus [5 marks]
- b) Explain five (4) biochemical abnormalities associated with diabetic keto –acidosis(DKA) other than hyperglycemia [10 marks]
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