



**AMREF INTERNATIONAL UNIVERSITY  
SCHOOL OF MEDICAL SCIENCES  
DEPARTMENT OF NURSING & MIDWIFERY SCIENCES  
BACHELOR OF SCIENCE IN NURSING  
END OF JANUARY-APRIL SEMESTER 2023 EXAMINATIONS**

**COURSE CODE AND TITLE: BSN 221 CLINICAL CHEMISTRY & HAEMATOLOGY**

**DATE: 4<sup>TH</sup> April 2023**

**Duration: 2 HOURS**

**Start: 9:00 AM**

**Finish: 11:00 AM**

**INSTRUCTIONS**

1. This exam is out of 70 marks
2. This Examination comprises **THREE** Sections. Section I: Multiple Choice Questions (20 marks) Section II: Short Answer Questions (30 marks) and Section III: Long Answer Questions (20 marks)
3. Answer **ALL** Questions.
4. Do Not write anything on the question paper -use the back of your booklet for rough work if need be.

**SECTION A: MULTIPLE CHOICE QUESTIONS**

**(20 MARKS)**

1. The ideal preservative for CSF glucose estimation is: -

- A. Fluoride Oxalate
- B. Sodium citrate
- C. Heparin
- D. Ethylenediaminetetraacetic acid (EDTA)

2. One of the following is unnecessary step in Phlebotomy procedure: -

- A. Placing bandage over the punctured site
- B. Recapping well the needle after use
- C. Washing hands prior to venepuncture
- D. Sterilizing the puncture site

3. The test that requires an arterial blood sample: -

- A. Malaria test.
- B. Electrolyte testing.
- C. pCO<sub>2</sub> determination.
- D. Plasma hemoglobin.

4. The major intracellular cation is:

- A. Calcium
- B. Sodium
- C. Chloride
- D. Potassium

5. The enzyme considered most tissue specific is: -

- A. Creatine kinase (CK)
- B. Amylase
- C. Alkaline phosphatase (ALP)
- D. Alcohol dehydrogenase (ADH)

6. Select the most appropriate adult reference range for fasting blood glucose: -
- A. 40–105 mg/dL (2.22–5.82 mmol/L)
  - B. 60–140 mg/dL (3.33–7.77 mmol/L)
  - C. 65–99 mg/dL (3.61–5.50 mmol/L)
  - D. 75–150 mg/dL (4.16–8.32 mmol/L)
7. Treatment recommendations for patients with coronary heart disease are based upon measurement of: -
- A. HDL cholesterol
  - B. VDL cholesterol
  - C. LDL cholesterol
  - D. Total cholesterol
8. A HIV-positive patient blood sample for chemistry must be properly labelled as: -
- A. Diagnostic specimen
  - B. Biological product
  - C. Infectious diseases
  - D. Clinical specimen
9. The condition associated with total body sodium excess is: -
- A. Renal failure
  - B. Hyperthyroidism
  - C. Hypoparathyroidism
  - D. Diabetic ketoacidosis
10. Alkaline phosphatase (ALP) is elevated in which disorder: -
- A. Addisons disease
  - B. Pagets diseasese
  - C. Diabetes insipidus
  - D. Scleroderma

11. The following is considered a normal hemoglobin: -

- A. Carboxyhemoglobin
- B. Methemoglobin
- C. Sulfhemoglobin
- D. Deoxyhemoglobin

12. The major Hemoglobin found in the RBCs of patients with sickle cell trait is: -

- A. Hgb S
- B. Hgb F
- C. Hgb A<sub>2</sub>
- D. Hgb A

13. The universal donor is:-

- A. A Negative, B Negative, AB Negative, O Negative
- B. O Negative
- C. AB Negative
- D. AB Negative, A Negative, B Negative

14. The following is a characteristic of classic hemophilia A: -

- A. Prolonged bleeding time
- B. Autosomal recessive inheritance
- C. Mild to severe bleeding episodes
- D. Prolonged PT

15. The Anticoagulant used in blood collection and storage for blood transfusion is: -

- A. Lithium heparin
- B. Ethylene Diamine Tetra-Acetic Acid (EDTA) liquid
- C. Sodium citrate
- D. Citrate phosphate dextrose adenine

16. The commonly used blood grouping system is: -

- A. Lewis blood grouping system
- B. MNs blood grouping system
- C. Kell blood grouping system
- D. ABO blood grouping system

17. Mean cell volume (MCV) is calculated using the following formula: -

- A.  $(\text{Hgb} \div \text{RBC}) \times 10$
- B.  $(\text{Hct} \div \text{RBC}) \times 10$
- C.  $(\text{Hct} \div \text{Hgb}) \times 100$
- D.  $(\text{Hgb} \div \text{RBC}) \times 100$

18. The average lifespan of Red blood cells is: -

- A. 120 days
- B. 200 days
- C. 190 days
- D. 140 days

19. The Synonyms of blood coagulation factors that is CORRECTLY matched is: -

- A. Factor I      Prothrombin
- B. Factor IV     Calcium
- C. Factor VII     Fibrinase
- D. Factor III     Hageman factor

20. Purple top vacutainer for collecting blood contains: -

- A. Sodium citrate
- B. Lithium heparin
- C. Ethylene Diamine Tetra-Acetic Acid (EDTA) liquid
- D. Sodium heparin

**SECTION B: SHORT ANSWER QUESTIONS** (30 MARKS)

1. Describe the following terms giving the normal serum values (6 Marks)
  - (i) Hyponatraemia
  - (ii) Hyperkalaemia
  - (iii) Hypocalcaemia
2. State SIX (6) conditions under which specimens for Clinical Chemistry analysis can be rejected in the Laboratory (6 marks)
3. State six (6) aims of enzyme estimation in diagnosis and monitoring of Diseases (6 Marks)
4. Outline six (6) functions of blood in the body (6 Marks)
5. State SIX (6) qualities of selecting a blood donor (6 Marks)

**SECTION C: LONG ANSWER QUESTION** (20 MARKS)

1. Discuss reactions which may occur to a patient during or immediately after blood transfusion (10 marks)
2. Discuss the Routine Kidney Function Tests (10 marks)