



**AMREF INTERNATIONAL UNIVERSITY
SCHOOL OF MEDICAL SCIENCES
DEPARTMENT OF NURSING & MIDWIFERY SCIENCES
End of Semester August 2024 Examinations**

BSN 221: Clinical Chemistry & Haematology (Main Examination)

DATE:

Duration: 2 HOURS

Start:

Finish:

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.

1. Which of the following anticoagulants is most appropriate for plasma glucose estimation?
 - A. Ethylene Diamine Tetra-Acetic Acid (EDTA)
 - B. Heparin
 - C. Sodium fluoride
 - D. Oxalate
2. _____ sample type is preferred for liver function tests?
 - A. Urine
 - B. Stool
 - C. Serum
 - D. Cerebrospinal fluid
3. Improper storage of a blood sample may lead to:
 - A. Increased haemoglobin concentration
 - B. Hemolysis
 - C. Elevated urea levels
 - D. Increased calcium levels
4. The pre-analytical phase of biochemical testing includes:
 - A. Result interpretation
 - B. Data entry errors
 - C. Sample collection and labelling
 - D. Instrument calibration
6. Analytical errors are most commonly caused by:
 - A. Improper fasting
 - B. Incorrect reference range
 - C. Faulty reagents or equipment
 - D. Wrong patient identification
7. Reference values are usually affected by all EXCEPT:
 - A. Age
 - B. Gender
 - C. Time of day
 - D. Test method used
8. To reduce analytical errors, a laboratory should:
 - A. Disinfect all surfaces
 - B. Regularly calibrate equipment
 - C. Delay reporting results
 - D. Use expired reagents for control
9. Which test is specific for myocardial infarction?
 - A. Urea
 - B. Creatinine
 - C. Troponin I
 - D. Total bilirubin
10. _____ test is used to assess renal function.
 - A. Amylase
 - B. Urea
 - C. Lipase
 - D. Total bilirubin
11. Thyroid function is commonly assessed by measuring:
 - A. Thyroid stimulating Hormone, Thyroxine 3, and 4
 - B. Cortisol
 - C. Calcium
 - D. Insulin and glucose

12. Pancreatic function is assessed by which enzyme(s)?
 - A. Bilirubin and albumin
 - B. Thyroid stimulating Hormone
 - C. Amylase and lipase
 - D. Thyroxine 3, and 4
13. Which electrolyte is the major intracellular cation?
 - A. Sodium
 - B. Potassium
 - C. Chloride
 - D. Calcium
14. _____ condition results from excessive loss of body water without adequate intake.
 - A. Hyponatremia
 - B. Hypernatremia
 - C. Hypocalcaemia
 - D. Hypokalaemia
15. The most accurate way to assess fluid imbalance is through:
 - A. Skin turgor
 - B. Serum glucose
 - C. Body weight changes
 - D. Urine pH
16. Respiratory acidosis is primarily caused by:
 - A. Diarrhea
 - B. Vomiting
 - C. Hypoventilation
 - D. Renal failure
17. The kidneys compensate for respiratory acidosis by:
 - A. Excreting more H⁺ ions
 - B. Retaining carbon dioxide
 - C. Increasing ventilation
 - D. Reducing bicarbonate reabsorption
18. One common symptom of metabolic alkalosis is:
 - A. Kussmaul respiration
 - B. CNS depression
 - C. Tetany
 - D. Deep rapid breathing
19. Iron deficiency anemia is characterized by:
 - A. Macrocytic, hyperchromic Red Blood Cells
 - B. Normocytic, normochromic Red Blood Cells
 - C. Microcytic, hypochromic Red Blood Cells
 - D. Increased reticulocyte count
20. Prolonged bleeding time is associated with:
 - A. Vitamin K excess
 - B. Platelet disorders
 - C. Anemia
 - D. Leucocytosis

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

1. Explain three (3) common pre-analytical errors encountered in biochemical testing and how each can be minimized (6 marks)
2. Briefly explain the role of creatinine, urea, and estimated glomerular filtration rate (eGFR) in assessing renal function (6 marks)
3. Explain three (3) major complications that can arise from blood transfusion and how to prevent them (6 marks)
4. Explain the role of potassium, sodium, and calcium in fluid and electrolyte balance and give one condition associated with the imbalance of each (6 marks).
5. Highlight the different types of leucocyte disorders (6 marks).

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

1. A 25-year-old pregnant woman is admitted with fatigue and pallor. Her complete blood count shows low haemoglobin, low MCV, and low serum ferritin. As a nurse, Identify the condition, discuss the laboratory findings, clinical implications, and outline the nursing management and nutritional education for this patient (10 marks)
2. You are working in a medical ward where multiple laboratory investigations have been ordered for different patients, including liver function tests, renal function tests, and cerebrospinal fluid analysis. Explain the correct types of samples required for each of these tests, how they should be collected and handled, and why proper sample management is important for accurate results and patient safety (10 marks)