"Investing in Africa's Future"

COLLEGE OF HEALTH, AGRICULTURE & NATURAL SCIENCES
DEPARTMENT OF HEALTH SCIENCES
BACHELOR OF MEDICAL LABORATORY SCIENCES HONOURS DEGREE

NSLS103: CLINICAL PATHOLOGY

END OF SECOND SEMESTER FINAL EXAMINATIONS

APRIL/MAY 2019

LECTURER: MR G. MALUNGA

DURATION: 3 HOURS

INSTRUCTIONS

Write your candidate number on the space provided on top of each page

Answer **all** questions in sections A on the question paper.

Answer **all** questions in section B on separate answer sheets provided.

Answer any **3** questions in section C on separate answer sheets provided

Credit will be given for logical, systematic and neat presentations in sections B and C

SECTION A : MULTIPLE CHOICE [40MARKS]
- **Answer all questions by encircling the correct response T for TRUE or F for FALSE for each statement in all the questions**
- **Each correct response is allocated half mark**

1. The following are functions of the urinary system
   - T   F   a) Excretion
   - T   F   b) Water balance
   - T   F   c) Acid –base balance
   - T   F   d) Reproduction

2. If plasma pH is low, rate of
   - T   F   a) H^+ excretion increases
   - T   F   b) HCO_3^- excretion decreases
   - T   F   c) H^+ excretion decreases
   - T   F   d) HCO_3^- excretion increases

3. Blood urea levels can be affected by
   - T   F   a) Dietary protein levels
   - T   F   b) Liver disease
   - T   F   c) Renal insufficiency
   - T   F   d) Glomerular membrane damage

4. Molecules are reabsorbed from the nephron into the capillary through
   - T   F   a) Filtration
   - T   F   b) Diffusion
   - T   F   c) Active transport
   - T   F   d) Osmosis

5. The following hormones are produced in the kidneys
   - T   F   a) Rennin
   - T   F   b) Erythropoietin
   - T   F   c) Vitamin D3
   - T   F   d) Aldosterone

6. A urine dipstick detects the following
   - T   F   a) Leucocytes
   - T   F   b) Blood
   - T   F   c) Urine casts
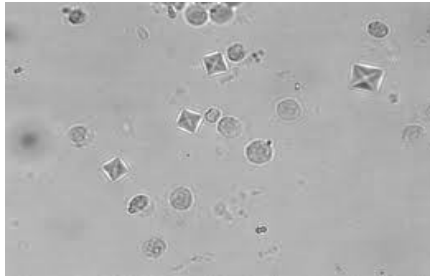   - T   F   d) Nitrite

7.

Fig 1

The diagram in Fig 1 shows

T   F   a) White Blood Cells
T   F   b) Calcium Oxalates
T   F   c) Granular Casts
T   F   d) *S. haematobium* ova

8.   Electrolytes which are of medical importance are

T   F   a) Na^+
T   F   b) HCO_3^-
T   F   c) Al^{3+}
T   F   d) Cl^-

9.   The following refers to electrolytes

T   F   a) Na^+ is the major extracellular cation
T   F   b) Cl^- exists in equal amounts both in ECF and ICF
T   F   c) K^+ is the major intracellular cation
T   F   d) HCO_3^- is an extracellular ion

10.   **All** Electrolytes can be measured using

T   F   a) Spectrophotometry
T   F   b) Ion Selective Electrodes
T   F   c) Coulometric - Amperometric Titration
T   F   d) Enzymatic methods

11.   The measurement of the following analyte/s is **greatly** affected by haemolysis

T   F   a) K^+
T   F   b) HCO_3^-
T   F   c) Urea
T   F   d) Cl^-

12.   The following refers to blood gases

T   F   a) Some of the CO_2 is transported in gaseous state in the blood
T   F   b) O_2 is transported bound to haemoglobin in the blood
T   F   c) Some of the oxygen is carried dissolved in plasma
T   F   d) CO_2 is transported in the form of HCO_3^-

13.   The panel of blood gas analysis include

T   F   a) HCO_3^-
T   F   b) Pco_2
T   F   c) Po_2
T   F   d) pH

14.   Samples for blood gas analysis
      T   F   a) Must be collected in blood tubes containing an anticoagulant
      T   F   b) Can be collected from veins
      T   F   c) Must be sent to the laboratory on ice
      T   F   d) Must be centrifuged before analysis

15.   The following laboratory processes are done on a CSF sample
      T   F   (a) ZN staining
      T   F   (b) Urea and protein measurement
      T   F   (c) WBC and RBC counts
      T   F   (d) Geimsa staining

16.   The biochemical analyte/s which is/are commonly measured in pericardial
       fluid, ascitic fluid and pleural fluid is/are
      T   F   a) Chloride
      T   F   b) Protein
      T   F   c) LDH
      T   F   d) Glucose

17.   A transudative body fluid has the following laboratory findings

      T   F   a) High specific gravity
      T   F   b) High WBC
      T   F   c) Low RBC

      T   F   d) A cloudy appearance

18.   Plasma levels of calcium are influenced by the following
      T   F   a) Renal disease
      T   F   b) Vitamin D
      T   F   c) Calcitonin
      T   F   d) Malabsorption

19.   The following are water-soluble vitamins
      T   F   a) Vitamin B_6
      T   F   b) Vitamin D
      T   F   c) Vitamin C
      T   F   d) Vitamin K

20. The following refers to phosphate in the human body
    T   F   a) 85% of it is present in the skeleton
    T   F   b) 45% of serum phosphate exist as free ions
    T   F   c) 99% of it is present in the skeleton
    T   F   d) 40% exist bound to proteins

SECTION B: [20 MARKS]

Answer all questions on separate answer sheets provided

1. State 5 functions of parathyroid hormone.   [5]
2. What are the features of folate deficiency. [5]
3. Calculate the anion gap and explain its significance, for a diabetic patient with the following laboratory results :
   Na^+ = 136 mmol/l
   K^+ = 5 mmol/l
   Cl^- = 97 mmol/l
   HCO_3^- = 13 mmol/l   [5]
4. Name any 5 aspirates which can be analyzed in a clinical laboratory. [5]

SECTION C : [75 marks]

Answer any 3 questions from this section on separate answer sheets provided

1. Explain how blood buffers function in maintaining optimal blood pH. [25]

2. Give an account of vitamin deficiency diseases. [25]
3. Describe the laboratory diagnosis of acute renal failure. [25]

4. Describe how a CSF sample is processed in a clinical laboratory. [25]

5. Discuss the regulation of Calcium and Phosphate in the body. [25]