Technical University of Mombasa

Faculty of Applied and Health Sciences

DEPARTMENT OF MEDICAL SCIENCES

UNIVERSITY EXAMINATION FOR THE DEGREE OF BACHELOR OF MEDICAL LABORATORY SCIENCES

AML 4110 : CLINICAL CHEMISTRY I

SPECIAL/SUPPLEMENTARY EXAMINATION

FEBRUARY 2013 SERIES 2 HOURS

Instructions to candidates:

This paper consist of **TWO** sections **A** and **B**

Section A –Contains MCQS, any wrong response will be penalised. Answer **ALL** questions in **Section B**.

SECTION A – MCQs – (30marks)

1. A blood pH of 7.35 would indicate
   a) Normal
   b) Acidosis
   c) Alkalosis
   d) Neutral

2. Which of the following would occur from an increased capillary hydrostatic pressure?
   a) Dehydration
   b) Hypotonic hydration
   c) Edema
   d) Potassium

3. What is the major cation in the ECF?

   a) Chloride

   b) Sodium

   c) Bicarbonate

   d) Potassium

4. Which of the following compartments has the highest proportion of water?

   a) Intracellular

   b) Transcellular fluid compartment

   c) Intravascular fluid compartment

   d) Interstitial fluid compartment

5. What is the hormone which controls glycogenolysis?

   a) Aldosterone

   b) ADH

   c) Insulin

   d) Glucagon

6. Match the following with the correct chemical formula:

   a) Weak base

   b) Weak acid

   c) Strong acid

   d) Strong base

   a. $NaHCO_3$ = a

   b. Lactic acid = b

   c. Sulphuric acid = b

   d. Potassium hydroxide = d

7. The end product of protein metabolism in man is

   a) Creatinine

   b) Ammonia

   c) Urea

   d) Uric acid

8. Nitroprosside in the Berthetut reaction functions as a

   a) Buffer

   b) Catalyst

   c) Substrate

   d) Chromogen

9. What is the name of the condition of high Na^+ (sodium) levels in the ECF?

   a) Hyperkalemia

   b) Hypokalemia

   c) Hypernatremia

   d) Hyponatremia

10. The bicarbonates

   a) Are anions of the intracellular fluids

   b) Are anions of the extracellular fluid

   c) Are cations of the extracellar fluid

   d) Have a normal plasma range of 23-30mmol/1

11. How does alcohol function as a diuretic?

a) Alcohol dilutes the blood and thus enables increased urine output

b) Alcohol receptors in the liver senses its presence and trigger a biochemical pathway that increases urine output to rid the body of alcohol

c) Alcohol inhibits the release of ADH and thus urine output is increased

d) None of the above

12. Metabolic alkalosis is seen in

a) An increase in rate and depth of breath

b) A decrease in rate and depth of breath

c) Excessive administration of sodium bicarbonate

d) Administration of substances whose metabolism produces H^+

13. The normal range of sodium in blood is

a) 135 – 145 mmol/1

b) 3.8 – 5.0 mmol/1

c) 6.8 – 10.

d) 5.0 – 6.8 mmol/I

14. Which of the following does not provide buffering power of blood?

a) HCO_3/H_2CO_3

b) Na+

c) Phosphate ions

d) Plasma proteins

15. A blood pH of 7.45 would indicate

a) Normal

b) Acidosis

c) Alaklosis

d) Neutral

16. Fluid bathing tissue is classified specifically as ____

a) Intracellular

b) Extracellar

c) Interstitial

d) None of the above

17. How is it possible for the rate and depter of breathing to affect hydrogen ion concentrations in body fluids?

a) During increased air exchange , more oxygen is exchanged with body cells, binding hydrogen ions

b) During increased air exchange, more carbon dioxide is given, returning hydrogen ion concentrations in body fluids?

c) During increased respiration over the long term more hemoglobin is produced, thus increasing the buffering of blood

d) The rate and depth of breathing does not alter hydrogen ion concentration in body fluids

18. Which body compartment contains the lowest relative amount of water?

a) Extracellular

b) Intracellular

c) Plasma

d) Transcellular

19. Which of these conditions leads to a severe, life – threatening water loss?

a) Diabetes mellitus, type 1

b) Diabetes mellitus, type 2

c) Diabetes insipidus

d) Hyponatremia

20. Regarding biabeters mellitus

a) IDDM commonly seen in persons about 40 years

b) NIDDM tend to occur in obese persons

c) Serum insulin level is absolutely absent in IDDM

d) None of the above

21. Insulin

a) Is a protein synthesized by B.Cells of isles of langerhan

b) Secretion is stimulated by dietary glucose

c) Increase gluconeogenesis in liver

d) Increase glycogenolysis in liver and muscle

22. Which of the following conditions are associated with pre-renal elevated urea levels

a) Severe diarrhea

b) Heart failure

c) Glomerolonephritis

d) None of the above

23. Which of the following disease conditions is associated with elevated bloods uric acid levels

a) Diabetes insipid

b) Gout

c) Malaria

d) None of the above

SECTION B – (40marks) Answer ALL questions

1. Describe the following

   a) Oval glucose tolerance test **(10marks)**

   b) The measurement of serum electrolytes using ion selective electrodes **(10marks)**

2. Describe the following

   a) Respiratory alkalosis **(5marks)**

   b) Metabolic acidosis **(5marks)**

3. Describe insulin Dependent Diabetes mellitus **(10marks)**