# 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

**BMLS 12S –Mid**

## AML 4310 : CLINICAL CHEMISTRY II

SPECIAL/SUPPLEMENTARY EXAMINATION

OCTOBER 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. The appearance of urine may be altered in the following conditions except?
   a) Haematoria
   b) Retinopathy
   c) Jaundice
   d) Diarrhea
   e) Haemoglobinuria

2. Urine preservatives include
   a) Thymol
   b) Cylacial acetic acid
   c) 5% acetic acid
   d) Sodium carbonate
   e) Sodium hydroxide

3. The presence of glucose in urine
    a) Can increase SG
    b) Can reduce SG
    c) Can cause diarrhea
    d) Can be detected by hay's test
    e) None of the above

4. Biliverdin is converted to bilirubin by
    a) Hydrolysis
    b) Bacterial action
    c) Oxidation
    d) Reduction
    e) Translation

5. Which one of the following is true of non conjugated bilirubin
    a) Toxic
    b) Bound to immunoglobulins
    c) Soluble bilirubin
    d) Free in plasma
    e) Non-toxic

6. An increase in excreted urine volume is called
    a) Anuria
    b) Renal dysfunction
    c) Oliguria
    d) Polyuria
    e) Urea

7. Dietery triglycerides are transported by
    a) Chylomicron
    b) LDL
    c) VLDL
    d) HDL
    e) IDL

8. Which of the following is specific for liver function assessment
    a) Alamine transminase
    b) Aspartate transminase
    c) Alkaline phosphatase
    d) HExokinase
    e) Phenylalanine hydroxylase

9. The following are examples of endocrine glands
    a) Sweat glands
    b) Salivary glands
    c) Skin
    d) Hypothalamus
    e) Brain

10. When lipoprotein electrophoreisis is done which fraction migrates the slowest to the anode?
    a) Chylomicron
    b) LDL
    c) VLDL
    d) HDL
    e) IDL

11. Stercobilinogen is formed in the intestine from
    a) Phspholipids
    b) Haemaglobin
    c) Bilirubin
    d) Pophobilinogen
    e) Faeces

12. Total plasma protein may be increased by
    a) Diarrhea
    b) Over hydration
    c) Excessive infravenous fluid infusion
    d) Nephrotic syndrome
    e) Increased pulse rate

13. Direct bilirubin is also known to be
    a) Non-esterified
    b) Biliverdin
    c) Bilirubin glucoronide
    d) Water insoluble
    e) A base

14. Bad lipoproteins refers to
    a) HDL
    b) LDL
    c) VLDL
    d) Cholesterol
    e) IDL

15. The following tests can be used to demonstrate presence of bilirubin
    a) Berthelot reaction
    b) Ictostix
    c) Erchlich test
    d) Hay's test
    e) Guthrie test

16. Hay's test for bile salts is based on
    a) Lowering of surface tension aqueous liquids
    b) Oxidation of bilirubin to biliverdin
    c) Increase the surface tension aquou liquids
    d) Formation of azobilirubin
    e) Bacterial growth on specific with culture media

17. Triglycerides from the liver are transported by
    a) Chylomicron
    b) LDL
    c) VLDL
    d) HDL
    e) IDL

18. Water constitutes the following percentages innormal urine
    a) 80%
    b) 95%
    c) 75%
    d) 90%
    e) 100%

19. An increase in excreted urine volume is called
    a) Anuria
    b) Renal dysfunction
    c) Oliguria
    d) Polyuria
    e) Nephrotic syndrome

20. The normal pH of blood is
    a) 3.6 – 5.0
    b) 5.6 – 7.0
    c) 7.36- 7.42
    d) 6.5 – 7.5
    e) 1 -3

21. Which of the following properties will a protein have at its isoelectric point?
    a) Net negative charge
    b) Net positive charge
    c) Net zero charge
    d) Mobility at pH 7.0
    e) Ability to store genetic information

22. Which of the following are properties of indirect bilirubin
    a) Insoluble in water
    b) Conjugated in the liver
    c) Conjugated with glucuronic acid
    d) Excreted in the urine of jaundiced patients
    e) Can catalyze metabolic reactions

23. What enzyme catalyses the conjugation of bilirubin?
    a) Cylucose 6 phosphate dehydrogenase
    b) Uridine diphosphate glucuronyltransferase
    c) Alanine amino transferase
    d) Hexokinase
    e) Tyrosinase

24. In a healthy individual the plasma protein in the greatest concentration is
    a) Albumin
    b) Gamma globulin
    c) Beta globulin
    d) Alpha globulin
    e) Bilirubin

25. The reabsorption of sodium rests with the hormone in renal tubules is mediated by the hormone
    a) Aldosterone
    b) Antidiuretic hormone
    c) Insulin
    d) Luteizing hormone
    e) Growth hormone

26. Which hormone secreted by the pituitary gland stimulates water reabsorption in the renal tubules ?
    a) Aldosterone
    b) Antidiuretic hormone
    c) Insulin
    d) Luteininzing hormone
    e) Growth hormone

27. Which of the following is true of primary amino aciduria
    a) It occurs due to disease of an organ like the liver
    b) It occurs due generalized renal tubular dysfunction
    c) It occurs due protein – energy malnutrition
    d) It occurs due to an inherited enzyme defect
    e) It occurs due to hormonal imbalance

28. Essential amino acids include the following except
    a) Levaine
    b) Isolevaine
    c) Valine
    d) Phenylalanine
    e) Alanine

29. Which of the following is true
    a) Absence of phenylalanine hydroxlase prevents formation of phenylalanine
    b) Absence of phenylalanine hydroxylase results to formation of tyrosine
    c) Phenyl alanine hydroxylase is required for formation of tyrocine
    d) Phenyl alamine hydroxylase is required for formation of alanine
    e) None of the above

30. Which one of the following is an in born error of metabolism
    a) Malaria
    b) Morple syrup disease
    c) Nephrotic syudrome
    d) Lung cancer
    e) Leukaemia

## SECTION B

1. a. Describe the principle and procedure of the Guthrie test **(10marks)**

   b. Outline the properties and physiological functions of bile salts **(10marks)**

2. a. Describe the following lipoproteins

      (i) HDL **(5marks)**

      (ii) LDL **(5marks)**

   b. Describe THREE categories of amino aciduria **(10marks)**