



TECHNICAL UNIVERSITY OF MOMBASA

FACULTY OF APPLIED AND HEALTH SCIENCES
DEPARTMENT OF MEDICAL SCIENCES

UNIVERSITY EXAMINATION FOR:

DMLS

AML 2210: CLINICAL CHEMISTRY II.

END OF SEMESTER EXAMINATION

SERIES: AUG 2019

TIME: 2 HOURS

DATE:

Instructions to Candidates

You should have the following for this examination

-Answer Booklet, examination pass and student ID

This paper consists of sections A and B. Attempt all sections.

Circle the correct answer in section A.

Section A (40 Marks)

1. Which one of the following synthesizes the bile acids?
 - A. Fatty acids
 - B. Bilirubin
 - C. Cholesterol
 - D. Mevalonic acid

2. Which one of the following has the fastest electrophoretic mobility?
 - A. Gamma
 - B. Alpha
 - C. Beta
 - D. Albumin

3. What is used to determine the concentration of serum globulin?
 - A. Biuret reaction
 - B. Bromocresol Green method
 - C. Paper chromatography
 - D. Calculation as difference between total protein and Albumin

4. Which one is the pH commonly used for the buffer in paper electrophoresis?
 - A. pH 7.0
 - B. pH 4.7
 - C. pH 8.6
 - D. pH 11.0

5. Which one of the immunoglobulin is present in serum in greater concentration?
 - A. IgG
 - B. IgA
 - C. IgD
 - D. IgM

6. Which one of the following diseases is associated with the detection of Bence-Jones proteins?
 - A. Renal disorder
 - B. Hyperglycemia
 - C. Multiple Myeloma
 - D. Diabetes mellitus

7. Which one of the following diseases is mostly associated with an elevation in serum uric acid?
 - A. Nephritis
 - B. Galactasaemia
 - C. Keto acidosis
 - D. Gout

8. Which one of the following is the optimum pH for serum Acid phosphatase?
 - A. pH 3.0
 - B. pH 4.9
 - C. pH 7.0
 - D. pH 10.2

9. Serum Alkaline phosphatase is elevated in diseases of:
 - A. Pancreas or liver
 - B. Bone or liver
 - C. Kidney or Bone
 - D. Intestine or liver

10. Which one of the following is a result of metabolism of purine in man?
- A. Urea
 - B. Phenylalanine
 - C. Pyrimidine
 - D. Uric acid
11. Which one is a characteristic of conjugated bilirubin?
- A. Protein bound
 - B. Soluble in water
 - C. Found free in plasma
 - D. Indirect bilirubin
12. Which one cannot be used as a preservative for 24-hour urine specimen?
- A. Concentrated hydrochloric acid
 - B. Thymol
 - C. Toluene
 - D. Oxalate
13. Which one of the following is a reagent strip used for the detection of protein in urine?
- A. Ketostix
 - B. Glucostic
 - C. Albustix
 - D. Albutest
14. Which of the following is NOT a renal function parameter?
- A. Blood urea nitrogen
 - B. Potassium
 - C. Lipase
 - D. Creatinine
15. What reaction does potassium hydroxide give in a system?
- A. Acidic
 - B. Alkaline
 - C. Neutral
 - D. Amphoteric
16. In which one of the following does urea formation take place?
- A. Kidney
 - B. Thyroid
 - C. Liver
 - D. Intestine

17. Which one is the major intracellular cation?
- A. Potassium
 - B. Sodium
 - C. Chloride
 - D. Magnesium
18. Which one is the major nitrogenous constituent of normal urine?
- A. Uric acid
 - B. Protein
 - C. Creatinine
 - D. Urea
19. The Jaffe reaction is used for the measurement of:
- A. Urea
 - B. Creatinine
 - C. Uric acid
 - D. Protein
20. The determination of phenylpyruvic acid in urine depends on a reaction with:
- A. Ferric ion
 - B. Hydrogen Peroxide
 - C. Alkaline picrate
 - D. Antimony Trichloride
21. Glycosuria may be defined as:-
- A. The presence of oxidizing substance in urine
 - B. The presence of glucose in urine
 - C. The detection of glycogen in urine
 - D. The presence of glucose in blood
22. If the pH of a solution is 5.0, the solution is said to be:
- A. Neutral
 - B. Basic
 - C. Alkaline
 - D. Acidic
23. Which of the following organs when affected is associated with the elevation of serum creatine phosphokinase?
- A. Pancreas
 - B. Liver
 - C. Muscle

- D. Gonads
24. Which one of the following is the sugar in nucleic acid?
- A. Ribose or Deoxyribose
 - B. Glucose or Fructose
 - C. Galactose
 - D. Desoxyglucose
25. The following is contained in a 0.01N chloride standard in 1 litre:
- A. 35.5mg of NaCl
 - B. 585mg of NaCl
 - C. 58.5mg of NaCl
 - D. 355mg of NaCl
26. Which one of the following crystals can be found in urine at pH 5.0
- A. Calcium Carbonate
 - B. Uric acid
 - C. Ammonium phosphate
 - D. Amorphous phosphate
27. Which one of the following is not detected by urine dip strip?
- A. Leucocytes
 - B. Blood
 - C. Platelets
 - D. Protein
28. The chemical analysis of urine includes the following, excepts
- A. pH
 - B. protein
 - C. Urobinagen
 - D. Schistosoma haematobium
29. What is the name given to a functional unit of a kidney?
- A. Ureter
 - B. Tubule
 - C. Nephron
 - D. Neuron
30. Which one of the following analyte is photosensitive and requires dark storage?
- A. Protein
 - B. Bilirubin
 - C. Lipids
 - D. Oestrogen

31. What is a term given to a value of serum potassium of 10mmol/L.?
- A. Hyponatremia
 - B. Hypernatremia
 - C. Hypokalemia
 - D. Hyperkalemia
32. Hyperglycemia is a terminology given to what blood glucose concentration?
- A. 1.5mmol/L
 - B. 5mmol/l
 - C. 8mmol/l
 - D. 15mmol/l
33. Which one of the following produces hormones for metabolism of sodium?
- A. Adrenal medulla
 - B. Pancreas
 - C. Adrenal cortex
 - D. Ovary
34. In a urea clearance test, the following values are obtained: Blood urea = 20mg%, urine urea =200mg%, urine volume = 2ml/min. What is the clearance in ml/min:
- A. 5
 - B. 10
 - C. 20
 - D. 100
35. Ethylenediaminetetracetic Acid (EDTA) acts as an anticoagulant by:
- A. Precipitating Ca^{2+}
 - B. Ionizing Ca^{2+}
 - C. Chelating Ca^{2+}
 - D. Removing thrombin
36. What is free bilirubin attached to when appears in plasma?
- A. Albumin
 - B. Lipid
 - C. Azodine
 - D. Glucose
37. Into how many bands does paper electrophoresis separates serum protein.?
- A. One
 - B. Two
 - C. Five
 - D. Eight

38. Which one is a useful enzyme in forensic chemistry?
- A. Alkali phosphatase
 - B. Acid phosphatase
 - C. Phosphohexose isomerase
 - D. ASAT
39. The use of fluoride as an anticoagulant in collecting blood for glucose analysis is:
- A. Prevent blood clotting
 - B. Preserve the plasma
 - C. Stop glycolysis
 - D. Enhance the analysis
40. Why specimens are supposed to be centrifuged with the stoppers (Caps) in place?
- A. Ensure balancing
 - B. Enhance proper mixing
 - C. Prevent haemolysis
 - D. Reduce evaporation and to prevent aerosolization of infectious particles.

SECTION B (60MARKS)

41. Discuss the types of Diabetes mellitus. **(20 marks)**
42. (a) Discuss the formation of bilirubin **(10 marks)**
- (b) Discuss the role of Insulin hormone **(10 marks)**

43. Write short notes on the following:

(Each 5marks)

- (I) Hyperglycaemia
- (II) Urinalysis
- (III) Renal Function Tests
- (IV) Urine preservatives