



TECHNICAL UNIVERSITY OF MOMBASA

FACULTY OF APPLIED AND HEALTH SCIENCES

DEPARTMENT OF MEDICAL SCIENCES

UNIVERSITY EXAMINATION FOR:

BMLS 15S REGULAR

AML 4201: CLINICAL CHEMISTRY I

END OF SEMESTER EXAMINATION

SERIES: DECEMBER 2016

TIME: 2 HOURS

DATE: Pick Date Dec 2016

Instructions to Candidates

You should have the following for this examination

-Answer Booklet, examination pass and student ID

This paper consists of **TWO** Section(s). Attempt **ALL** questions.

Circle the correct answer in section A.

Section A

1. Blood collected into fluoride-oxalate can also be used for measuring the following except
 - a. Glucose
 - b. Protein
 - c. Urea
 - d. Bilirubin
 - e. Electrolytes
2. Which of the following specimen is collected for testing for occult blood?
 - a. Urine
 - b. C.S.F
 - c. Urine
 - d. Stool
 - e. None of the above
3. Which of the following analytes is formed from the breakdown of erythrocytes?
 - a. Creatinine
 - b. Bilirubin
 - c. Creatine
 - d. Uric acid
 - e. None of the above

4. Which is the process by which glucose is formed from fats and proteins?
 - a. Glycolysis
 - b. Glucosation
 - c. Gluconeogenesis
 - d. Anabolism
 - e. Catabolism
5. Which of the following is true of creatinine?
 - a. it is a metabolite of ammonia
 - b. It is a nitrogen containing compound
 - c. It is a protein
 - d. It is a hormone
 - e. None of the above
6. What is the importance of determining the nitrite levels in urine?
 - a. Investigate the concentrating power of the kidneys
 - b. To diagnose and monitor proteinuria
 - c. Diagnosis of urinary tract infection
 - d. None of the above
7. What does the term haematuria mean?
 - a. Creatinine in urine
 - b. Haemoglobin in urine
 - c. Blood in urine
 - d. Stool in urine
 - e. Hormone in urine
8. Which statement explains why specimen containers should be centrifuged with cap/stopper in place?
 - a. To ensure balancing
 - b. To enhance proper mixing
 - c. To prevent haemolysis
 - d. To prevent aerosolyzation
 - e. For easy identification
9. Nitroprusside in the Berthelot reaction functions as a _____
 - a. buffer
 - b. catalyst
 - c. substrate
 - d. chromogen
 - e. electron donor
10. Containers for collection of random urine samples include the following
 - a. 10 litre jerrican
 - b. Bijou bottle
 - c. McCartney bottle
 - d. Winchester bottle
 - e. Universal bottle
11. What substance is normally found in urine that is responsible for its yellow coloration?
 - a. Bilirubin
 - b. Melanin
 - c. Carotene
 - d. Urochrome
 - e. Creatine

12. An increase in urine volume is termed ?
- Anuria
 - Renal dysfunction
 - Oliguria
 - Polyuria
 - Retinopathy
13. Albumin is able to regulating the flow of water between the plasma and tissue fluid by
- Its effect on plasma oncotic pressure
 - Its effect on plasma hydrostatic pressure
 - Its effect on sodium potassium pump
 - Its effect on active transport
 - None of the above
14. A blood pH of 7.6 would indicate:
- nothing it's normal
 - acidosis
 - alkalosis
 - neutral
 - none of the above
15. What is the major anion in the ECF?
- chloride
 - sodium
 - bicarbonate
 - Potassium
 - zinc
16. Which is the chief cation in intracellular fluid?
- Na⁺
 - Cl⁻
 - K⁺
 - Zn²⁺
 - CO₃²⁻
17. What is the name of the condition of low K⁺ (potassium) levels in the ECF?
- Hyperkalemia
 - Hypokalemia
 - Hypernatremia
 - Hyponatremia
 - Hyperemesis
18. The chlorides have the following characteristics
- are cations of the intra cellular fluids
 - are anions of the extracellular fluid
 - are cations of the extra cellular fluid
 - have a normal plasma range of 195 – 205 mmol / l
 - have a normal plasma range of 205 - 255 mmol / l

19. How does alcohol function as a diuretic?

- a. Alcohol dilutes the blood and thus enables increased urine output
- b. Alcohol receptors in the liver sense 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. Alcohol increases the pulse rate which then increases the output of urine
- e. Acts as a reducing agent

20. Metabolic acidosis is seen in the following

- 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⁺
- e. Alcohol increases the pulse rate

21. The normal range for sodium in blood is ?

- a. 135-145 mmol/l
- b. 3.8 – 5.0 mmol/l
- c. 6.8 – 10.0 mmol/l
- d. 5.0– 6.8 mmol/l
- e. 2.0 – 4.0 mmol/l

22. Which one of the following enzymes is involved in the principle of blood glucose estimation?

- a. Glucose reductase
- b. Glucose oxidase
- c. Hexokinase
- d. Catalase enzyme
- e. None of the above

23. Which of the following processes is not involved in urine formation

- a. Glomerular filtration
- b. Tubular reabsorption
- c. Tubular secretion
- d. Tubular assimilation
- e. None of the above

24. What is the hormone which controls sodium reabsorption from distal convoluted tubule?

- a. Aldosterone
- b. ADH
- c. Insulin
- d. Glucagon
- e. Testosterone

25. Which of the following terms refers to a blood sugar test done 2 hours after a meal?

- a. Random blood sugar
- b. Post prandial blood sugar
- c. Fasting blood sugar
- d. Glucose tolerance test
- e. None of the above

26. Patients with diabetes insipidus tend to produce urine having the following

- a. Increased volume, decreased specific gravity
 - b. Increased volume, increased specific gravity
 - c. Decreased volume, decreased specific gravity
 - d. Decreased volume, increased specific gravity
 - e. Decreased volume, no change in specific gravity
27. Regarding Diabetes mellitus the following is true
- a. IDDM commonly seen in person above 40 years
 - b. NIDDM tend to occur in obese person
 - c. Serum insulin level is absolutely absent in NIDDM
 - d. Serum protein levels are elevated
 - e. None of the above
28. The following is true concerning insulin
- a. Is a protein synthesized by β cells of islets of Langerhan
 - b. Secretion is stimulated by dietary protein
 - c. Increase gluconeogenesis in liver
 - d. Increase glycogenolysis in liver and muscle
 - e. is an enzyme
29. Which of the following conditions is associated with pre-renal elevated urea levels
- a. Severe diarrhea
 - b. Jaundice
 - c. Glomerulonephritis
 - d. Nephrotic syndrome
 - e. Renal tumours
30. Which of the following disease conditions is associated with elevated blood uric acid levels
- a. diabetes
 - b. Gout
 - c. Malaria
 - d. Syphilis
 - e. Anaemia

Section B

31. Describe the following
- a. The effect of insulin on carbohydrate and fat metabolism (10 marks)
 - b. How water balance is maintained during sweating (10 MARKS)
32. Describe the following
- a. Explain the estimation of ALT as a liver function test (10 marks)
 - b. Describe respiratory acidosis (10 marks)