



TECHNICAL UNIVERSITY OF MOMBASA

Faculty of Applied and Health Sciences

DEPARTMENT OF MEDICAL SCIENCES

DIPLOMA IN MEDICAL LABORATORY SCIENCES
(DMLS 12 S)

AML 2110: CLINICAL CHEMISTRY I

SPECIAL/SUPPLEMENTARY: EXAMINATIONS

SERIES: OCTOBER 2013

TIME: 2 HOURS

INSTRUCTIONS:

You should have the following for this examination

- *Answer booklet*

This paper consists of **TWO** sections.

Answer all questions in **Section A** and **B**. $\frac{1}{2}$ marks deducted for any wrong answer in **Section A**.

This paper consists of 8 PRINTED pages
SECTION A (40MARKS)

1. The release of insulin is caused by
 - a) Low blood glucose levels
 - b) Increased blood sugar levels
 - c) Presence of enzymes
 - d) Increased calcium levels
 - e) None of the above

(1mark)
2. The main source of vitamins C is
 - a) Proteins
 - b) Carbohydrates
 - c) Lipids
 - d) Fresh fruits and fruit juices
 - e) Fats

(1mark)
3. Define specificity
 - a) Amount of variation in result
 - b) Ability of the test to reflect absence of a disease with those that are disease free
 - c) Ability of a test to detect a disease when it's present
 - d) How close the results is to the true value
 - e) None of the above

(1mark)
4. Two of the following are then functions of vitamins A
 - a) Supply of energy
 - b) Buffering effect
 - c) Vision formation
 - d) Signaling effect
 - e) Essential for growth and metabolism of all body cells

(2marks)
5. Sources of vitamin D include
 - a) Vegetables
 - b) Fish
 - c) Glucose
 - d) Galactose
 - e) Fructose

(1mark)
6. Most forms of carbohydrates are composed of carbon, hydrogen and oxygen in ration of
 - a) 2:1:1
 - b) 1:2:1
 - c) 2:2:2
 - d) 3:2:1
 - e) None of the above

(1mark)
7. Lipids can be easily separated from other biological material by use of
 - a) Organic solvent
 - b) Inorganic solvent

- c) Fats and oils
- d) Oils
- e) Fatty acids

(1mark)

8. Lipids that also contain an amphipathic group are called

- a) Simple lipids
- b) Compound lipids
- c) Derived lipids
- d) a and b
- e) None of the above

(1mark)

9. The following can be separated using the chromatographic methods except

- a) Organic acids
- b) Fresh frozen plasma
- c) Amino acids
- d) Serum proteins
- e) A and C

(1mark)

10. An example of a simple lipid include

- a) Alcohols
- b) Sterol
- c) Waxes
- d) Glycolipids
- e) Phospholipids

(1mark)

11. The other name of clinical chemistry is

- a) Forensic science
- b) Chemical pathology
- c) Parasitology
- d) Biotechnology
- e) None of the above

(1mark)

12. One of the following is an anterior pituitary hormone

- a) Antidiuretic hormone
- b) Oxytocin
- c) Growth hormone
- d) A and b
- e) None of the above

(1mark)

13. The enzyme that break down maltose during digestion is called

- a) Sucrase
- b) Maltase
- c) Invertase
- d) Lactase
- e) None of the above

(1mark)

14. Starch is usual a mixture of two substances namely

- a) Glucose and fructose
- b) Amylose and Amylopectin

- c) Raffinose and starchyose
- d) Galactose and maltose
- e) Fructose and lactose

(1mark)

15. One property of sugars is

- a) Readily available
- b) Dissolved in organic solvents
- c) They are sweet
- d) a and b
- e) None of the above

(1mark)

16. Which of the following is mainly stored in the muscles and the liver

- a) Glucose
- b) Cellulose
- c) Glycogen
- d) Hemicellulose
- e) Pectin

(1mark)

17. The counter regulatory hormol of glucagon is

- a) Calciforin
- b) Insulin
- c) Thyroxine
- d) Melatonin
- e) None of the above

(1mark)

18. Which of the following is not an anticoagulant

- a) Glucose
- b) EDTA
- c) Acid citrate dextrose
- d) Sodium fluoride
- e) Citrate

(1mark)

19. Give an example of substances measured by use of calorimetric method

- a) Urea
- b) Plasma
- c) Copper
- d) Glucose
- e) None of the above

(1mark)

20. Which of the following is the most abundant plasma protein

- a) Beta (I and II) globulins
- b) Albumin
- c) Gamma globulin
- d) Alpha II globulins
- e) A and b

(1mark)

21. One of the following is the most highly positively charged plasma protein

- a) Albumin

- b) Gamma globulin
- c) Beta (I and II) globulins
- d) Alpha II globulins
- e) None of the above

(1mark)

22. Enzymes are classified into all except

- a) Lyases
- b) Proteins
- c) Transferases
- d) Hydrolases
- e) Ligases

(1mark)

23. Lipids are divided into three major groups except

- a) Derived
- b) Compound lipids
- c) Monosaccharides
- d) Simple lipids
- e) B and d

(1mark)

24. What are vitamins

- a) Colourless compounds
- b) Essential organic substances needed in smaller amounts in the diet
- c) Sources of energy
- d) Sources of fats
- e) None of the above

(1mark)

25. Proteins contains all the following except

- a) Glucose
- b) Carbon
- c) Hydrogen
- d) Oxygen
- e) Nitrogen

(1mark)

26. Where are non-essential amino acids synthesized

- a) Synthesized in the body
- b) Synthesized in the stomach
- c) Synthesized in the liver
- d) A and B
- e) None of the above

(1mark)

27. Which of the following is a non-essential amino acids

- a) Leucine
- b) Lysine
- c) Isoleucine
- d) Valine
- e) Tryptophan

(1mark)

28. Give TWO major functions of proteins

- a) Providing vital body constituently
- b) Providing energy
- c) Maintaining body fluid balance
- d) Vision
- e) None of the above

(2marks)

29. Breakdown of glucose is known as

- a) Glycolisis
- b) Glyconeogenesis
- c) Densometry
- d) B and c
- e) None of the above

(1mark)

30. Deficiency of vitamin A leads to

- a) Bone breakdown
- b) Night blindness
- c) Osteomalacia
- d) Liver cirhossis
- e) None of the above

(1mark)

31. Maltose is formed by condensation of

- a) Two fructose molecules
- b) Two glucose molecules
- c) One galactose molecule
- d) Two sucrose molecules
- e) A and b

(1mark)

32. Carbohydrates can be classified into three major groups except

- a) Monosaccharides
- b) Cellulose
- c) Diasaccharides
- d) Polysaccharades
- e) C and D

(1mark)

33. The following are properties of sugars except

- a) sweet
- b) soluble in water
- c) when heated they turn yellow
- d) they are crystalline in shape
- e) have reducing properties

(1mark)

34. The enzymne that breaks down mactose is

- a) Lactose
- b) Mactose
- c) Lipase
- d) Glucokinase
- e) None of the above

(1mark)

35. The following are some of the methods used in clinical chemistry laboratory except
a) Radio immune assay
b) Enzymatic methods
c) Calorimetric methods
d) Gram staining techniques
e) Ion selective electrode
(1mark)
36. The brown substance that turn to when sugars are heated is known as
a) stachyose
b) raffinose
c) amylase
d) carameralisc
e) None of the above
(1mark)
37. A zymogen is
a) fat
b) oil
c) wax
d) enzyme secreted in their in active form
e) Alcohol
(1mark)
38. Controllable biological variables include are except
a) Skin
b) Posture
c) Exercise
d) Physical training
e) Circadian variation
(1mark)

SECTION B

1. Discuss the agarose gel electrophoresis **(20marks)**
2. a) Lipids are classified into three groups discuss **(15marks)**
b) Outline the importance of clinical chemistry **(5marks)**
3. a) Briefly discuss the hormonal stimulus effect on target cells **(10marks)**
b) Outline SIX properties of sugars **(10marks)**