



# TECHNICAL UNIVERSITY OF MOMBASA

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FACULTY OF APPLIED AND HEALTH SCIENCES

DEPARTMENT OF MEDICAL SCIENCES

**UNIVERSITY EXAMINATION FOR:**

CMLS

AML 1103: CLINICAL CHEMISTRY I.

END OF SEMESTER EXAMINATION

**SERIES: sept 2017**

**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 Choose Nochoose Sect/Quest. AttemptChoose instruction.

**Circle the correct answer in section A.**

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## **Section A**

1. Which one of the following is not a classification of glassware:
  - A. Chemical composition
  - B. Retaining procedure
  - C. End use
  - D. Physical properties
2. The following are properties of soda glass except
  - A. Melts easily on burning flame (450-500°C)
  - B. It does not require carefully heating and annealing
  - C. It undergoes crystallization
  - D. The edges feels smooth's but not smooth on viewing under light source
3. Which one of the following is an example of a chemical which attacks all types of glassware
  - A. Hydrochloric acid
  - B. Phosphoric Acid
  - C. Sulphuric Acid
  - D. Nitric Acid

4. Which one of the following is not an example of chemical cleaning solution of a glassware:-
  - A. Chromic acid solution
  - B. Aquaregia solution
  - C. Universal cold clearing solution
  - D. Hydro fluoric acid
  
5. The following are materials used in manufacturing soda glass except:-
  - A. A silica
  - B. Sodium
  - C. Calcium oxide
  - D. Potassium hydroxide
  
6. Which of the following is a physical characteristic of a hard glass?
  - A. It is expensive
  - B. It is resistance to chemical attacks
  - C. It has thermal properties
  - D. It does not crystallize
  
7. The following are standard solutions except.
  - A. Percentage solution
  - B. Molar solution
  - C. Normal solution
  - D. Diluting solution
  
8. The following are ways of effective communication in a clinical laboratory. Which one is not
  - A. By writing
  - B. By speaking
  - C. By actions
  - D. By shouting
  
9. Spoken communication includes the following important aspects in clinical chemistry laboratory except.
  - A. Clarity of speech and language used
  - B. Tone of voice
  - C. Ability to speak informatively
  - D. Ability to speak loudly
  
10. Which one of the following is an example of an essential amino acid
  - A. Alanine
  - B. Asparagine
  - C. Lycine
  - D. Glycine

11. Aliphatic amino acids includes the following except
- A. Serine
  - B. Glycine
  - C. Alanine
  - D. Leucine
12. Tryptophan is an aromatic class of amino acid and a precursor of :-
- A. Porphyrins
  - B. Nitric oxide
  - C. Serotonin
  - D. Polyamines
13. Amino acids are composed of the following elements except :
- A. Carbon
  - B. Hydrogen
  - C. Nitrogen
  - D. Chloride
14. Which one of the following is not an example of inorganic cofactor
- A. Magnesium
  - B. Zinc
  - C. Iron-sulfur clusters
  - D. Flavin
15. Coenzymes are molecules which transfer chemical groups between enzymes and include the following except:-
- A. NADH
  - B. NADPH
  - C. Adenosine triphosphate
  - D. RND
16. Which one of the following is not a use of the amylase enzyme from fungi and plants:-
- A. Production of sugars from starch
  - B. Breakdown of starch in flour to sugar in baking
  - C. Clarify fruit juices
  - D. Splits polysaccharides
17. The following are factors affecting enzyme action except:-
- A. pH
  - B. Temperature
  - C. Substrate concentration
  - D. Water

18. Indicators are substances which give different shades of colours. Which one is used as an indicator in clinical chemistry.
- A. Determine pH of liquids
  - B. Determine the PK value for a solution
  - C. Determine the start of acid-base titration
  - D. Determine the effectiveness of a reaction
19. Which one of the following is not a component of a spectrophotometer?
- A. Light sources
  - B. Spectrum
  - C. Dichromator
  - D. Photo-detector
20. The rate of migration of molecules in electrophoresis depends on the following except
- A. The electric field strength
  - B. The net electrical charge of the molecule
  - C. The size and shape of the molecules
  - D. The pH of the solution
21. Spectrophotometer can be used in clinical chemistry for the analysis of the following except.
- A. Enzymes
  - B. Total proteins
  - C. Albumin
  - D. Vitamins
22. Proteins are an essential class of biomolecules found in:-
- A. All body cells
  - B. Secretions
  - C. All body fluids
  - D. All bones
23. Plasma proteins may include the following except:-
- A. Albumin
  - B. Globin
  - C. Fibrinogen
  - D. Myoglobin
24. The optimal reaction temperature of effective enzyme activity is:-
- A. 37°C
  - B. 25°C
  - C. 30°C
  - D. 35°C

25. Carbohydrates are hydrates of one of the following elements:-
- A. Oxygen
  - B. Nitrogen
  - C. Carbon
  - D. Hydrogen
26. Carbohydrates may play the following roles in the body except
- A. Storage of energy
  - B. Structural components of coenzymes
  - C. Its derivations are used in immune system and fertilization
  - D. Used in protein a synthesis
27. The following are chemical groups of carbohydrates except:
- A. Monosaccharides
  - B. Trisaccharides
  - C. Disaccharides
  - D. Polysaccharides
28. If the carbonyl group is an aldehyde, the macro saccharide is:-
- A. Aldose
  - B. Ketose
  - C. Maltose
  - D. Galatose
29. In a standard Fisher protection, if the hydroxyl group is not the right the molecule is said to be:-
- A. L-sugar
  - B. D-sugar
  - C. Alpha glucose
  - D. Beta Glucose
30. Which one of the following is a biological function of vitamin C.?
- A. Normal vision
  - B. Integrity of epithelial cells
  - C. Embryonic development
  - D. Absorption of non –hence iron enhancement
31. Which of the following is not a monosaccharide?
- A. Fructose
  - B. Maltose
  - C. Galactose
  - D. Glucose

32. Sucrose is formed by condensation of:-
- A. Glucose and fructose
  - B. Glucose and galactose
  - C. Glucose and mannose
  - D. Glucose and maltose
33. Polysacchararides are condensed polymers of monosaccharides and include the following except.
- A. Starch
  - B. Glycogen
  - C. Cellulose
  - D. Mannose
34. Protein molecules are made up of the following elements except:-
- A. Carbon
  - B. Hydrogen
  - C. Nitrogen
  - D. Helium
35. The following are properties of proteins which one is not?
- A. They are amphoteric
  - B. Soluble in salt concentrations
  - C. They are suspended in solution to form colloides
  - D. They are source of fats.
36. The functions of proteins in the body include the following except
- A. Provides amino acid for formation of new tissues
  - B. Provide amino acid for enzyme formation
  - C. Acts as a primary source of energy
  - D. Helps in the regulation of body fluid balance
37. Which one of the following is not an example of fat soluble vitamins
- A. Vitamin A
  - B. Vitamin B
  - C. Vitamin K
  - D. Vitamin B<sub>12</sub>
38. Which one of the following vitamins may be obtained form of uv irradiation
- A. Vitamin D
  - B. Vitamin A
  - C. Vitamin K
  - D. Vitamin B<sub>2</sub>
39. Which of the following is a water soluble vitamin
- A. Vitamin C
  - B. Vitamin K
  - C. Vitamin D
  - D. Vitamin A

40. Which one of the following is not an effect of hormones:-
- A. Stimulation or inhibition of growth
  - B. Regulation of metabolism
  - C. Sexual arousal
  - D. Formation of enzymes

## **Section B**

41. (a) Explain the properties of a soft glass **(8marks)**
- (b) Briefly describe the cleaning of glassware in the laboratory for clinical chemistry analysis **(12marks)**
42. (a) State the classes of carbohydrates giving an example on each **(5marks)**
- (b) Highlight the factors affecting an enzymes activity and give a brief explanation **(15marks)**
43. Discuss the collections transport of specimens for clinical chemistry analysis **(20marks)**