



TECHNICAL UNIVERSITY OF MOMBASA

FACULTY OF APPLIED AND HEALTH SCIENCES

DEPARTMENT OF MEDICAL SCIENCES

UNIVERSITY EXAMINATION FOR:

DMLS

AML 2201: CLINICAL CHEMISTRY I.

SPECIAL/ SUPPLIMENTARY EXAMINATIONS

SERIES: SEPTEMBER 2018

TIME: 2 HOURS

DATE: Sep 2018

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 (Answer All questions)

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. Lysine
 - 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 B₁₂
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 B₂
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 (Answer All questions)

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 collection and transport of specimens for clinical chemistry analysis **(20marks)**