



TECHNICAL UNIVERSITY OF MOMBASA
Faculty of Applied & Health Sciences
DEPARTMENT OF MEDICAL SCIENCES

DIPLOMA IN MEDICAL LABORATORY SCIENCES
(DMLS)

AML 2309: CLINICAL CHEMISTRY III

SPECIAL/SUPPLEMENTARY EXAMINATIONS

SERIES: JUNE/JULY 2015

TIME: 2 HOURS

INSTRUCTIONS:

– Answer All questions

This paper consists of Eight printed pages.

SECTION A

1. In colorimetric analysis, the blank reagent is important because it:
 - A. Has a known concentration
 - B. Help to zero the colorimeter
 - C. Monitor the potency of reagents
 - D. Monitor the accuracy of technique
2. The following is a non-essential amino-acid
 - A. Leucin
 - B. Glutamate
 - C. Histidine
 - D. Tryptophan
3. An essential amino acid is one that
 - A. Facilitates metabolism of other proteins
 - B. Must be obtained from exogenous sources
 - C. Is found in all proteins
 - D. Produced by help of hormones
4. The following are the several reactions that protein simple molecules undergo as part of the body's metabolic processes include:
 - A. Precipitation
 - B. Deamination
 - C. Transamination
 - D. Proteosis
5. The ultimate product of amino-acid metabolism is:
 - A. Creatinine
 - B. Creatine
 - C. Uric acid
 - D. Urea
6. In aliphatic amino acids, the carboxyl and amino groups are attached to
 - A. The carbon atom next to the carboxyl group
 - B. A different carbon atom
 - C. To each other
 - D. A benzene ring

7. Which of the following statement is true
- A. Aliphatic amino-acids have a benzene ring in their structure
 - B. Amino-acids cannot be raised in plasma to a level that the renal function is compromised
 - C. Aromatic amino acids posses a benzene ring in its structure.
 - D. In renal amino aciduria, amino acids are metabolized in the kidney
8. Alkaptonuria is associated with
- A. Acute pancreatitis
 - B. Poisoning
 - C. Incomplete fat metabolism
 - D. Homogentisic acid excretion
9. Ferric chloride reacts with phenylpyruvate in urine to produce a green colour in what condition
- A. Alkaptonuria
 - B. Phenylketonuria
 - C. Proteinuria
 - D. Aminoaciduria
10. Heating stool suspensions before carrying out occult test
- A. Activate the reaction
 - B. Activates the enzymes involved
 - C. Inactivate enzymes
 - D. Provides optimal temperatures for the reaction
11. Trypsin is responsible for:
- A. Conversion of trypsinogen to trypsin
 - B. Breakdown of peptides
 - C. Breakdown of proteins
 - D. Conversion of starch to maltose
12. Stool can be hard
- A. Because it is just has to be hard
 - B. Lack of ADH
 - C. Infection of Schistosoma Mansoni
 - D. Because of skatole and indole group
13. 5% sodium hydrogen carbonate is employed in
- A. Okokit
 - B. Haematest
 - C. Tryptic activity test
 - D. Occult test

14. Saliva contains the following except
- A. Mineral salts
 - B. Ptyalin
 - C. Mucin
 - D. Maltose
15. The endocrine function of the pancreas is production of:
- A. Bilirubin
 - B. Cholecystokinin
 - C. Amylase
 - D. Glucagon
16. Anuria may be due to the condition below:
- A. Hypofunction of ADH
 - B. Extreme cold
 - C. Hereditary cause
 - D. Incompatible blood transfusion
17. If both $[\text{OH}^-]$ and $[\text{H}^+]$ of a solution are equal, the PH is
- A. 7
 - B. Below 7
 - C. > 7
 - D. 14
18. Proteins are made up of chains of
- A. Amines
 - B. Albumin
 - C. Globulins
 - D. Amino acid residues
19. Mention the pre-analytical errors in the laboratory
- A. Use of contaminated specimen container
 - B. Poor microscopy skills
 - C. Untimely results
 - D. Wrong wavelength
20. The following are machines usually set in a clinical chemistry laboratory except
- A. Flow cytometer
 - B. Incubator
 - C. Spectrophotometre
 - D. Haemocytometre

21. The following is false about spectrophotometry
- A. Spectrophotometric analysis usually use the beer-lambert's law
 - B. A good spectropotometre is one that is highly sensitive and can measure of 10-5m
 - C. Lambert's law states that the intensity of ray of monochromatic light decreases with increasing concentration of the absorbing medium
 - D. In the electromagnetic spectrum, ultra violet region ranges between 200 – 400mm wavelength which is very essential in absorption of substance
22. The following are types of electrophoresis except
- A. PAGE
 - B. Agarose gel electrophoresis
 - C. Transformation
 - D. Paper electrophoresis
23. Flame photometry can be applied in
- A. Protein analysis
 - B. Spectrophotometry
 - C. Electrolyte analysis
 - D. Urinalysis
24. Quality assurance entails
- A. Internal quality control
 - B. Performance of surgical procedures
 - C. Pre analytical methods
 - D. Deviations from target specifications
25. A levey jening's control chart can be simply described as
- A. Simple graphical display in which the observed values are plotted versus an acceptable range of values
 - B. Used to chart results of a malfunction machine
 - C. Used instead of a calibration curve in spectrophotometry
 - D. Shows deviations of target
26. The volume of a 0.2M NaOH solution required to neutralize 20ml of 0.8M HCL solution is
- A. 80 ml
 - B. 0.8ml
 - C. 0.016 ml
 - D. None of the above

27. The two common methods used to analyse gastric juice in the laboratory are
- A. Barium meal
 - B. Augmetine inhibition method
 - C. Pentagstrin test
 - D. Histaminase method
28. The following are the functions of gastric juice except
- A. Provision of intrinsic factor
 - B. Production of mucus
 - C. Promotes healing of peptic ulcers
 - D. Lowering of stomach PH
29. Protein fraction with the greatest anodal migration at PH 8.6 is
- A. LDL
 - B. Albumin
 - C. α - globulin
 - D. β - globulin
30. What is the function of gastric juice
- A. To provide erythropoeitin
 - B. To provide intrinsic factor
 - C. To raise PH
 - D. To digest starch
31. Parenteral gastric stimulants include
- A. Adrenaline
 - B. Insulin
 - C. Cortisol
 - D. Alcohol (70% ethanol)
32. The following statements is/are true
- A. Proficiency testing is used to check the competency of a laboratory technologist
 - B. A daily quality control is absolutely similar to OCV
 - C. A daily quality control chart gives machines calibration over a period of time just like the OCV control chart.
 - D. A daily quality control chart can be used to determine the working ability of a machine overtime
33. One of the following cells function to secrete HCL
- A. Chief cells
 - B. Peptic cells
 - C. Gastric mucosal cells
 - D. Parietal oxyntic cells
34. Turbidity of CSF is indicative of

- A. Haemorrhage
- B. Meningitis caused by bacteria
- C. Viral meningitis
- D. Xanthochromia

35. Structural linkage of proteins is:

- A. Disulphide linkages
- B. Peptide linkages
- C. Glycosidic linkage
- D. Covalent bonds

36. CSF total proteins normal ranges are:

- A. 15 – 45mg/100ml
- B. 0.15 – 45 mg/dl
- C. 15 – 40 mg/dl
- D. 2.5 – 8.3 mmol/l

37. CSF glucose

- A. Is lower than blood glucose
- B. Is higher than blood glucose
- C. Is same as plasma glucose
- D. Is responsible for uncontrolled hyperglycaemia

38. Rothera's test utilizes

- A. 10% ferric chloride
- B. Ammonium sulphate
- C. Sodium chloride
- D. Salicylates

39. Machines are part of occupation in a clinical Chemistry laboratory, which one is out

- A. Spectrophotometre
- B. Flow cytometer
- C. Microscope
- D. Colorimeter

40. In assessment of prostate cancer some liver enzymes may be used in laboratory diagnosis

- A. Alkaline phosphatase
- B. Acid phosphatase
- C. Alanine transaminase
- D. Aspartate transaminase

SECTION B

1. Define the following terms:
 - A. Quality (1 mark)
 - B. Total testing process (2 marks)
 - C. Proficiency testing (1 mark)
 - D. External quality assessment (1 mark)
 - E. Outline **THREE** analytical methods done in the laboratory (3 marks)
 - F. A good quality control chart (5 marks)
2.
 - a) What is occult blood? (2 marks)
 - b) Describe the various tests for pancreatic and G.I analysis. (10 marks)
 - c) State the tests available for occult blood in stool. (5 marks)
3. Using CSF as the sample, draw a protein calibration curve. (20 marks)
4. Using a method of your choice, explain the gastric juice analysis in a clinical chemistry laboratory. (10 marks)