



KENYATTA UNIVERSITY

UNIVERSITY EXAMINATIONS 2011/2012
SECOND SEMESTER EXAMINATION FOR THE DEGREE OF BACHELOR OF
SCIENCE (MEDICAL LABORATORY)

HML 307: CLINICAL CHEMISTRY II

DATE: TUESDAY, 27 MARCH 2012

TIME: 2.00P.M – 4.00P.M

INSTRUCTIONS

SECTION A: ANSWER ALL QUESTIONS IN THIS SECTION (5 MARKS EACH)

1. List the functions of calcium in the human body
2. 'Clarity' is used in the testing of urine. If the urine is cloudy, this may be due to certain factors. List 5 of them.
3. What are the causes of Hyperphosphatemia?

SECTION B: ANSWER ONE QUESTION IN THIS SECTION (20 MARKS EACH)

1. You have been asked to deliver a lecture on Osteomalacia and Rickets during a Kenyatta University Public Lecture. Write explanatory notes on these metabolic bone diseases to give as a hand-out after your lecture. Be sure to touch on the description of these diseases, requirements of optimal mineralization and the vitamin which is needed to reduce the occurrence of these diseases.
2. Testing the pH of urine is an essential part of the basic examination of urine. What causes the changes in pH in the body? Explain the 3 categories of pH and the possible causes of each.

SECTION C: ANSWER ALL QUESTIONS (15 MARKS)

1. The most common cause of hypercalcemia are elevated PTH and
 - A. Hypoercalcemia virus
 - B. Malignant neoplasms
 - C. Calcitonin
 - D. Low levels of magnesium

2. Crystals found in normal urine include
 - A. Leucine
 - B. Sulfonamide
 - C. Ampicillin
 - D. Amorphous Phosphates
3. The most common causes of hypocalcemia include all of the following except
 - A. Vitamin C deficiency
 - B. Acute pancreatitis
 - C. Chronic renal failure
 - D. Hypoparathyroidism
4. There are two types of bone, compact bone and
 - A. Cortical bone
 - B. Cancellous bone
 - C. Loose bone
 - D. Conduct bone
5. Very-Low-Density Lipoproteins are produced by the
 - A. Liver
 - B. Heart
 - C. Kidneys
 - D. Lymph nodes
6. Red blood cells with cellular protrusions or fragmentation are termed
 - A. Deformed leucocytes
 - B. Controrted erythrocytes
 - C. Dysmorphic erythrocytes
 - D. Distorted leucocytes
7. Homocysteine (Hcy) has traditionally been measured by
 - A. Enzymatic adenosylation
 - B. Immunoassay
 - C. Use of a Calorimeter
 - D. Chromatographs
8. A healthy adult contains approximately of calcium
 - A. 1 – 1.3 kg
 - B. 1 – 13 kg
 - C. 10 – 13 kg
 - D. 1 – 13 g
9. In modern times, the most useful lipid and lipoprotein testing method is
 - A. Ultracentrifugation
 - B. Enzymatic testing
 - C. Electrophoretic testing
 - D. Laboratory testing

10. In blood, organic phosphate is located primarily in
 - A. Erythrocytes
 - B. Lymphocytes
 - C. Phosphocytes
 - D. Homeocytes
11. The copper reduction method of testing for sugars in urine will detect the majority of non-glucose sugars that might be present in urine, apart from
 - A. Glucose
 - B. Fructose
 - C. Sucrose
 - D. Galactose
12. Most commonly methods for determination of inorganic phosphate are based on the reaction of phosphate with
 - A. Ammonium chloride
 - B. Sulphuric acid
 - C. Sodium hydroxide
 - D. Ammonium molybdate
13. The most common abnormal color of urine is
 - A. Yellow
 - B. Black
 - C. Red
 - D. Orange
14. The presence of detectable amounts of glucose in urine is termed as
 - A. Hyperglycemia
 - B. Glycosuria
 - C. Hypoglycemia
 - D. Diabetes
15. Major lipoproteins do not include
 - A. Very-Low-Density Lipoproteins
 - B. Low-Density Lipoproteins
 - C. High-Density Lipoprotein
 - D. Very-High Density Lipoprotein
16. The most common metabolic disease of bone is
 - A. Osteoporosis
 - B. Rickets
 - C. Osteocalcin
 - D. Renal Osteodystrophy
17. In humans the peptide named brain natriuretic peptide (BNP) is produced mainly in the
 - A. Brain
 - B. Cardiac ventricle

- C. Arteries
 - D. Cardiac auricle
18. Ultracentrifugation separates lipoproteins by
- A. Electrophoretic mobility
 - B. Buoyant density
 - C. Color
 - D. Polarity
19. The only formed elements of urine that have the kidney as their sole site of origin are
- A. Sugars
 - B. Melanin granules
 - C. Epithelial cells
 - D. Casts
20. Almost all of the sterol in plasma is made of
- A. Cholesterol
 - B. Triglycerides
 - C. Red blood cells
 - D. Carbohydrates
21. The rare condition in which the urine contains lymph is called
- A. Lympho-uric complex
 - B. Renal Parenchymal Disease
 - C. Chyluria
 - D. Postrenal
22. The most commonly used support medium for lipoprotein electrophoresis is
- A. Water
 - B. Electrolytic fluid
 - C. Agarose gel
 - D. Glycerol
23. Bone remodeling is a coupled process, of which one part involves the resorption of old bone by
- A. Osteoclasts
 - B. Osteoporotic processes
 - C. Densitometry
 - D. Osteoblasts
24. The enzyme that catalyzes the first step of glycogenolysis is
- A. Glycolytic acid
 - B. Glycogen Phosphorylase
 - C. Polyglycerine
 - D. Glycogen Enzyme
25. The most important disease affecting the heart is
- A. Cancer

- B. Heart attack
 - C. Coronary disease
 - D. Heart-break
26. Calcium is absorbed in the
- A. Stomach
 - B. Duodenum
 - C. Oesophagus
 - D. Bones
27. Those that are most at risk of suffering from hypermagnesemia are
- A. Children
 - B. Teenagers
 - C. Health workers
 - D. Elderly
28. The most important cardiac marker (proteins released into circulation from damaged heart muscle) is
- A. Cardiac troponin
 - B. Cholesterol
 - C. Homocysteine
 - D. Cardiomyopathy
29. Crystals form in urine when alterations in the following factors affect their solubilities, except changes in
- A. pH
 - B. Temperature
 - C. Weight
 - D. Concentration
30. Coronary Heart Disease and other heart diseases can impair the heart's ability to pump blood, causing the clinical syndrome of
- A. Heart Failure
 - B. High blood pressure
 - C. Irregular heart beat
 - D. Coronary impairment