



KENYATTA UNIVERSITY
EXAMINATION FOR THE DEGREE OF BACHELOR OF SCIENCE (MEDICAL
LABORATORY SCIENCE)

HML302 CLINICAL CHEMISTRY 1

1ST SEMESTER, 2022/2023

TIME: 2 Hours

INSTRUCTIONS:

SECTION A: ANSWER ALL QUESTIONS: (EACH 4 MARKS)

1. List **four** examples of transport proteins illustrating their functions (4 marks)
2. a) State **four** types of urine preservatives (2 marks)
b) Explain how urine preservatives work (2 marks)
3. Enumerate **four** causes of analytical errors in a clinical chemistry laboratory (4 marks)
4. State possible reasons for increased and decreased calcium ions (4 marks)
5. Other than blood and urine samples, list other body fluids illustrating test done in a clinical chemistry laboratory (4 marks)

SECTION B: ANSWER ONLY ONE QUESTION

6. a) Discuss possible indications for cerebrospinal spinal fluid analysis (5 marks)
b) Describe the procedure used to physically examine cerebrospinal spinal fluid sample in a clinical laboratory (8 marks).
c) Discuss possible laboratory findings in a cerebrospinal spinal fluid sample collected from a patient suffering from meningitis (7 marks).
7. Describe various:
 - a) Metabolic waste products analyzed in a clinical chemistry laboratory giving reasons for their increased and decreased values (10 marks).
 - b) Tumor markers analyzed in a clinical chemistry laboratory (10 marks).

SECTION C: ANSWER ALL QUESTION IN THE ANSWER BOOKLET ($\frac{1}{2}$ MARK EACH)

1. In which condition would TIBC be high?
 - a) Hemochromatosis B
 - b) Chronic illness
 - c) Malnutrition D
 - d) Iron deficiency
2. Which of the following enzymes is not used in the diagnosis of myocardial infarction?
 - a) Aldolase
 - b) Aspartate transaminase
 - c) Creatine kinase
 - d) Lactate dehydrogenase
3. Which of the following is not a plasma nonspecific enzyme?
 - a) Alanine amino transferase
 - b) Aldolase
 - c) Enzymes involved in blood coagulation
 - d) Aspartate transaminase
4. On collecting blood, what solution is added to it?
 - a) sodium citrate
 - b) potassium citrate
 - c) sodium phosphate
 - d) potassium phosphate
5. Triacylglycerol packed with the apolipoprotein and cholesterol in lipoprotein aggregate is called _____.
 - a) Chylomicrons
 - b) VLDL
 - c) HDL
 - d) LDL
6. Name the energy source of the brain during starvation?
 - a) Fat
 - b) Ketone bodies
 - c) Protein
 - d) Lipids

- over a period of weeks?
- Measurement of blood glucose
 - Measurement of HbA1C
 - Measurement of urinary ketone bodies
 - Measurement of insulin
8. Which of the following vitamins is stored in the liver?
- Vitamin K
 - Vitamin D
 - Vitamin E
 - All of the above
9. Which of the following enzyme would be more active in diabetic patients?
- Hormone-sensitive lipase
 - Fatty acid synthase
 - Lipoprotein lipase
 - Glucokinase
10. _____ is responsible for the yellow coloring in jaundice.
- bilirubin
 - urobilinogen
 - urobilin
 - stercobilin
11. Which of the following is the consequence of insulin deficiency in protein metabolism?
- Decreased protein breakdown
 - Increased synthesis of amino acids
 - Decreased ureagenesis
 - Increased protein synthesis
12. Pre-diabetes is the term used for individuals that do not meet the criteria for diabetes but are too high to be considered normal. Which of the following statement accurately characterize prediabetes?
- Fasting blood glucose from 120-180 mg/dL
 - Fasting blood glucose from 126-140 mg/dL
 - Fasting blood glucose from 110-125 mg/dL
 - All of the above
13. The cholesterol serves as the precursor for the following biosynthetic pathways, EXCEPT
- Bile acid synthesis
 - Steroid hormone synthesis
 - Aldosterone synthesis
 - Thyroid hormone synthesis

- a) bilirubin
 - b) urobilinogen
 - c) urobilin
 - d) stercobilin
15. Bile acid is derived from:
- a) Cholesterol
 - b) Amino acids
 - c) Fatty acids
 - d) Bilirubin
16. Excess consumption of potassium results in which of the following condition?
- a) Increased secretion of cortisol
 - b) Increased secretion of aldosterone
 - c) Increased secretion of ACTH
 - d) Decreased secretion of CRH
17. Which of the following enzyme is used as a reagent in cholesterol assay?
- a) Urease
 - b) Uricase
 - c) Cholesterol oxidase
 - d) Lactate dehydrogenase
18. Which of the following is the most possible cause of UTI in pregnant women?
- a) Changes in the hormones
 - b) The changes in the size of the uterus
 - c) Decreased bladder capacity and urinary retention
 - d) All of the above
19. Which of these is not a plasma specific enzyme?
- a) Ferroxidase
 - b) Pseudocholinesterase
 - c) Lipoprotein lipase
 - d) Acid phosphatase
20. Uricase for uric acid while Lipase: is for _____
- a) Ethanol
 - b) Glucose
 - c) Triacylglycerol
 - d) Creatine kinase