



THE CATHOLIC UNIVERSITY OF EASTERN AFRICA

A. M. E. C. E. A

P.O. Box 62157

00200 Nairobi - KENYA

Telephone: 891601-6

REGINA PACIS INSTITUTE OF HEALTH SCIENCES

MAIN EXAMINATION

SEPTEMBER – DECEMBER 2019 TRIMESTER

FACULTY OF SCIENCES

DEPARTMENT OF NURSING

REGULAR PROGRAMME

NUR 203: MEDICAL BIOCHEMISTRY I

Date: DECEMBER 2019

Duration: 3 Hours

INSTRUCTIONS: Answer ALL Questions

Part 1 Multiple Choice Questions (M.C.Q's) **20 MARKS** (Each M.C.Q is 1 mark).

Answer all questions in Part1

- Q1. Two sugars which differ from one another only in configuration around a single carbon atom are termed
- A) Epimers
 - B) Anomers
 - C) Optical isomers
 - D) Stereoisomers
- Q2. The sugar found in DNA is
- A) Xylose
 - B) Ribose
 - C) Deoxyribose
 - D) Ribulose
- Q3. The normal range of total serum bilirubin is
- A) 0.2–1.2 mg/100 ml
 - B) 1.5–1.8 mg/100 ml
 - C) 2.0–4.0 mg/100 ml
 - D) Above 7.0 mg/100 ml

- Q4. Which one of the following does not present with an increase in LDH-5 enzyme
- A) Acute hepatitis
 - B) Muscular dystrophies
 - C) Breast carcinoma
 - D) Pulmonary embolism
- Q5. Increased reabsorption of water from the kidney is the major consequence of the secretion of the hormone?
- A) Cortisol
 - B) Insulin
 - C) Vasopressin
 - D) Aldosterone
- Q6. Sulphur containing amino acid is
- A) Methionine
 - B) Leucine
 - C) Valine
 - D) Asparagine
- Q7. Which one of the following does not increase the fluidity of membranes?
- A) Polyunsaturated fatty acids
 - B) Saturated fatty acids
 - C) Integral proteins
 - D) Cholesterol
- Q8. Cholesterol, bile salts, vitamin D and sex hormones are
- A) Mucolipids
 - B) Glycolipids
 - C) Phospholipids
 - D) Isoprenoid lipids
- Q9. Fischer's 'lock and key' model of the enzyme action implies that
- A) The active site is complementary in shape to that of substance only after interaction.
 - B) The active site is complementary in shape to that of substance
 - C) Substrates change conformation prior to active site interaction
 - D) The active site is flexible and adjusts to Substrate
- Q10. Enzyme involved in joining together two substrates is
- A) Glutamine synthetase
 - B) Aldolase
 - C) Guanine deaminase
 - D) Arginase

- Q11. The pH optima of most of the enzymes is
- A) Between 2 and 4
 - B) Between 5 and 9
 - C) Between 8 and 12
 - D) Above 12
- Q12. The normal serum GOT activity ranges from
- A) 3.0–15.0 IU/L
 - B) 4.0–17.0 IU/L
 - C) 4.0–60.0 IU/L
 - D) 0.9–4.0 IU/L
- Q13. Which one of the following is not an intermediates of citric acid cycle
- A) Oxalosuccinate
 - B) Oxaloacetate
 - C) Pyruvate
 - D) Fumarate
- Q14. The fact that DNA bears the genetic information of an organism implies that
- A) Base composition should be identical from species to species
 - B) DNA base composition should change with age
 - C) DNA from different tissues in the same organism should usually have the same base composition
 - D) DNA base composition is altered with nutritional state of an organism
- Q15. An increased melting temperature of duplex DNA results from a high content of
- A) Adenine + Guanine
 - B) Thymine + Cytosine
 - C) Cytosine + Guanine
 - D) Cytosine + Adenine
- Q16. Direction of DNA synthesis is
- A) 5' → 3'
 - B) 3' → 5'
 - C) Both (A) and (B)
 - D) None of these
- Q17. Reverse transcriptase catalyses
- A) Synthesis of RNA
 - B) Breakdown of RNA
 - C) Synthesis of DNA
 - D) Breakdown of DNA

- Q18. Using written conversion which one of the following sequences is complimentary to TGGCAGCCT?
- A) ACC GTC GGA
 - B) ACC GUC GGA
 - C) AGG CTG CCA
 - D) TGG CTC GGA
- Q19. Vasopressin (ADH)
- A) Enhance facultative reabsorption of water
 - B) Decreases reabsorption of water
 - C) Increases excretion of calcium
 - D) Decreases excretion of calcium
- Q20. Calcium absorption is increased by
- A) Vitamin D
 - B) Vitamin C
 - C) Vitamin K
 - D) Vitamin E

Part 11 Short Answer Questions (S.A.Q's)

40 MARKS.

Answer all questions in this section.

Q21. Describe the structure of biological membranes using a well labelled diagram.

(10marks)

Q22. Give a detailed classification of the following with examples;

(10marks)

- a) Enzymes
- b) Proteins

Q23. Write a brief description on the following with examples

(9marks)

- a) Glucogenic amino acids
- b) Ketogenic amino acids

c) Glucogenic and Ketogenic amino acids

Q24. Glycolysis is the initial pathway for oxidation of carbohydrates in the cytoplasm

a) Outline the reaction steps of glycolysis

(8marks)

b) Calculate energetics of complete oxidation of one molecule of Glucose

(3marks)

**Part 111 ESSAY /Long Answer Questions (L.A.Q's)
MARKS.**

40

Answer all questions in this section.

Q25. Discuss the De Novo and salvage pathways of the following;

a) Purine metabolism

(10marks)

b) Pyrimidine metabolism

(10marks)

Q26. Describe the effect of the following on enzyme activity using a well labeled graphs **(20marks)**

a) Temperature

b) PH

c) Substrate Concentration

d) Enzyme Concentration

END