

CHUKA



UNIVERSITY

UNIVERSITY EXAMINATIONS

**FIRST YEAR EXAMINATION FOR THE AWARD OF DEGREE OF BACHELOR
OF SCIENCE IN NURSING**

NURU115: MEDICAL BIOCHEMISTRY I

STREAMS: BSC (NURU)

TIME: 2 HOURS

DAY/DATE: WEDNESDAY 15/04/2020

2.30 P.M. – 4.30 P.M

INSTRUCTIONS:

- 1. All questions are compulsory. Ensure that all your answers are properly numbers**
- 2. Part I: multiple choice questions (MCQ). Write the correct answer on the space provided in the answer booklet. Each MCQ is one mark**
- 3. Part II. Short answer questions – answer questions following each other on the answer booklet**
- 4. Part III: Long answer question. Answer each question on the answer booklet**

PART 1: MULTIPLE CHOICE QUESTIONS (10 MARKS)

1. Most of the monosaccharides found in human body are
 - (a) L-isomers
 - (b) D-isomers
 - (c) D and L-isomers
 - (d) Optical isomers
2. In competitive inhibition, an inhibitor;
 - (a) Binds at several different sites on an enzyme
 - (b) Binds covalently to the enzyme
 - (c) Binds only to the ES complex
 - (d) Binds reversibly at the active site

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3. A peptide bond is formed
 - (a) When carboxyl group of amino acid reacts with α –amino group of another amino acid.
 - (b) When amino acid reacts with alkali
 - (c) When carboxyl group of amino acid reacts with an alcohol
 - (d) When carboxyl group of amino acid reacts with side chain of another amino acid

4. A patient was diagnosed with a hypertriglyceridemia. This condition is named for the high blood levels of lipids composed of
 - (a) 3 fatty acyl groups attached to a glycerol backbone
 - (b) A glycerol lipid containing a phosphorylcholine group
 - (c) A sphingolipid containing three fatty acyl groups
 - (d) Three glycerol moieties attached to a fatty acid

5. A symporter
 - (a) Moves solute molecules in opposite direction
 - (b) Moves solute molecules in same direction
 - (c) Depends on energy
 - (d) Moves only one solute molecule

6. Protein kinases phosphorylate proteins only at certain hydroxyl groups on amino acid side chains. Which of the following groups of amino acids all contain side chain hydroxyl groups?
 - (a) Aspartate, glutamate, and serine
 - (b) Serine, threonine, and tyrosine
 - (c) Threonine, phenylalanine, and arginine
 - (d) Lysine, arginine, and proline

7. Which of the following is not a carbohydrate-based sugar substitute for diabetic patients?
 - (a) Olestra
 - (b) Saccharin
 - (c) Sucralose
 - (d) Tagatose

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8. Which of the following eicosanoids is involved in mediating immediate hypersensitivity reactions?
- (a) Lipoxins (LX)
 - (b) Leukotriene (LTA)
 - (c) Thromboxane (TXA)
 - (d) Prostaglandins (PG)
9. All of the following statements are true for lipids, except
- (a) Lipids are soluble in organic solvents
 - (b) They are present in humans, animals and plants
 - (c) In man they serves as energy source
 - (d) They are absent in cooking oil and milk
10. All the following statements are correct regarding protein except:
- (a) Proteins are involved in transport of gases
 - (b) Proteins are involved in defence
 - (c) Proteins are not found in all cells
 - (d) Proteins act as buffers

PART II: SHORT ANSWER QUESTIONS (30 MARKS)

1. Draw Fischer configuration formulae of D- and L- isomers of fructose and glucose [4 marks]
2. Describe the causes of fat rancidity. Name diseases associated with lipid peroxidation [5 marks]
3. List major functions of biological membranes [6 marks]
4. Name sugar present in sugar can and draw its Haworth projection formula [3 marks]
5. Outline biosynthesis of Eicosanoids indicating target sites of steroid and non-steroid anti-inflammatory drugs (NSAIDS) [7 marks]
6. Using an illustrative diagram, describe the secondary structure of DNA.

PART III: LONG ANSWER QUESTIONS (30 MARKS)

1. (a) Give the structure of Hyaluronic acid and describe its biological significance [10 marks]
- (b) Explain why corticosteroids and cephalosporins are used to treat rheumatoid arthritis caused by bacterial infection [5 marks]
2. Discuss significance of medical biochemistry in health sciences [15 marks]