

CHUKA

UNIVERSITY



**UNIVERSITY EXAMINATIONS  
EXAMINATION FOR THE AWARD OF DEGREE OF BACHELOR OF  
SCIENCE IN HUMAN NUTRITION AND DIETETICS**

**HNDS 122: MACRONUTRIENTS**

**STREAMS: Y1S2**

**TIME: 2 HOURS**

**DAY/DATE:**

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**INSTRUCTIONS:**

- Answer **ALL** questions
- Do not write anything on the question paper
- No reference materials are allowed in the examination room
- **No** use of mobile phones or any other unauthorized materials
- Write your answers legibly and use your time wisely

**SECTION A: MULTIPLE CHOICE QUESTIONS (15 MARKS)**

1. The general formula of monosaccharides is
  - a.  $C_{2n}H_2O_n$
  - b.  $C_nH_2O_{2n}$
  - c.  $C_nH_{2n}O_{2n}$
  - d.  $C_nH_{2n}O_n$
2. What is a bond between amino acids called?
  - a. Ionic bond
  - b. Acidic bond
  - c. Peptide bond
  - d. Hydrogen bond
3. Conversion of messages carried by mRNA into amino acid sequences is called
  - a. Transcription
  - b. Replication
  - c. Translation
  - d. DNA repair
4. A polysaccharide which is often called animal starch is
  - a. Glycogen
  - b. Starch
  - c. Inulin
  - d. Dextrin

5. Which of the following is a sugar alcohol
  - a. Methanol
  - b. Mannitol
  - c. Trehalose
  - d. Xylulose
6. Which of the following factors is not responsible for the denaturation of proteins?
  - a. Heat
  - b. Charge
  - c. pH change
  - d. Organic solvents
7. Lipids are soluble in \_\_\_\_.
  - a. Water
  - b. Inorganic solvents
  - c. Polar solvents
  - d. Organic solvents
8. Class of carbohydrates which cannot be hydrolyzed further, is known as?
  - a. Disaccharides
  - b. Polysaccharides
  - c. Proteoglycan
  - d. Monosaccharide
9. Starch consists of
  - a. Unbranched amylose and branched amylopectin
  - b. Branched amylose and branched amylopectin
  - c. Unbranched amylose and unbranched amylopectin
  - d. None of these
10. Which of the following statement is true
  - a. Oxidative rancidity is observed more frequently in vegetable fats than animal fats
  - b. Plants fats do not undergo oxidative rancidity
  - c. Oxidative rancidity can be effectively checked by dehydrogenation of fatty acids
  - d. Oxidative rancidity is observed more frequently in animal fats than vegetable fats
11. Sucrose is a
  - a. Monosaccharide
  - b. Disaccharide
  - c. Polysaccharide
  - d. Triose
12. Choose the monounsaturated fatty acid out of the following-
  - a. Linoleic acid
  - b. Linolenic acid
  - c. Oleic acid
  - d. Stearic acid

13. Which of the following is also known as invert sugar?
- Fructose
  - Dextrose
  - Glucose
  - Sucrose
14. How is the secondary structure of a protein stabilized?
- Van der wall forces
  - Hydrogen bonding
  - Covalent bond
  - Hydrophobic bond
15. Generally fats with unsaturated fatty acids are \_\_\_\_\_ at room temperature (25°C)
- Solid
  - Liquid in the presence of oxygen
  - Liquid in the absence of oxygen
  - Liquid

**SECTION B Short Answer Questions (25 MARKS)**

- Name three examples of soluble fibers (3 marks)
- Differentiate between essential and non-essential amino acids (2 marks)
- Explain the digestion of lipids between the mouth and stomach (4 marks)
- Explain the importance of fats to the bioavailability of other nutrients. (4 marks)
- Describe the digestion of carbohydrates in the small intestines (5 marks)
- Explain the role of cholesterol in the human body system (4 marks)
- Name three (3) chronic diseases associated with high consumption of fatty foods (3 marks)

**SECTION C Long Answer Questions (30 MARKS)**

- a) Using illustrations, describe the chemical classification of proteins (12 marks)  
b) Describe four common lipoproteins and their functions (8 marks)
- Describe the chemical and mechanical digestion of meat in the body (10 marks)