

CHUKA



UNIVERSITY

UNIVERSITY EXAMINATIONS

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

HNDS 122: MACRONUTRIENTS

STREAMS: BSc. HNDS (Y1S1)

TIME: 2 HOURS

DAY/DATE: MONDAY 14/04/2025

11.30 A.M. – 1.30 P.M.

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 MULTIPLE CHOICE QUESTIONS (20 MARKS)

1. The primary storage form of carbohydrates in the human body is:
 - A. Glucose
 - B. Glycogen
 - C. Starch
 - D. Maltose
2. Which amino acid is considered essential for adults?
 - A. Alanine
 - B. Glutamine
 - C. Histidine
 - D. Proline

3. Triglycerides are composed of:
 - A. One glycerol and two fatty acids
 - B. Two glycerols and one fatty acid
 - C. One glycerol and three fatty acids
 - D. Three glycerols and one fatty acid
4. The recommended protein intake for a sedentary adult is approximately:
 - A. 0.5 g/kg body weight
 - B. 0.8 g/kg body weight
 - C. 1.2 g/kg body weight
 - D. 2.0 g/kg body weight
5. The primary function of ketones is:
 - A. Muscle building
 - B. Alternative energy source
 - C. Hormone production
 - D. Enzyme activation
6. Which fatty acid cannot be synthesized by the human body?
 - A. Linoleic acid
 - B. Oleic acid
 - C. Palmitic acid
 - D. Stearic acid
7. The most abundant protein in the human body is:
 - A. Insulin
 - B. Hemoglobin
 - C. Collagen
 - D. Albumin
8. The process of converting proteins to glucose is called:
 - A. Glycolysis
 - B. Gluconeogenesis
 - C. Lipogenesis
 - D. Ketosis

9. The recommended daily carbohydrate intake for adults is:
- A. 20-30% of total calories
 - B. 30-40% of total calories
 - C. 45-65% of total calories
 - D. 70-80% of total calories
10. The primary site of lipid metabolism is:
- A. Kidney
 - B. Liver
 - C. Pancreas
 - D. Intestine
11. Protein is essential
- A. To maintain proper fluid regulation
 - B. To add fibre to the diet
 - C. For brain work
 - D. To provide instant energy
12. Which of the following is NOT a conjugated protein
- A. Mucin
 - B. Casein
 - C. Myoglobin
 - D. Globulin
13. Which of the following is NOT a monosaccharide
- A. Erythrose
 - B. Verbacose
 - C. Xylulose
 - D. Xylose
14. Which of the following factors is NOT responsible for the denaturation of proteins?
- A. Heat
 - B. Charge
 - C. pH change
 - D. Organic solvents

15. Lipids are soluble in ____.
- A. Water
 - B. Inorganic solvents
 - C. Polar solvents
 - D. Organic solvents
16. Inadequate protein intake with adequate energy intake describe which of the following condition:
- A. Marasmus
 - B. Korsakoff
 - C. Kwashiorkor
 - D. Scurvy
17. Which of the following causes a decrease in LDL level?
- A. Proteins
 - B. Dietary Fibres
 - C. Palm Oil
 - D. Transfats
18. Class of carbohydrates which cannot be hydrolyzed further, is known as?
- A. Disaccharides
 - B. Polysaccharides
 - C. Proteoglycan
 - D. Monosaccharide
19. 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
20. The process of protein breakdown is called:
- A. Lipogenesis
 - B. Proteolysis
 - C. Gluconeogenesis
 - D. Ketogenesis

SECTION B Short Answer Questions (20 MARKS)

1. Mention two health benefits to the human body and two food sources of Omega-3 (4 marks)
2. Explain the mechanisms involved regulation of blood glucose levels. (4 marks)
3. State four benefits of dietary fiber in human nutrition (4 marks)
4. Describe the process of protein denaturation and its significance in nutrition. (4 marks)
5. Compare and contrast simple and complex carbohydrates. (4 marks)

SECTION C Long Answer Questions (30 MARKS)

1. a) Describe in detail the process of protein digestion and metabolism, highlighting the key enzymes and organs involved. (12 marks)
b) Discuss the role of proteins in maintaining body functions and homeostasis. (8 marks)
2. Using relevant examples, explain the structure and classification of lipids. (10 marks)

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