NAMIBIA UNIVERSITY
OF SCIENCE AND TECHNOLOGY

FACULTY OF HEALTH, APPLIED SCIENCES AND NATURAL RESOURCES

DEPARTMENT OF HEALTH SCIENCES

QUALIFICATION : BACHELOR OF HUMAN NUTRITION	
QUALIFICATION CODE: 08BOHN	**LEVEL:** 6
COURSE NAME: FOOD CHEMISTRY	**COURSE CODE:** FCH621S
SESSION: JANUARY 2023	**PAPER:** THEORY
DURATION: 3 HOURS	**MARKS:** 100

SUPPLEMENTARY/SECOND OPPORTUNITY QUESTION PAPER	
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INSTRUCTIONS
1. Answer ALL the questions. 2. Write clearly and neatly. 3. Number the answers clearly.

PERMISSIBLE MATERIALS

NONE

THIS QUESTION PAPER CONSISTS OF 6 PAGES (Including this front page)

SECTION A

QUESTION 1 **(10 MARKS)**

Evaluate the following statements and select the most appropriate answer from the given possibilities. *(Each question carries **1 mark**.)*

1.1 Which of the following food items may contain hidden fats:

A. Potato chips (Simba)

B. Biltong

C. Organic peanuts

D. None of the above

1.2 The enzyme Peptidase is classified as a:

A. Lyase

B. Hydrolase

C. Transferase

D. Isomerase

1.3 Which of the following enzymes is used in the meat industry:

A. Protease

B. Lactase

C. Amylase

D. Pectinase

1.4 Which of the following types of starch contributes to gel formation:

A. Amylopectin

B. Amylose

C. Pectin and amylose

D. None of the above

1.5 A lipid is said to be saponifiable when it is able if:

A. It can be converted into a soap.

B. It can be converted into an emulsion.

C. It can be converted into a natural gum.

D. All of the above.

1.6 The ester bond between glycerol and the fatty acids can be chemically cleaved in the presence of water and the following conditions:

A. Neutral to basic conditions at high temperatures.

B. Acidic conditions at high temperatures.

C. Acidic conditions at moderate temperatures.

D. All of the above.

1.7 Which of the following is not a chlorophyll preservation method?

A. Acid neutralisation

B. High Temperature Short Time (HTST) processing

C. Allomerisation

D. Application of Metallo Complex

1.8 Goitre is a deficiency disease caused by a lack of which of the following minerals:

A. Iodine

B. Iron

C. Selenium

D. Zinc

1.9 Two stereoisomers that are mirror images of each other are referred to as:

A. Chiral pair

B. Anomeric pair

C. Enatiomeric pair

D. Hemiacetal pair

1.10 The chemical bond formed between two monosaccharides is called:

A. Glycophospholipid bond

B. Glycolipid bond

C. Glycosidic bond

D. Peptide bond

QUESTION 2 (10 MARKS)

Assess the following statements and decide whether they are **true or false**. Write only the number of the question and next to it indicate your answer as **true or false** in the ANSWER BOOK. *(Each question carries **1 mark**)*

2.1 Fatty acids are typically made up of an even number of carbon atoms.

2.2 Food additives are not considered nutritional even if they have some nutritive value.

2.3 Sodium is highly bioavailable compared to iron.

2.4 High density lipoproteins are the desired form of cholesterol.

2.5 All carotenes contain 40 carbon atoms in their backbones.

2.6 Anthocyanins are highly stable.

2.7 In basic media, chlorophyll is very stable towards heat, whereas in acidic media it is unstable.

2.8 In the farm to fork value chain, one should be mindful of humidity and temperature changes during storage.

2.9 Water activity and moisture content are always directly proportional to each other.

2.10 Dispersions are defined as mixtures of two substances which are capable of completely dissolving into each other.

SECTION B

QUESTION 3 (20 MARKS)

3.1 What is food chemistry. (3)

3.2 What are the three main causes of food spoilage. (3)

3.3 What is the difference between bound and free water. (2)

3.4 What is lipid interesterification. (2)

3.5 What are the key elements of an amino acid. (4)

3.6 Provide **one food source**, one function and one deficiency of the following mineral:

a) Iron (3)

b) Magnesium (3)

QUESTION 4 (20 MARKS)

4.1 Based on its digestibility, starch is grouped into three categories. Name and briefly describe these three groups. (6)

4.2 Suggest two ways in which chlorophyll may be preserved in food products. (2)

4.3 The melting point of a triacylglycerol is determined by three things. List them (3)

4.4 Outline some of the known dangers of food additives. (4)

4.5 Why do food processors use food flavourings. (3)

4.6 Name any two essential fatty acids. (2)

SECTION C

QUESTION 5 **(40 MARKS)**

5.1 In a table format, outline the differences between saturated and unsaturated fatty acids. (10)

5.2 What is *Lipid hydrogenation* and why is it practiced? (4)

5.3 Briefly describe three basic principles that must be met when classifying enzymes. (6)

5.4 Outline the three factors that greatly affect anthocyanins degradation. (3)

5.5 Outline any three (3) physical properties of carotenoids. (3)

5.6 Outline any 3 factors that influence the stability of meat colour and pigment stability. (3)

5.7 Briefly discuss anthocyanins colour and stability. (4)

5.8 Which body is responsible for the classification of enzymes? (1)

5.9 What is protein denaturation? (2)

5.10 What is the difference between amylose and amylopectin? (4)

GOOD LUCK!!!