



**NAMIBIA UNIVERSITY
OF SCIENCE AND TECHNOLOGY**

**Faculty of Health, Natural
Resources and Applied
Sciences**

School of Health Sciences

**Department of Preventative
Health Sciences**

13 Jackson Kaujeua Street T: +264 61 207 2970
Private Bag 13388 F: +264 61 207 9970
Windhoek E: dphs@nust.na
NAMIBIA W: www.nust.na

QUALIFICATION: BACHELOR OF HUMAN NUTRITION	
QUALIFICATION CODE: 08BOHN	LEVEL: 6
COURSE: FOOD COMPOSITION AND ANALYSIS	COURSE CODE: FCA621S
DATE: NOVEMBER 2024	SESSION: 1
DURATION: 3 HOURS	MARKS: 100

FIRST OPPORTUNITY EXAMINATION: QUESTION PAPER

EXAMINER: MS FIINA K. NAMUKWAMBI

MODERATOR: MR GEORGE WALIOMUZIBU MUKISA

INSTRUCTIONS:

1. Answer all questions on the separate answer sheet.
2. Please write neatly and legibly.
3. Do not use the left side margin of the exam paper. This must be allowed for the examiner.
4. No books, notes and other additional aids are allowed.
5. Mark all answers clearly with their respective question numbers.

PERMISSIBLE MATERIALS:

1. None

ATTACHMENTS

1. None

This question paper consists of 5 pages including this front page

SECTION A: SHORT ANSWER QUESTION**[15 MARKS]****QUESTION 1: MULTIPLE CHOICE QUESTIONS****[15 MARKS]**

Evaluate the statements in each numbered section and select the most appropriate answer or phrase from the given possibilities. Fill in the appropriate letter next to the number of the correct statement/phrase on your ANSWER SHEET.

- 1.1 Sampling is done from a _____ of food material (1)
A. small quantity
B. manageable quantity
C. large quantity
D. None of the above
- 1.2 The analytical technique selection is based on: (1)
A. the number of people available to carry out the analysis.
B. the location
C. the property to be measured.
D. information about other analytical techniques
- 1.3 The ability to reproduce an answer between determinations performed by the same scientist (or group of scientists) using the same equipment and experimental approach (how close measurements of the same item are to each other. (1)
A. Precision
B. Flexibility
C. Accuracy
D. Reproducibility
- 1.4 Water acts as a solvent, filling material, as well as a means for maintaining the structure and functions of macromolecules and cells (1)
A. True
B. False
- 1.5 This water retains its physical properties and thus acts as the dispersing agent for colloids and the solvent for salts.
A. Water of hydration
B. Free water
C. Adsorbed water
- 1.6 Proper handling of samples intended for moisture content analysis includes: (1)
A. Leaving the sample at room temperature
B. Leaving enough headspace in the container
C. Minimizing any heating of a sample by friction during grinding
D. Pre-drying the sample
- 1.7 Carbohydrates are complex polymers of amino acids: (1)
A. True
B. False

- 1.8 Biuret method detects substances containing at least two peptide bonds, i.e. large peptides and all proteins. (1)
A. True
B. False
- 1.9 In many foods the lipid component plays a major role in determining the overall physical characteristics, such as flavour, texture, mouthfeel and appearance. (1)
A. True
B. False
- 1.10 Measurement of adsorption of radiation in lipids includes. (1)
A. Infrared
B. UV-visible
C. All of the above
D. None of the above
- 1.11 This is an Oligosaccharide (1)
A. Galactose
B. Maltose
C. Cellulose
D. Glucose
- 1.12 _____ is used to determining the type and concentration of specific minerals in foods. (1)
A. Mass absorption
B. Atomic absorption
C. Plasma ashing
D. None of the above
- 1.13 Most vitamins can be synthesized in the body and are obtained from food and supplements. (1)
A. True
B. False
- 1.14 Functional foods are food that contains components that offer health benefits beyond their basic nutritional value.
A. True
B. False
- 1.15 AACC stands for: (1)
A. American Analytical Control Center
B. American Analytical Control Chemist
C. American Association of Cereal Chemists
D. Africa Association of Control chemists

SECTION B: LONG ANSWER QUESTIONS**[85 MARKS]**

Please answer ALL of the questions in this section.

QUESTION 2:**[18 MARKS]**

2.1 Define the following terms and concepts:

2.1.1 Food composition and analysis. (2)

2.1.2 Moisture content. (2)

2.2 Outline the benefits of selecting a limited number of samples. (4)

2.3 Justify with reasons any **five (5)** important criteria in selecting a technique for food analysis. (10)

QUESTION 3:**[16 MARKS]**

3.1 Explain the reasons for food analysis. (7)

3.2 Government agencies have specified several voluntary and mandatory standards concerning the composition, quality, inspection, and labelling of specific food products. Briefly describe five mandatory standards. (6)

3.3 With relative examples, name **three (3)** types of properties to be analysed in the following subheadings. (3)

3.3.1 Chemical composition

3.3.2 Physical properties

3.3.3 Sensory properties

QUESTION 4:**[26 MARKS]**

4.1 You work as a Nutritionist in a Food processing company, and you are tasked to analysed moisture content from some food samples. Summarise the principle you have to followed for drying method analysis. (4)

4.2 The Kjeldahl method is a common method used in protein analysis. Clearly discuss the **five (5)** steps carried out in sequence when using Kjeldahl method. (10)

4.3 Discuss the principle of total carbohydrates: phenol-sulfuric acid method. (5)

4.4 Explain general procedures for dry ashing used to analysis minerals in food. (7)

QUESTION 5:

[25 MARKS]

- 5.1 What are the advantages of using Phenol-Sulfuric acid method when analysing Carbohydrates. (4)
- 5.2 Briefly explain the general classification of Lipids. (6)
- 5.3 Categorise **three (3)** classes of vitamins assays. (3)
- 5.4 State **four (4)** methods used specific analysis of Mono- and Oligosaccharides (4)
- 5.5 Mention **any five (5)** functional components. (5)
- 5.6 Discuss the role of phenolic acids in human health. (3)

END OF QUESTION PAPER