



**NAMIBIA UNIVERSITY  
OF SCIENCE AND TECHNOLOGY**

**FACULTY OF HEALTH, APPLIED SCIENCES AND NATURAL RESOURCES**

**DEPARTMENT OF HEALTH SCIENCES**

<b>QUALIFICATION :</b> BACHELOR OF HUMAN NUTRITION	
<b>QUALIFICATION CODE:</b> 08BOHN	<b>LEVEL:</b> 6
<b>COURSE NAME:</b> FOOD COMPOSITION AND ANALYSIS	<b>COURSE CODE:</b> FCA621S
<b>SESSION:</b> NOVEMBER 2022	<b>PAPER:</b> THEORY
<b>DURATION:</b> 3 HOURS	<b>MARKS:</b> 100

<b>FIRST OPPORTUNITY QUESTION PAPER</b>	
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<b>INSTRUCTIONS</b>
<ol style="list-style-type: none"><li>1. Answer ALL the questions.</li><li>2. Write clearly and neatly.</li><li>3. Number the answers clearly.</li><li>4. Do not copy</li></ol>

**PERMISSIBLE MATERIALS**

NONE

**THIS QUESTION PAPER CONSISTS OF 5 PAGES (Including this front page)**

\* Caution that  
font is Calibri, 12

## SECTION A

### QUESTION 1

[10 MARKS]

Read the following questions carefully and circle the correct answer (*Each question carries 1 mark.*)

- 1.1 Researchers in the university laboratory analyze the food to ensure:
- A. Food industries to provide safe food
  - B. Fairness in food prices
  - C. Food quality maintenance
  - D. Development or improvement of existing products
- 1.2 There are several voluntary and mandatory food standards which have been specified by the government, concerning:
- A. Food prices and labelling
  - B. Prices and fair market competition
  - C. Food labeling and composition
  - D. None of the above
- 1.3 Sampling can be defined as:
- A. A process of collecting a laboratory sample
  - B. A way in which a sample is prepared
  - C. A process of taking a sample from the population
  - D. A portion for analysis
- 1.4 The ability to reproduce similar results by scientists using the same experimental approach but in different laboratories using different equipment is called:
- A. Acceptability
  - B. Precision
  - C. Reproducibility
  - D. Accuracy
- 1.5 During handling of samples to be analyzed for moisture content, make sure that:
- A. The sample is left in open area with enough air circulation
  - B. The headspace in the sample containers is big enough
  - C. Let some moisture evaporate from the sample

- D. Minimize any heating of a sample by friction during grinding
- 1.6 This analytical technique is used for Ash content determination:
- A. Solvent extraction method
  - B. Oven drying method
  - C. Low temperature plasma dry ashing
  - D. Refractometry and conductivity
- 1.7 The basic principle of protein determination includes:
- A. Determination scattering properties
  - B. Determination of other food components
  - C. Determination of food texture
  - D. All the above
- 1.8 The sample preparation required in lipid analysis is determined by:
- A. The type of food being analyzed
  - B. The volatility and susceptibility to oxidation
  - C. The method of extraction
  - D. All the above
- 1.9 The Bioassay can be used for vitamins analysis, but only for determination of:
- A. Niacin
  - B. Vitamin B and C
  - C. Vitamin B12 and D
  - D. All the above
- 1.10 Oligosaccharides include:
- A. Maltose
  - B. Starch
  - C. Cellulose
  - D. Galactose

## **QUESTION 2**

**[20 MARKS]**

Distinguish between the following terms

- 2.1 Standards of identity and standards of quality. (4)
- 2.2 Attributes and variables properties. (4)
- 2.3 Homogeneous and Heterogeneous population. (4)

- 2.4 Systematic sampling and judgmental sampling. (4)
- 2.5 A continuous and compartmentalized population. (4)

## SECTION B

### QUESTION 3

**[10 MARKS]**

- 3.1 Students from NIMT have visited your department and they have no idea of what Food Composition and Analysis is. Explain to them what Food Composition and Analysis is (3)
- 3.2 Explain why the following bodies analyze food
- 3.2.1 Food Manufacturers (1)
  - 3.2.2 Ingredients Supplier (1)
  - 3.2.3 Analytical Laboratory Services (1)
  - 3.2.4 Government Laboratory (1)
- 3.3 Nutritional labelling is mandatory for almost all food types. What information would you expect to find on the food label (3)

### QUESTION 4

**[12 MARKS]**

- 4.1 Selecting a limited number of samples is very important. Give four (4) benefits for selecting a limited number of samples rather than a whole population (4)
- 4.2 Assume you have collected samples and you would like to analyze them. Discuss **four (4)** steps you would follow to prepare your laboratory samples (8)

## SECTION C

### QUESTION 5

**[30 MARKS]**

- 5.1 You have analyzed moisture content from some food samples in your laboratory recently. Outline the procedures you have followed during this analysis (6)
- 5.2 Mention **two (2)** drying ovens commonly used in moisture content analysis (2)
- 5.3 When using the Vacuum ovens there are important points one should keep in mind. Mention these points. (5)
- 5.4 Discuss the principle of infrared lamp drying. (6)

- 5.5 Discuss points to pay attention to when preparing samples for ash content analysis (5)
- 5.6 Mention **two (2)** main instruments needed to carry out the ash content analysis using the dry ashing method (2)
- 5.7 Give **four (4)** disadvantages of dry Ashing method (4)

**QUESTION 6**

**[18 MARKS]**

- 6.1 Clearly give the principle of Kjeldahl Method (5)
- 6.2 Drying sample is the first step in sample preparation for lipid analysis using solvent extraction method. Discuss it (5)
- 6.3 Give any **four (4)** methods used for specific analysis of Mono- and Oligosaccharides (4)
- 6.4 Give the general extraction procedures for the following (4)
- 6.4.1 Ascorbic acid
  - 6.4.2 Vitamin B1 and B2
  - 6.4.3 Niacin
  - 6.4.4 Vitamins A, E, or D

**THE END**  
**GOOD LUCK**