



**NAMIBIA UNIVERSITY
OF SCIENCE AND TECHNOLOGY**

Faculty of Health and Applied Sciences

Department of Health Sciences

QUALIFICATION: BACHELOR OF HUMAN NUTRITION	
QUALIFICATION CODE: 08B0HN	LEVEL: 6
COURSE CODE: FCA 621S	COURSE NAME: FOOD COMPOSITION AND ANALYSIS
SESSION: JANUARY 2020	PAPER: THEORY
DURATION: 3 HOURS	MARKS: 100

SUPPLEMENTARY/SECOND OPPORTUNITY EXAMINATION QUESTION PAPER	
EXAMINER(S)	Mr. Waliomuzibu Mukisa George William
MODERATOR:	Ms. Fiina Namukwambi

INSTRUCTIONS
<ol style="list-style-type: none">1. Answer ALL the questions.2. Write clearly and neatly.3. Number the answers clearly.

PERMISSIBLE MATERIALS

CALCULATOR

THIS QUESTION PAPER CONSISTS OF 4 PAGES (Including this front page)

SECTION A

QUESTION 1

(42 MARKS)

- 1.1 Explain the major changes that may occur in food sample before analysis and may result in wrong results. (8)
- 1.2 Explain the following terms used in establishment of research project.
- 1.2.1 Sampling Plan. (2)
 - 1.2.2 Compartmentalised population. (2)
 - 1.2.3 Continuous population. (2)
- 1.3 Outline three (3) major types of chromatographic methods used in analysis of carbohydrates. (3)
- 1.4 In the experiment to determine the concentration of reducing sugars in a food sample using the Thin Layer Chromatography, the solvent moved a distance 1 cm on the stationary phase and the two categories of reducing sugars (A and B) in the sample, each moved 0.3 cm and 0.6 cm respectively.
- 1.4.1 Calculate the retention factor (R_f) of the sample. (4)
 - 1.4.2 Using the R_f value explain the difference between A and B. (5)
- 1.5 A found sample was weighed in crucible and the weight recorded as 30 kg. It was dried in the oven over 24 hrs period and weight of the dried sample was 25 g. If the weight of the crucible before oven drying was 1.8 g.
- 1.5.1 Determine the moisture content (%) of the sample. (3)
 - 1.5.2 Determine the total solids (%) of the sample. (3)

- 1.6 Briefly explain the difference between following terms in food analysis.
- 1.6.1 Reproducibility and Specificity. (2)
 - 1.6.2 Free water and chemically bound water. (2)
 - 1.6.3 Homogenous and heterogeneous population. (2)
 - 1.6.4 Direct and indirect methods of moisture determination. (2)
 - 1.6.5 Random errors and systematic errors. (2)

SECTION B

QUESTION 2

(44 MARKS)

- 2.1 Explain the principle behind the forced oven drying. (2)
- 2.2 Describe the process for determination of total solids in food using a forced draft oven. (6)
- 2.3 Explain the importance of sample dimension and water type in drying a food sample by forced draft oven. (4)
- 2.4 Describe the Karl-Fisher method for the determination of moisture content in food samples. (5)
- 2.5 Explain five reasons (5) why it is important for nutritionists and food Manufacturers to know the moisture content of food product. (10)
- 2.6 Explain the principle for determination of mineral content of food sample by atomic absorption spectroscopy. (4)
- 2.7 Outline two (2) types of spectroscopic methods used in food analysis. (2)
- 2.8 Explain the Beer-Lambert law. (5)

- 2.9 Describe the Munson and Walker method for determination of carbohydrate content of a food sample. (6)

QUESTION 3

(14 MARKS)

- 3.1 Outline four (4) disadvantages of the Munson and Walker method. (4)
- 3.2 Explain the spattering in relation to drying of food by gravimetric methods. (2)
- 3.3 Describe the dry ashing method used in determination of ash content of food. (5)
- 3.4 Explain three (3) reasons for determination of ash and mineral content of foods. (3)

GOOD LUCK