



NAMIBIA UNIVERSITY
OF SCIENCE AND TECHNOLOGY

FACULTY OF HEALTH, NATURAL RESOURCES AND APPLIED SCIENCES
SCHOOL OF AGRICULTURE AND NATURAL RESOURCES SCIENCES
DEPARTMENT OF AGRICULTURAL SCIENCES AND AGRIBUSINESS

QUALIFICATIONS: BACHELOR OF SCIENCE IN AGRICULTURE	
QUALIFICATIONS CODE: 07BAGA	LEVEL: 7
COURSE CODE: APT621S	COURSE NAME: AGROPROCESSING AND TECHNOLOGY
DATE: NOVEMBER 2024	PAPER: 1
DURATION: 3 HOURS	MARKS: 100

FIRST OPPORTUNITY EXAMINATION QUESTION PAPER	
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MODERATOR:	DR. VENAUNE HEPUTE

INSTRUCTIONS
<ol style="list-style-type: none">1. Answer all the questions.2. Write neatly and clearly.3. Mark all answers clearly with their respective question numbers.4. All written work MUST be done in blue or black ink.5. No books, notes and other additional aids are allowed.

PERMISSIBLE MATERIALS

1. Calculator
2. Examination paper
3. Examination script

THIS QUESTION PAPER CONSISTS OF 4 PAGES
(Excluding This Front Page)

Section A: Multiple choice questions**[15 marks]**

Evaluate the statements below 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. What happens to food left at room temperature for an extended period?
 - a) Microbial growth and enzymatic reactions slow down.
 - b) Enzymatic reactions accelerates and spoil food product.
 - c) Microorganisms will grow and spoil the food product.
 - d) Microbial growth and enzymatic reactions accelerate.
2. What is the relevance of using biodegradable cleaning materials that are effective at low temperature in food processing?
 - a) They increase the risk of contamination.
 - b) They help reduce environmental impact and energy consumption.
 - c) They have no effect on food safety.
 - d) They have no impact on production costs.
3. How can reducing packaging materials benefit food manufacturers?
 - a) It increases production costs.
 - b) It helps manufacturers become more energy efficient.
 - c) It reduces food safety standards.
 - d) It has no impact on energy efficiency.
4. How does increasing the surface-area-to-volume ratio of food affect its rate of drying, heating, or cooling?
 - a) It decreases the rate of drying, heating, or cooling.
 - b) It increases the rate of drying, heating, or cooling.
 - c) It does not impact the rate of drying, heating, or cooling.
 - d) It decreases temperature sensitivity but speeds up cooling.
5. Which process in food technology requires a high-pressure pump to function efficiently?
 - a) Reverse osmosis.
 - b) Ultrafiltration.
 - c) Spray drying.
 - d) Freeze drying.
6. How have online marketplaces impacted consumer access to food?
 - a) Decreased food access options.
 - b) Not made any significant impact on food access.
 - c) Significantly transformed how consumers access food products.
 - d) Decreased food consumptions.
7. What role do complex carbohydrates play in plants?
 - a) They dissolve readily in water to provide energy.
 - b) They act as structural components.
 - c) Broken into simple sugars to aid nutrient absorption.
 - d) Increase water and mineral uptake.
8. Which of the following best describes the chemical composition of carbohydrates?
 - a) Carbon, nitrogen and oxygen atoms.
 - b) Carbon, hydrogen, and oxygen atoms.
 - c) Hydrogen, nitrogen, and sulfur atoms.

- d) Oxygen, hydrogen, and phosphorus atoms.
- 9. According to ISO, what is the correct way to indicate that a product or system conforms to a specific ISO standard?
 - a) "ISO certified"
 - b) "ISO 9001 certified"
 - c) "ISO 9001:2015 certified"
 - d) "Certified by ISO"
- 10. Which of the following is true about lipids in terms of their physical behavior?
 - a) Fats are liquid at room temperature, while oils are solid.
 - b) Fats are solid at room temperature, while oils are liquid.
 - c) Both fats and oils are always solid at room temperature.
 - d) Oils contain no energy storage properties.
- 11. What are the primary components of triglycerides?
 - a) Glucose and amino acids.
 - b) Glycerol and fatty acids.
 - c) Phosphates and proteins.
 - d) Carbohydrates and vitamins.
- 12. What material is most commonly used for making food cans today?
 - a) Tin plate sheet.
 - b) Copper.
 - c) Aluminium.
 - d) Sheets.
- 13. Who is responsible for certifying that a service, product, or system meets ISO standards?
 - a) ISO itself.
 - b) The government.
 - c) Third-party certification bodies.
 - d) Manufacturers.
- 14. What is the role of the Namibia Standards Institute (NSI) under the Ministry of Trade and Industry?
 - a) Enforcing health regulations at hospitals.
 - b) Implementing the Standards Act.
 - c) Regulating water and forestry industries.
 - d) Monitoring the import of foreign goods.
- 15. What is the primary objective of the Namibia Food Safety Policy?
 - a) To promote agricultural growth.
 - b) To facilitate trade in non-food products.
 - c) To protect consumer health and facilitate trade in food.
 - d) To reduce the cost of food production.

Section B: True/False questions

[15 marks]

Evaluate the statements below and indicate whether the statement is true or false. Write the word 'True' or 'False' next to the corresponding number on your ANSWER SHEET.

1. Fermentation in food processing primarily enhances flavor, texture, and shelf life.
2. Prolonged exposure to enzymatic reactions enhances the nutritional value of food.

3. The primary purpose of Modified Atmosphere Packaging is to slow down the deterioration processes of perishable goods.
4. Rapid diagnostic kits and sensors in food safety during a crisis help quickly identify pathogens and contaminants.
5. The national Food Safety Policy excludes persons or organizations involved in the handling, transporting, and storage of food.
6. Pasteurization is commonly applied to canned foods in addition to dairy products and fruit juices.
7. The national Food Safety Policy is applicable to the Ministry of Agriculture, Water and Forestry.
8. The secondary structure of proteins is formed by the interactions between R-groups along the backbone of the polypeptide chain.
9. Cumulative toxic effects are not considered when determining the danger of a foodstuff.
10. Cross-contamination can occur if salad, which does not need to be cooked, comes into contact with raw meats.
11. The SADC Sanitary and Phytosanitary (SPS) Annex promotes transparency and non-discrimination in applying SPS measures.
12. Enterohaemorrhagic *Escherichia coli* is only associated with contaminated fresh fruits and vegetables.
13. Campylobacter is mainly spread through raw milk, raw or undercooked poultry, and drinking water.
14. The primary structure of a protein refers to the specific sequence of amino acids bonded together, determined by genetic information.
15. GAP include sustainable cultivation methods and safe harvesting techniques to minimize risks of contamination.

Section C: Short/long questions

[70 marks]

Please answer ALL the questions in this section.

Short questions

[35 marks]

1. Define the following terms. [10]
 - a) Agroprocessing.
 - b) Raw materials.
 - c) Value addition.
 - d) Pasteurization.
 - e) Codex alimentarius.
2. Briefly discuss food spoilage. In your answer, include the definition of food spoilage, and the main factors contributing to food spoilage. [9]
3. Briefly describe pickling in food processing. In your answer, define pickling, explain the two types of pickling and describe how each method preserves food. [11]
4. Mention the five (5) key objectives of food processing. [5]

Long questions

[35 marks]

5. Discuss in detail the positive and negative impacts of food technology and innovation on Namibian traditional foods and diets. [19]

6. Picture yourself as a quality control manager at a fresh produce distribution centre. A shipment of delicate vegetables has just arrived. During your inspection, you observed that a few packets were missing any indication of Modified Atmosphere Packaging (MAP). Emphasize the importance of MAP in preserving the quality and safety of perishable food products to your supplier and explain why its presence is indispensable for your operations. [16]

END OF QUESTION PAPER