THE UNITED REPUBLIC OF TANZANIA
NATIONAL EXAMINATIONS COUNCIL OF TANZANIA
ADVANCED CERTIFICATE OF SECONDARY EDUCATTION EXAMINATION

155/1 **FOOD AND HUMAN NUTRITION 1**

(For Both School and Private Candidates)

Time: 3 Hours **Year: 2023**

Instructions

1. This paper consists of sections **A** and **B**.
2. Answer **all** questions in section **A** and only **Two (2)** questions from section **B**.
3. Cellular phones and any unauthorised materials are **not** allowed in the examination room.
4. Write your **examination Number** on every page of your answer booklet(s).

SECTION A (60 Marks)

Answer all questions in this section.

1. In order to produce high quality and safe food products, a proper control in the whole chain of production starting from raw materials to the final products is very important. In view of this statement, briefly explain:

   (a) The role of the following agents in ensuring that food quality and safety is met and maintained.
   - (i) the government
   - (ii) food companies
   - (iii) customers.

   (b) The rationale for quality management systems to a food production organization. Give two points.

2. Suppose you were invited to give a presentation in a short training on thermo-processing of vegetables by canning method. Illustrate five basic steps you would include in your presentation for the industrial production of high quality canned vegetables.

3. Household food security is an important aspect in achieving good nutritional status. Support this statement by;
   (a) briefly explaining three basic components of household food security.
   (b) Identifying four qualitative conditions for adequate nutrients supply for active and health life.

4. Farmers in your village are complaining that a large amount of food crops is lost after harvesting as a result of spoilage and deterioration. Assist them to control the situation by briefly explaining;
   (a) three causes of food crop spoilage and deterioration.
   (b) three indicators of spoiled and deteriorated food crops.
   (c) four control measures of food crop spoilage and deterioration.

5. Recommended Dietary Allowance (RDA) is the guideline for selection of types and amount of nutrients to be consumed to meet the body needs. Briefly describe five uses of RDA.

6. Suppose you were consulted by a large-scale farmer who wants to construct a storage structure for safe storage of food grain. Assist this farmer by;
   (a) differentiating traditional storage structures from modern storage structures.
   (b) briefly explaining four characteristics of improved storage structures.

7. Mr. Salehe who is a new food processer and supplier observed rancidity in most of his stored food products. Assist him by;
   (a) explaining six factors which accelerate the development of oxidative rancidity in fats and oils.
   (b) suggesting six methods of preventing rancidity.

8. Proper planning of family meals requires adequate knowledge on food and nutrition for the nutrient requirements of all members to be met. In view of this statement;
   (a) explain six benefits of meal planning.
   (b) outline six factors to consider when planning family meals.

9. You were consulted by form five students who failed to perform the experiment to determine the percentage of crude fat content in a given food sample by using Soxhlet method. With the aid of a well labelled diagram of the Soxhlet apparatus, explain seven stages of the experiment that leads to a correct value.

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155/2 **FOOD AND HUMAN NUTRITION 2**

(For Both School and Private Candidates)

Time: 3 Hours **Year: 2023**

Instructions

1. This paper consists of sections **A** and **B**.
2. Answer **all** questions in section **A** and only **Two (2)** questions from section **B**.
3. Cellular phones and any unauthorised materials are **not** allowed in the examination room.
4. Write your **examination Number** on every page of your answer booklet(s).

SECTION A (60 Marks)

1. Assume that you have planned to establish a profitable catering business in the Tanzanian's capital city and you need to estimate the budget for starting that business. Briefly explain five areas that will require estimation of the budget in your business.

2. Briefly explain;
   (a) the importance of nutrition education communication.
   (b) characteristics of a communication message on food and nutrition problem solving to the community.

3. The microbiological analysis of most patients who consumed poultry, fish and meat dishes in a wedding ceremony revealed the presence of clostridium perfringens. Suggest five techniques the caterer could have taken to prevent the condition.

4. A mother in her 8th pregnancy visited you complain that she experienced spontaneous fractures and is suffering from deformed spine and rheumatic pain in the legs and lower back. Assist this woman to control the condition by identifying.
   (a) two main causes of the condition
   (b) four preventive measures and
   (c) four treatments for the condition

5. Suppose you have been employed as an expert in menu planning;
   (a) Briefly explain how the knowledge on food preparation and service methods can simplify your work.
   (b) Categorize eight factors you should consider before planning the menu.

6. The women belonging to Mandateni women group are complaining about the use of contraceptives. Recommend five major factors to consider in selecting an appropriate contraceptive method for use which they have to know.

SECTION B (40 Marks)

Answer two questions from this section.

7. Microorganisms that cause food-borne illnesses may contaminate food products through different routes. Justify this statement in nine points.

8. The food and nutritional policy is an essential aspect that coordinate the implementation of food and nutrition programmes in any state.
   (a) Elaborate six aims of the Food and Nutrition Policy for Tanzania to the modern Tanzanian community.
   (b) Analyse four areas which are emphasized in the policy.

9. The forms of undernutrition in the community are caused by different factors that require multiple measures to control them. In view of this statement;
   (a) Explain how lack of nutrition education and failure to eat enough food for the bod requirements can cause undernutrition.
   (b) Suggest seven practical solutions to the situation.

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155/3 **FOOD AND NUTRITION 3**

(For Both School and Private candidates)

Time: 3 Hours **Year: 2023**

Instructions

1. This paper consists of **three (3)** questions**.**
2. Answer **all** questions.
3. Question **one (1)** carries **twenty (20)**, and question **two (2)** and **three (3)** carry **fifteen (15)** marks each.
4. Cellular phones and any unauthorized materials are **not** allowed in the examination room.
5. Write your **Examination Number** on every page of your answer booklet (s).

1. You are provided with food sample **H**, food reagents and a piece of cloth . Perform an experiment by following the given procedures (i)-(iv):

(i) Place the wheat flour in a mixing bowl. Add little water gradually and kneed for 10 minutes to make dough. Roll the dough into a ball, place it in a petri dish then press to touch it while observing. Record your observations and give explanations for the observations.

(ii) Place the dough on a piece of cloth and wrap it tightly. Wash and squeeze the dough under running tap water. Serve about 50ml of the first washing in a beaker and leave it to settle for 15 minutes. Record their observations and give explanations for their observations.

(iii) Continue washing until the water coming out is clean. Scratch the substance left from the piece of cloth and place it in a petri dish. Record the characteristics of the obtained substance and compare its size with the original dough.

(iv) Place 2g of the substance obtained in procedure (iii) in a test tube then add concentrated nitric acid to cover it. Carefully boil the mixture while observing the colour changes. Cool the mixture under tap water and carefully add 3ml of ammonium hydroxide solution while observing. Record your observations.

Questions

(a) Identify sample **H.**

(b) What is the effect of discarding the top substance obtained in step (ii)?

(c) Identify the substance obtained in step (iii).

(d) Give the reason for the change in the size of the dough observed in step (iii).

(e) What does step (iv) demonstrate.

(f) Briefly explain the principle applied in separating the two components of sample **H.**

2. You are provided with food sample **G**. Peel, wash and cut four slices from the sample. Perform the experiment immediately by following the given procedure. Record your observations in colour changes after 10 minutes. Give explanations of what you have observed and then answer the questions that follow.

Procedure:

(i) leave one slice on a plain paper.

(ii) Put the second slice in a tap water bath.

(iii) Spray the third slice with lemon juice.

(iv) Plunge the fourth slice into boiling water for 3 minutes.

Questions:

(a) Briefly explain the reaction that resulted into the development of colour change observed in the experiment. Give three points.

(b) Briefly explain the benefit of the reaction observed in this experiment in food processing.

3. You are provided with sample **J**, **K, L, M** and **N**. Perform the experiment by following the given procedure and then answer the questions that follow.

Procedure:

(i) Mix sample **J** thoroughly before weighing.

(ii) Weigh accurately 8g of sample **J** in a 200 ml (or 250ml) conical flask.

(iii) Prepare 50ml of a mixture of **K** and **L** by mixing 25ml of each sample. Heat the mixture in a water bath to make it hot. Add the mixture to the flask containing sample **J**, then shake the content.

(iv) Add about 1.0ml of solution **M.**

(v) Heat the mixture for 10 minutes in the water bath maintained at 75-80^{o}C.

(vi) Titrate the mixture while hot against solution **N**, shaking vigorously during titration until a permanent colour persisting for at least 10 seconds is formed in the conical flask.

(vii) Record the titre volume and repeat the titration to obtain three readings.

Questions

(a) Identify samples **K** and **L**.

(b) What was the function of the mixture of sample **K** and **L** in this experiment?

(c) Calculate

(i) the acid value of sample **J**.

(ii) the percentage of free fatty acid (expressed on an oleic acid basis).

(d) Give the importance of;

(iii) shaking the mixture in steps (iii) and (vi).

(iv) heating the mixture in procedure (v).

(e) From the literature, the acid value of the cooking oil ranges from 0.9 - 1.1. Compared the experimental value with the literature value and give the analytical importance of this value.

(f) Briefly explain the significance of cooking oil/fat analysis for Free Fatty Acid **(FFA).**