

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

155/2

FOOD AND HUMAN NUTRITION 2

(For Both School and Private Candidates)

Time: 3 Hours

ANSWERS

Year: 2022

Instructions

1. This paper consists of sections **A** and **B**.
2. Answer **all** questions in section **A** and only **Three (3)** 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).

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1. (a) Identify eight causes of undernutrition to this group.

One cause is poor appetite, which often occurs in the elderly due to age-related changes in taste and smell, reducing their interest in food.

Another cause is chewing and swallowing difficulties resulting from tooth loss, gum diseases, or throat problems, making it hard to eat a variety of nutritious foods.

Chronic illnesses such as diabetes, hypertension, and arthritis increase nutritional needs while also affecting food intake.

Limited income among the elderly reduces access to a variety of foods, leading to reliance on monotonous and less nutritious diets.

Physical limitations like reduced mobility and poor eyesight make it difficult for elders to shop for, prepare, or even access food.

Social isolation, especially in elderly people living alone or neglected by family, leads to reduced food intake and poor dietary habits.

Lack of nutrition knowledge makes it hard for some elders to plan balanced meals or understand their changing nutritional needs.

Side effects from medications, such as nausea or loss of appetite, interfere with regular eating patterns and nutrient absorption.

(b) Suggest two nutritional strategies to help elders maintain a healthy diet and good eating habits.

One strategy is to provide soft, easy-to-chew, and nutrient-dense meals tailored to the elder's chewing ability and appetite.

Another strategy is organizing community-based meal programs or family support systems to reduce social isolation and ensure regular, balanced meals for the elderly.

2. (a) Elaborate three ways in which the amount of water present in food can be made unavailable for microbial growth.

Adding solutes such as salt or sugar binds the free water in food, reducing the availability of moisture for microbial growth.

Drying or dehydration physically removes water from the food, lowering the moisture content to levels where most microorganisms cannot survive.

Freezing food changes water into ice, making it unavailable for microbial activity as most bacteria cannot multiply at freezing temperatures.

(b) Identify four methods of reducing the water available for microbial growth to prevent growth of spoilage and poisoning microorganisms that may be present in raw foods.

Salting is a method where salt draws out moisture through osmosis, reducing water activity.

Drying exposes food to sun or hot air, removing water and preventing spoilage.

Sugaring involves adding high concentrations of sugar to foods like jams and preserves, inhibiting microbial growth.

Freezing lowers the temperature and converts water to ice, preventing microbial activity.

3. (a) Two characteristics of proper weaning foods.

Weaning foods should be rich in both energy and nutrients to support rapid growth and development of infants. They should be soft in texture and easy to digest, making them suitable for the immature digestive systems of infants.

(b) Three reasons for the malnourishment of infants in African countries during the weaning period.

One reason is the early or late introduction of complementary foods, which either deprives the child of needed nutrients or exposes them to infections too soon.

Another reason is poor nutritional quality of weaning foods, often lacking protein, vitamins, and minerals essential for growth.

Poor food hygiene during preparation and storage of weaning foods leads to infections such as diarrhea, contributing to nutrient loss and malnutrition.

4. Briefly explain ten factors to be considered in formulating recipes for the customers which you would include in your presentation.

Nutritional value should be a priority to ensure recipes meet dietary requirements for energy, protein, and micronutrients.

Availability of ingredients is important to guarantee consistent preparation without frequent menu changes.

Customer preferences and tastes should be considered to increase satisfaction and attract repeat business.

Cost of ingredients must be monitored to maintain profitability while offering affordable meals.

Skill level of kitchen staff should be considered to ensure the recipes can be executed effectively.

Preparation time affects kitchen operations and customer satisfaction, so recipes should suit the kitchen's service speed.

Seasonality of ingredients ensures freshness, availability, and cost-effectiveness throughout the year.

Cultural and religious beliefs of customers should be respected by including recipes free from restricted foods.

Portion size consistency maintains cost control and satisfies customer expectations.

Food safety and hygiene practices must be incorporated in recipes to ensure public health protection.

5. Marasmus is one of the severe forms of Protein – Energy Malnutrition affecting most under-five children in developing countries; yet many people are not able to detect the problem for immediate control.

Six indicators of marasmus include severe wasting of body tissues, leading to a very thin, emaciated appearance.

Marked loss of muscle and fat under the skin, resulting in visible bones and sagging skin.

Prominent ribs and sunken eyes due to extreme fat and muscle loss.

Dry, wrinkled skin and growth retardation, causing the child to appear much younger than their actual age.

Weakness, fatigue, and irritability as a result of inadequate energy and protein intake.

Frequent infections due to a severely weakened immune system.

Four control measures include promoting exclusive breastfeeding for the first six months of life.

Providing appropriate complementary foods rich in energy and protein after six months.

Nutrition education for caregivers on feeding practices, hygiene, and early detection of malnutrition.

Community-based therapeutic feeding programs for severely malnourished children using specially formulated therapeutic foods.

6. (a) Why mothers are advised to breast-feed their newborns instead of feeding them with breast-milk substitutes? Give eight points.

Breast milk contains all the nutrients a baby needs in the correct proportions for growth and development.

It boosts the infant's immunity by providing antibodies that protect against infections.

Breast milk is always fresh, clean, and at the right temperature, reducing the risk of foodborne illnesses.

Breastfeeding promotes bonding between the mother and child.

It reduces the risk of malnutrition and undernutrition by providing a reliable source of balanced nutrition.

Breast milk is easily digestible and prevents constipation and diarrhea in infants.

It promotes healthy brain development due to essential fatty acids present in breast milk.

Breastfeeding is economical and readily available, with no need for costly substitutes or equipment.

(b) Briefly explain how feeding the newborns with breast-milk substitutes may lead to undernutrition in developing countries.

In developing countries, breast-milk substitutes are often mixed with contaminated water, leading to infections like diarrhea that cause nutrient loss.

Poverty may result in caregivers over-diluting substitutes to make them last longer, reducing their nutritional value.

Lack of awareness about proper preparation and feeding practices may lead to inadequate feeding frequency and amounts.

The high cost of substitutes may prevent consistent access, leading to intermittent feeding and insufficient nutrient intake, increasing the risk of undernutrition.

7. You have been invited to a meeting to address the issue on the management of catering establishments. The specific agenda is "the principles of catering which form basic guidelines to managing catering operations." Analyse nine principles which you would include in your presentation.

The first principle is **hygiene and safety**, which ensures that food is handled, prepared, and served in a clean environment to prevent contamination and protect the health of consumers.

The second principle is **menu planning**, which involves preparing a balanced, varied, and cost-effective menu that meets the nutritional, cultural, and personal preferences of customers.

The third principle is **cost control**, which ensures efficient use of financial resources by minimizing wastage, controlling portion sizes, and purchasing within budget while maintaining quality.

The fourth principle is **quality control**, which involves setting and maintaining standards in food preparation, presentation, and service to satisfy customer expectations and build the establishment's reputation.

The fifth principle is **customer satisfaction**, which emphasizes the importance of meeting or exceeding customer needs and preferences through good service, appealing meals, and a welcoming atmosphere.

The sixth principle is **resource management**, which covers the effective use of human, financial, and material resources to achieve operational efficiency and profitability.

The seventh principle is **staff training and development**, which ensures that employees are well-trained in food safety, customer service, and cooking techniques to maintain consistent service quality.

The eighth principle is **procurement and storage management**, which ensures proper purchasing, storage, and stock rotation practices to maintain food quality and prevent spoilage.

The ninth principle is **legal compliance**, which involves adhering to health, safety, and food handling regulations set by authorities to avoid penalties and protect public health.

8. In a ward meeting, the members were given a nutritional education message stating, “Every mother should provide her children with meat or fish every day.”

(a) In three points, justify why the message may be considered unsuitable for the nutritional education program in our country.

The message is **economically unrealistic** because many families in low-income areas cannot afford to buy meat or fish daily due to financial constraints.

It is **nutritionally unbalanced** as it focuses only on animal protein sources, ignoring affordable and nutritious plant-based proteins like beans, groundnuts, and peas.

The message is **culturally insensitive** since some communities might have dietary restrictions, religious beliefs, or cultural practices that limit or avoid the consumption of meat and fish.

(b) Recommend six suitable techniques for coming up with a successful nutritional education program with the same objective.

One technique is **conducting a community needs assessment** to understand the economic, cultural, and food availability conditions before preparing nutrition messages.

Another technique is **using locally available and affordable food examples**, like legumes, eggs, and groundnuts, instead of focusing only on expensive protein sources.

Involving community leaders and elders in planning ensures cultural acceptance and encourages community participation in the program.

Using visual aids and demonstrations, like cooking sessions or food displays, helps participants learn practically about combining different food types for a balanced diet.

Simplifying nutrition messages so that they are clear, realistic, and easily applicable within the local context.

Monitoring and evaluating the program regularly to assess its effectiveness, adjust messages where necessary, and involve feedback from community members.

9. It has been observed that microbial food poisoning is one of the leading problems which affect the catering business. Suggest six approaches that can be used to control the situation.

One approach is to **train food handlers on proper hygiene and food safety practices**, including handwashing, equipment sanitization, and safe food storage.

Another approach is to **ensure strict temperature control** by keeping hot foods hot and cold foods cold to inhibit microbial growth.

Regular cleaning and sanitizing of kitchen premises, equipment, and utensils reduces the risk of cross-contamination and bacterial buildup.

Purchasing food from reputable and approved suppliers ensures that ingredients are safe and of high quality before entering the kitchen.

Practicing good personal hygiene among food handlers, such as wearing clean uniforms, covering hair, and avoiding food handling when ill, prevents contamination.

Implementing food safety management systems like Hazard Analysis and Critical Control Points (HACCP) helps to identify, monitor, and control potential hazards at every stage of food preparation and service.