

**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: 2023**

**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. 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.

The first area is **kitchen equipment and utensils**, which includes the cost of purchasing cookers, refrigerators, freezers, blenders, cutlery, and serving tools necessary for food preparation and service.

The second area is **premises and rent expenses**, which covers the costs of renting or buying a suitable location for the catering business, including renovation and furnishing to meet hygiene and operational standards.

The third area is **staff salaries and recruitment costs**, which involves estimating monthly wages for chefs, waiters, cleaners, and administrative personnel necessary for running daily operations.

The fourth area is **food stock and ingredients**, which includes the cost of purchasing initial food supplies, drinks, and condiments required to prepare dishes as per the menu.

The fifth area is **marketing and advertisement**, which covers expenses for promoting the business through flyers, banners, social media, and other channels to attract customers and create public awareness.

2. Briefly explain;  
(a) the importance of nutrition education communication.

Nutrition education communication is important because it helps create awareness and informs individuals and communities about healthy eating habits and nutritional practices necessary for preventing diseases and promoting good health.

It influences positive behavioral changes by providing practical advice and motivation for adopting better dietary choices and food handling practices.

It also empowers communities by improving their knowledge and decision-making abilities regarding food selection, meal planning, and addressing nutritional problems.

- (b) Characteristics of a communication message on food and nutrition problem solving to the community.

The message should be **clear and simple**, avoiding technical terms so it can be easily understood by all community members, including those with low literacy levels.

It should be **culturally appropriate**, respecting local beliefs, traditions, and food habits to gain community acceptance and participation.

It should be **practical and realistic**, offering solutions that are affordable, locally available, and applicable within the community's means and resources.

The message should be **action-oriented**, encouraging immediate and measurable actions to solve food and nutrition-related problems effectively.

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.

The caterer should have **cooked meat and poultry dishes thoroughly** to temperatures high enough to kill clostridium perfringens spores.

They should have **served food immediately after cooking** or kept it at safe hot-holding temperatures above 60°C to prevent bacterial multiplication.

Food should have been **cooled rapidly and stored in shallow containers** in refrigerators if it was not served immediately to limit spore germination.

The caterer should have **avoided preparing food too far in advance**, which increases the risk of contamination and bacterial growth during prolonged storage.

Maintaining **proper kitchen hygiene and equipment sanitation** would reduce cross-contamination and prevent the spread of bacteria from surfaces and utensils.

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

The first cause is **calcium deficiency**, where increased demands during multiple pregnancies deplete calcium from the mother's bones, leading to weakened bones and fractures.

The second cause is **vitamin D deficiency**, which impairs calcium absorption, contributing to poor bone mineralization, leading to deformities and bone pain.

(b) Four preventive measures

One preventive measure is **increasing dietary intake of calcium-rich foods** such as milk, sardines, green leafy vegetables, and fortified cereals.

The second is **ensuring adequate sunlight exposure** to stimulate the production of vitamin D in the skin for better calcium absorption.

The third measure is **regular light physical activity** to strengthen bones and improve overall musculoskeletal health.

The fourth measure is **health education and antenatal nutritional counseling** to inform mothers about the importance of a balanced diet during and after pregnancy.

(c) Four treatments for the condition

One treatment is **administering calcium supplements** as prescribed by a healthcare professional to restore calcium levels.

The second is **vitamin D supplementation** to enhance calcium absorption and strengthen bones.

The third treatment involves **analgesic medications** to manage bone and joint pain under medical supervision.

The fourth treatment is **physical therapy and rehabilitation exercises** to improve posture, relieve pain, and restore mobility.

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.

Knowledge of food preparation methods helps in selecting dishes that suit the kitchen's equipment, skills of the staff, and customer preferences, ensuring smooth operations and quality meals.

Understanding service methods allows for designing menus that are practical for the type of service offered, whether buffet, table service, or take-away, ensuring efficiency and customer satisfaction.

(b) Categorize eight factors you should consider before planning the menu.

The first factor is **nutritional value**, ensuring the menu provides balanced and adequate nutrients.

The second is **availability of ingredients**, making sure items can be sourced locally and consistently.

The third is **seasonality of foods**, selecting items based on the best quality and price at different times of the year.

The fourth is **customer preferences**, considering dietary habits, age groups, religious beliefs, and cultural practices.

The fifth factor is **budget and pricing**, balancing quality with affordability for both the business and customers.

The sixth is **staff skills and kitchen equipment**, ensuring the menu is within the operational capability of the establishment.

The seventh is **type of service and occasion**, tailoring the menu for events, buffets, daily service, or special functions.

The eighth factor is **time and labor requirements**, choosing dishes that fit within the available preparation time and staffing levels.

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.

The first factor is **effectiveness of the method**, ensuring it reliably prevents unwanted pregnancies based on individual needs.

The second factor is **safety and possible side effects**, considering the user's health conditions and the potential risks associated with each method.

The third is **cost and accessibility**, choosing methods that are affordable and readily available within the local health facilities.

The fourth factor is **cultural and religious acceptability**, selecting methods that align with community beliefs and values to ensure acceptance.

The fifth factor is **the individual's reproductive intentions and preferences**, considering whether the woman wants a temporary, long-term, or permanent method depending on her family planning goals.

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

First, microorganisms can contaminate food through **improper handling by infected food handlers**. If a person handling food has poor hygiene practices such as not washing hands after using the toilet, they can transfer bacteria and viruses to the food.

Second, **contaminated water used for washing, cooking, or processing food** is a common route for introducing harmful microorganisms. Water carrying pathogens like cholera bacteria or salmonella can infect food items.

Third, contamination occurs through **unclean or poorly sanitized equipment and utensils**. Food contact surfaces like cutting boards, knives, and storage containers can harbor bacteria if not cleaned properly.

Fourth, **cross-contamination between raw and cooked foods** is a significant route, especially when raw meat or poultry juices come into contact with ready-to-eat foods, leading to the transfer of bacteria such as E. coli.

Fifth, **improper food storage conditions**, such as leaving perishable foods at room temperature for extended periods, encourage the multiplication of microorganisms like clostridium perfringens.

Sixth, microorganisms enter food through **contaminated soil or dust**, particularly for fresh produce like fruits and vegetables, if proper washing and cleaning are not done.

Seventh, **pests such as rodents, flies, and cockroaches** are carriers of food-borne pathogens. These pests contaminate food through droppings, direct contact, or carrying dirt onto food surfaces.

Eighth, **poor quality raw materials and ingredients** already contaminated before reaching the kitchen can introduce harmful microorganisms to final food products.

Ninth, **contaminated packaging materials** or containers can transfer microorganisms to food during storage or transportation if the materials are not clean or have been exposed to dirty environments.

8. The food and nutritional policy is an essential aspect that coordinates the implementation of food and nutrition programs in any state.

(a) Elaborate six aims of the Food and Nutrition Policy for Tanzania to the modern Tanzanian community.

The first aim is to **improve the nutritional well-being of all Tanzanians** by ensuring access to adequate and nutritious food to meet daily dietary requirements.

The second aim is to **reduce the prevalence of malnutrition** among vulnerable groups such as children under five, pregnant women, and the elderly.

The third aim is to **promote nutrition education and awareness programs** to inform the public about healthy dietary practices and the importance of balanced nutrition.

The fourth aim is to **strengthen institutional and community capacity** for planning, implementing, and monitoring nutrition-related interventions across various sectors.

The fifth aim is to **ensure food security at national, community, and household levels**, so all people have reliable access to sufficient and safe food.

The sixth aim is to **promote research and data collection** on food and nutrition issues to support evidence-based decision-making and program improvements.

(b) Analyse four areas which are emphasized in the policy.

The first area is **household food security**, focusing on increasing food production, reducing post-harvest losses, and ensuring equitable distribution of food resources.

The second area is **nutritional care and support for vulnerable groups**, emphasizing services for children, pregnant and lactating women, and individuals with special dietary needs.

The third area is **public nutrition education and information dissemination**, aiming to create awareness about good nutrition, balanced diets, and food safety practices.

The fourth area is **food safety and quality control**, ensuring that foods produced, distributed, and consumed are free from contaminants and meet health standards.

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 body requirements can cause undernutrition.

Lack of nutrition education leads to **poor dietary choices and eating habits** since individuals are unaware of the importance of balanced meals, the need for variety in food consumption, and how to prepare meals that meet their body's nutritional demands.

It also contributes to **ignorance of the symptoms and dangers of malnutrition**, resulting in delayed diagnosis and intervention, allowing undernutrition to worsen, especially among children and vulnerable groups.

Failure to eat enough food for the body's requirements means the **body lacks essential nutrients and energy** needed for growth, maintenance, and repair, leading to weight loss, muscle wasting, stunted growth, and weakened immunity.

- (b) Suggest seven practical solutions to the situation.

The first solution is to **implement community-based nutrition education programs** to raise awareness about the importance of balanced diets and proper child feeding practices.

The second is to **promote kitchen gardening and small-scale farming** to improve household food security by ensuring access to fresh vegetables and fruits.

The third solution is to **strengthen school feeding programs** to provide children with at least one balanced meal per day, improving their nutritional status and concentration in school.

The fourth is to **support breastfeeding campaigns** to encourage exclusive breastfeeding for the first six months of life, providing essential nutrients and protection against malnutrition.

The fifth solution is to **increase food fortification programs**, adding essential vitamins and minerals to commonly consumed foods like flour and salt to prevent micronutrient deficiencies.

The sixth is to **improve food distribution systems** to ensure equitable access to food supplies across regions, particularly in rural and marginalized communities.

The seventh solution is to **establish community nutrition rehabilitation centers** where severely malnourished individuals, especially children, can receive therapeutic feeding and medical care.