THE UNITED REPUBLIC OF TANZANIA

NATIONAL EXAMINATIONS COUNCIL

ADVANCED CERTIFICATE OF SECONDARY EDUCATION EXAMINATION

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

(For Both School and Private Candidates)

Time : 3 Hours **ANSWERS** **Year : 2013**

Instructions

1. This paper consists of sections **A** and **B**.
2. Answer all questions in section **A** and only **two (2)** question from section **B**.
3. Non-programmable calculators may be used.
4. Communication devices and any unauthorised materials are **not** allowed in the examination room.
5. Write your **Examination Number** on every page of your answer booklet(s).

1. State four objectives of nutrition education programmes and explain three components of nutrition education.

The first objective of nutrition education programmes is to **increase knowledge about proper nutrition**. This means providing individuals and communities with information on the types of foods, nutrients, and balanced diets required for good health. By improving knowledge, people can make informed choices about what they eat and understand the relationship between diet and health.

A second objective is to **change attitudes towards healthy eating**. Nutrition education aims to influence perceptions and beliefs about food. For instance, it encourages positive attitudes towards consuming fruits, vegetables, and other nutrient-rich foods while reducing preferences for unhealthy options. Changing attitudes is crucial because knowledge alone does not always result in behavior change.

A third objective is to **develop skills for practical application of nutrition knowledge**. This includes teaching people how to plan, prepare, and store meals safely. Skills development ensures that individuals can translate what they learn into daily practices, such as reading food labels, portion control, or using affordable local foods to achieve a balanced diet.

The fourth objective is to **promote long-term behavioral change**. Nutrition education programs aim to instill lasting habits that improve health outcomes over time. By reinforcing consistent healthy practices, communities can reduce the prevalence of malnutrition, obesity, and diet-related diseases.

The first component of nutrition education is **knowledge dissemination**. This involves providing accurate, up-to-date information about nutrients, balanced diets, and the importance of food safety. Materials like brochures, posters, and seminars are used to deliver this information to different target groups.

The second component is **skills development**. Nutrition education is not only about teaching theory but also practical applications. Skills include meal planning, food preparation, safe storage, and cooking methods that preserve nutrients. Practical demonstrations and hands-on training sessions are effective ways to teach these skills.

The third component is **behavior change support**. This focuses on helping individuals adopt and maintain healthy eating behaviors. Strategies may include counseling, peer support groups, and follow-up sessions

that reinforce positive practices. This component ensures that knowledge and skills translate into daily routines.

2. Analyze six practical solutions to nutrition problems in developing countries.

One practical solution is **promoting home gardening and local food production**. Communities can grow fruits, vegetables, and legumes at home or in communal gardens, ensuring access to fresh, nutrient-rich foods. This reduces dependence on expensive or imported foods and helps fight micronutrient deficiencies.

Another solution is **fortification of staple foods**. Adding essential vitamins and minerals to widely consumed foods, such as flour, salt, or cooking oil, can prevent deficiencies on a large scale. For example, iodized salt helps prevent goiter, and fortified flour can reduce iron-deficiency anemia.

Supplementary feeding programmes are also effective. Targeted interventions, such as providing fortified foods to children, pregnant women, or malnourished individuals, can address immediate nutritional gaps. These programmes improve growth and health outcomes in vulnerable groups.

A fourth solution is **nutrition education and awareness campaigns**. Educating communities about the importance of balanced diets, proper meal preparation, and hygiene helps prevent both malnutrition and diet-related illnesses. These campaigns can be delivered through schools, health centers, and community groups.

Improving water, sanitation, and hygiene (WASH) is another crucial solution. Access to clean water and sanitation facilities prevents waterborne diseases that exacerbate malnutrition. Handwashing and proper food handling reduce contamination, promoting overall health and nutrition.

Finally, **government policy and support** play a vital role. Policies that subsidize healthy foods, regulate food prices, and implement school feeding programs can improve access to nutritious diets. Collaboration with NGOs and international agencies also strengthens community nutrition initiatives.

3. Define the term “standard recipe” and describe seven items to be included in a standard recipe.

A standard recipe is a **set of instructions for preparing a specific dish consistently, ensuring uniform quality, taste, and quantity**. It provides detailed guidance on ingredients, preparation, and cooking

procedures, allowing any cook to reproduce the same result every time. Standard recipes are widely used in commercial kitchens, restaurants, and nutrition programs to maintain consistency.

The first item to include in a standard recipe is the **recipe title**. This clearly identifies the dish and ensures there is no confusion when selecting a recipe from a collection.

Second, the **ingredients list with exact quantities** must be specified. Accurate measurement of ingredients, including units such as grams, liters, or cups, ensures consistency in flavor, texture, and nutritional content.

Third, the **equipment required** should be mentioned. Listing necessary tools, such as ovens, mixers, or knives, helps prepare the dish efficiently and avoids delays during cooking.

Fourth, the **preparation steps** must be clearly described. Instructions should be detailed and sequential, outlining actions such as chopping, mixing, marinating, and cooking to guide the cook accurately.

Fifth, the **cooking method and time** are essential. This includes specifying temperatures, duration, and techniques, ensuring the dish is cooked safely and to the desired quality.

Sixth, the **yield or portion size** should be indicated. This informs the cook how many servings the recipe produces and allows for scaling up or down according to demand.

Seventh, the **nutritional information** may be included. This provides details about calories, protein, fat, vitamins, and minerals, which is especially important in institutional or community nutrition settings.

4. Give the importance of practicing good personal hygiene in the kitchen and state seven personal hygiene practices that food handlers should observe.

Practicing good personal hygiene in the kitchen is **critical to prevent contamination and the spread of foodborne illnesses**. Food handlers who maintain hygiene reduce the risk of transmitting bacteria, viruses, and parasites to food, protecting both themselves and consumers.

The first hygiene practice is **regular handwashing with soap and clean water**. This removes dirt, pathogens, and food residues, significantly reducing the risk of contaminating food during preparation or service.

Second, food handlers should **keep nails trimmed and clean**. Long or dirty nails can harbor bacteria that transfer to food. Avoiding artificial nails and nail polish is also recommended because they can trap pathogens.

Third, wearing **clean protective clothing**, such as aprons, gloves, and hairnets, prevents contamination from hair, skin, and street clothes. This ensures that food remains safe and hygienic throughout preparation.

Fourth, **avoiding touching face, hair, or body while handling food** is essential. Pathogens from the skin, nose, or mouth can easily transfer to food if hands are not kept away from these areas.

Fifth, food handlers should **cover cuts or wounds** with waterproof bandages. Open injuries can carry harmful microorganisms that contaminate food, leading to illnesses.

Sixth, maintaining **good oral hygiene** by brushing teeth regularly and avoiding bad breath reduces bacterial spread, particularly when speaking near food.

Seventh, **avoiding eating, drinking, or smoking in food preparation areas** prevents contamination from saliva, crumbs, or smoke particles. This also encourages a clean and professional work environment.

5. Explain five conditions which support the growth and multiplication of bacteria in foods.

One condition is **temperature within the danger zone (5°C–60°C)**. Most bacteria grow rapidly in this range, with optimal growth occurring around 37°C. Keeping food out of this range slows or stops bacterial multiplication.

Second, **moisture availability** is crucial. Water is essential for bacterial metabolism and reproduction. Foods with high moisture content, such as cooked rice or soups, are more prone to bacterial growth compared to dry foods like cereals.

Third, **nutrient-rich environment** supports bacterial growth. Foods containing proteins, carbohydrates, and fats provide energy and building blocks for bacteria. Meat, dairy, and cooked starches are highly susceptible.

Fourth, **pH level** affects bacterial survival. Most pathogenic bacteria prefer neutral to slightly acidic conditions (pH 6.5–7.5). Highly acidic foods, like citrus or pickles, inhibit their growth.

Fifth, **time** is an important factor. The longer food is left in favorable conditions, the more bacteria can multiply. Even small numbers of bacteria can become hazardous if allowed to grow unchecked over several hours.

6. Elaborate six important factors District Nutrition Programme Practitioners must consider for successful community nutrition programmes.

One factor is **community needs assessment**. Practitioners must understand local dietary habits, prevalent nutritional deficiencies, and available resources to design effective interventions tailored to the population.

Second, **resource availability** is essential. Programs require adequate funding, personnel, equipment, and food supplies. Practitioners must plan within available resources to ensure sustainability.

Third, **cultural and social acceptability** must be considered. Nutrition interventions should respect local beliefs, customs, and food preferences to encourage adoption and prevent resistance.

Fourth, **training and capacity building** of community workers is critical. Skilled personnel can implement nutrition programs effectively, provide education, and monitor outcomes.

Fifth, **monitoring and evaluation mechanisms** are important. Regular assessment of program activities, nutritional status of the population, and challenges ensures the program is on track and allows timely adjustments.

Sixth, **collaboration with stakeholders** enhances program success. Engaging local leaders, health facilities, schools, NGOs, and government agencies ensures coordinated efforts and maximizes impact.

SECTION B (60 Marks)

Answer two questions from this section

7. Mention three foods associated with staphylococcal food poisoning, list five symptoms, and state four steps to reduce incidence of the disease.

Foods commonly associated with staphylococcal food poisoning include **cream-filled pastries, cooked meats, and dairy products**. These foods provide an ideal environment for Staphylococcus aureus to multiply and produce toxins if left at unsafe temperatures.

Five symptoms of staphylococcal food poisoning are **nausea, vomiting, abdominal cramps, diarrhea, and sometimes mild fever**. Symptoms typically appear quickly, within 1–6 hours of consuming contaminated food, but the illness is usually self-limiting.

To reduce the incidence of the disease, four steps can be taken. First, **practice strict handwashing and personal hygiene** among food handlers to prevent contamination. Second, **store food at safe temperatures** by refrigerating perishable items below 5°C. Third, **avoid leaving cooked food at room temperature for long periods**. Fourth, **properly clean and sanitize utensils, surfaces, and equipment** to eliminate bacterial contamination.

8. Classify microorganisms based on their temperature ranges and explain what happens when they are kept below minimum or above maximum growth temperature.

Microorganisms can be classified as **psychrophiles, mesophiles, and thermophiles** based on their preferred temperature ranges. Psychrophiles thrive at low temperatures, typically below 20°C, mesophiles grow best between 20°C and 45°C, and thermophiles prefer high temperatures above 45°C.

When microorganisms are kept **below their minimum growth temperature**, metabolic activities slow down, reproduction is inhibited, and they may become dormant but not necessarily die. Conversely, when microorganisms are exposed **above their maximum growth temperature**, proteins denature, enzymes are inactivated, and cells may die, effectively reducing their numbers in food or other environments.

9. Identify seven measures to control promotion and use of infant formulae in developing countries.

The first measure is **enforcing the International Code of Marketing of Breast-milk Substitutes**, which restricts aggressive promotion of infant formula. This helps prevent misleading advertising that could discourage breastfeeding.

Second, **healthcare workers should receive training on breastfeeding support**. By educating staff, mothers are encouraged to choose breastfeeding over formula unless medically necessary.

Third, **providing breastfeeding education to mothers during antenatal and postnatal care** promotes informed decision-making. Mothers learn the benefits of exclusive breastfeeding for the first six months.

Fourth, **restricting free or low-cost distribution of formula in hospitals** prevents dependency and unnecessary use.

Fifth, **monitoring and reporting violations of marketing codes** ensures compliance and accountability among formula companies.

Sixth, **community awareness campaigns** highlight the advantages of breastfeeding and potential risks of formula feeding.

Seventh, **policy advocacy and legislation** at national levels support programs that promote breastfeeding and limit formula promotion, protecting infant health in developing countries.

10. Categorize five main departments of a tourist hotel and show their roles in management.

The first department is **Front Office**, responsible for guest reception, check-in, check-out, reservations, and addressing guest inquiries. It serves as the primary point of contact for customers and manages room allocations efficiently.

Second is the **Housekeeping Department**, which ensures rooms and public areas are clean, safe, and well-maintained. Housekeeping manages laundry, room preparation, and overall hygiene to enhance guest satisfaction.

Third is the **Food and Beverage Department**, managing restaurants, bars, room service, and catering services. It oversees food preparation, quality, menu planning, inventory, and customer service related to dining.

Fourth, the **Maintenance/Engineering Department** is responsible for the upkeep of the hotel's physical infrastructure, including plumbing, electrical systems, and equipment. This ensures all facilities function smoothly and safely.

Fifth is the **Human Resources and Administration Department**, which handles recruitment, staff training, payroll, employee relations, and compliance with labor laws. This department ensures that the hotel is adequately staffed with motivated personnel and operates according to legal standards.