THE UNITED REPUBLIC OF TANZANIA

NATIONAL EXAMINATIONS COUNCIL

ADVANCED CERTIFICATE OF SECONDARY EDUCATION EXAMINATION

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

(For Both School and Private Candidates)

Time : 3 Hours **ANSWERS** **Year : 2009**

Instructions

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

SECTION A (40 Marks)

Answer all questions in this section

1. (a) Define food security.

Food security refers to a situation where all people, at all times, have physical, social, and economic access to sufficient, safe, and nutritious food that meets their dietary needs and food preferences for an active and healthy life.

(b) State four pillars of food security.

The four pillars of food security are availability, accessibility, utilization, and stability.

Availability refers to having enough food produced or imported to meet the population's needs.

Accessibility ensures that individuals have the resources or means to obtain the food they need.

Utilization is about proper biological use of food, including diet quality, nutrition, and health.

Stability refers to consistent access to food over time, without risk of shortage due to shocks or seasonal changes.

(c) Mention two challenges of achieving food security in Tanzania.

Climate variability such as droughts and floods affects food production.

Poverty limits households' ability to access adequate and nutritious food.

2. Explain three functions of proteins in the human body.

Proteins are essential for growth and repair of body tissues, including muscles, skin, and organs.

They act as enzymes and hormones, regulating biochemical reactions and physiological processes.

Proteins provide energy when carbohydrates and fats are insufficient and support immune function through antibody production.

3. (a) List any three water-soluble vitamins.

Vitamin C, Vitamin B1 (Thiamine), Vitamin B2 (Riboflavin).

(b) For each, give one deficiency disease.

Vitamin C deficiency causes scurvy.

Vitamin B1 deficiency causes beriberi.

Vitamin B2 deficiency causes ariboflavinosis, which is characterized by cracked lips and sore throat.

4. (i) What is food preservation?

Food preservation is the process of treating and handling food in ways that prevent or slow down spoilage, microbial growth, and loss of nutritional value, thereby extending the shelf life of food.

(ii) Mention three traditional methods of preserving food.

Drying, smoking, and salting.

(iii) State two limitations of these methods.

They may reduce the nutritional quality of food.

They often provide only short-term preservation compared to modern methods.

5. Differentiate between complete proteins and incomplete proteins.

Complete proteins contain all essential amino acids required by the human body, for example, meat, eggs, and milk.

Incomplete proteins lack one or more essential amino acids, for example, beans, maize, and rice.

6. (a) Give three sources of dietary fiber.

Fruits such as bananas and apples.

Vegetables such as carrots and cabbage.

Whole grains such as wheat, maize, and oats.

(b) State three functions of dietary fiber.

Dietary fiber aids digestion and prevents constipation by promoting smooth bowel movements.

It helps regulate blood sugar levels by slowing down glucose absorption.

It reduces cholesterol levels, thereby lowering the risk of heart disease.

7. Explain two causes of food poisoning and two measures to prevent it.

Causes:

Contamination by bacteria such as Salmonella or E. coli in improperly handled food.

Consumption of food containing toxins or chemicals.

Prevention measures:

Ensure proper cooking and storage of food at safe temperatures.

Maintain personal hygiene, including washing hands and cleaning cooking utensils.

8. Write down four disadvantages of overnutrition.

Overnutrition can lead to obesity, which increases the risk of heart disease and diabetes.

It can cause hypertension due to excess salt and fat intake.

It may result in joint problems due to increased body weight.

Overnutrition can reduce life expectancy and increase healthcare costs.

SECTION B (60 Marks)

Answer only three questions from this section

9. Discuss the impact of climate change on food and nutrition security in Africa.

Climate change leads to unpredictable rainfall and prolonged droughts, reducing agricultural productivity and food availability.

Rising temperatures and extreme weather events increase crop pests and diseases, further affecting yields.

Food prices may rise due to scarcity, making it difficult for households to access nutritious food.

Climate change disrupts water sources for irrigation and livestock, affecting both crop and animal production.

It can lead to malnutrition as people are unable to access adequate quantities of nutrient-rich food consistently.

10. Analyse the effects of HIV/AIDS on food production and household nutrition in Tanzania.

HIV/AIDS reduces the workforce in farming households due to illness, lowering food production.

It increases healthcare costs, leaving less household income for food purchase.

Affected individuals may have reduced nutrient intake and poor absorption, leading to malnutrition.

HIV/AIDS increases dependency ratios, placing additional pressure on households to provide sufficient food.

Children in affected households may suffer from food insecurity and inadequate nutrition, impacting their growth and development.

11. Evaluate six methods of food preservation and their importance in maintaining food security.

Canning preserves food by sealing it in airtight containers and heating it to kill microorganisms; this ensures long-term food availability.

Freezing slows microbial growth and enzymatic activity, extending the shelf life of perishable foods.

Drying removes moisture from food, preventing bacterial growth and spoilage, making food transport and storage easier.

Salting draws water out of food, inhibiting microbial growth, and is useful for meats and fish.

Fermentation preserves food by producing acids or alcohol that inhibit spoilage microorganisms; it also adds nutritional value.

Vacuum packing removes air from packaging, slowing down oxidation and microbial growth, maintaining food quality and safety.

12. Discuss the challenges facing urban populations in maintaining healthy diets, and suggest possible solutions.

Challenges include limited access to fresh and affordable foods due to high population density and urbanization.

High consumption of processed and fast foods leads to overnutrition and non-communicable diseases.

Lack of nutrition education limits awareness about balanced diets.

Solutions: promote urban farming and community gardens to increase access to fresh produce.

Implement nutrition education programs in schools and communities to encourage healthy eating habits.

Encourage policies that regulate fast food advertising and improve the availability of healthy, affordable foods.

13. Assess the importance of dietary guidelines in promoting public health.

Dietary guidelines provide evidence-based recommendations on balanced diets, which help prevent malnutrition.

They guide the public on appropriate portion sizes and nutrient intake to reduce the risk of diet-related diseases.

Guidelines encourage the consumption of a variety of foods, ensuring dietary diversity and adequate micronutrient intake.

They promote healthy eating habits, including reduced salt, sugar, and fat consumption, which lowers non-communicable disease risks.

Dietary guidelines serve as a framework for policymakers and health professionals to design nutrition programs that improve overall public health.