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 : 2006**

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).

1. (a) Define food poisoning.
(b) Identify three common causes of food poisoning.
(c) Explain three measures that can be taken to prevent food poisoning.

(a) Food poisoning is an illness caused by eating food contaminated with harmful microorganisms, toxins, or chemicals that affect the digestive system and overall health.

(b) One common cause of food poisoning is bacterial contamination, for example from Salmonella or Escherichia coli. These bacteria grow when food is improperly stored or cooked.

Another cause is chemical contamination, such as food exposed to pesticides, cleaning agents, or heavy metals.

Food poisoning can also result from toxins produced by molds and fungi, which grow on poorly stored grains or nuts.

(c) One measure to prevent food poisoning is proper food handling, such as washing hands before preparing or eating food.

Cooking food thoroughly at the right temperatures ensures that harmful microorganisms are destroyed.

Storing food safely by refrigerating perishable items prevents bacterial growth and reduces contamination risks.

2. (a) Distinguish between water-soluble and fat-soluble vitamins.
(b) Give two examples of each type.
(c) Explain two roles of vitamin A in the human body.

(a) Water-soluble vitamins dissolve in water and cannot be stored in the body for long, meaning they must be consumed regularly. Fat-soluble vitamins dissolve in fats and oils and can be stored in the liver and fatty tissues for future use.

(b) Examples of water-soluble vitamins include vitamin C and vitamin B1 (thiamine). Examples of fat-soluble vitamins include vitamin A and vitamin D.

(c) Vitamin A is important for maintaining good vision, particularly night vision, because it forms part of the pigment in the retina.

It also supports the immune system by helping the body fight infections and maintain healthy skin and mucous membranes.

3. (a) Define malnutrition.
(b) List four forms of malnutrition.
(c) Explain two effects of protein-energy malnutrition in children.

(a) Malnutrition is a condition caused by inadequate, excessive, or imbalanced intake of nutrients, leading to health problems and impaired body functions.

(b) The forms of malnutrition are undernutrition, overnutrition, micronutrient deficiencies, and protein-energy malnutrition.

(c) One effect of protein-energy malnutrition is kwashiorkor, where children develop swollen abdomens, hair discoloration, and edema due to protein deficiency.

Another effect is marasmus, where children become extremely thin and weak because of inadequate intake of both proteins and calories.

4. (a) State four advantages of breastfeeding to the infant.
(b) Mention two advantages to the mother.

(a) Breastfeeding provides infants with all the essential nutrients required for healthy growth and development in the first months of life.

It contains antibodies that protect infants against infections such as diarrhea and respiratory diseases.

Breast milk is easy to digest and reduces the risk of allergies in infants.

It promotes bonding between the mother and the infant, improving emotional development.

(b) Breastfeeding helps mothers reduce the risk of breast and ovarian cancers by balancing hormonal activity.

It also supports natural birth control by delaying ovulation in the months following delivery.

5. Discuss the effects of climate change on food production in Tanzania.

Climate change leads to unpredictable rainfall patterns, which disrupt planting and harvesting seasons and reduce crop yields.

It increases the frequency of droughts, reducing water availability for irrigation and livestock production.

Rising temperatures encourage the spread of crop pests and diseases, which destroy harvests.

Flooding due to heavy rains destroys farms and leads to soil erosion, lowering long-term fertility.

Overall, climate change reduces food production and threatens food security in Tanzania.

6. (a) What are complementary proteins?
(b) Give two examples of food combinations that form complementary proteins.
(c) Explain why they are important in human nutrition.

(a) Complementary proteins are combinations of two or more plant-based protein sources that, when eaten together, provide all essential amino acids required by the body.

(b) One example is rice combined with beans, which balances amino acids lacking in either food when eaten alone.

Another example is maize with groundnuts, which also provides a complete set of essential amino acids.

(c) They are important because many plant proteins are incomplete, lacking one or more essential amino acids. By combining them, people who rely on plant-based diets can meet their protein requirements.

7. (a) Define obesity.

(b) Mention three causes of obesity.

(c) State three health risks associated with obesity.

(a) Obesity is a condition where a person has excessive body fat that may negatively affect health, usually measured using body mass index (BMI).

(b) One cause of obesity is excessive intake of high-calorie foods such as fast foods, sugary drinks, and fried snacks.

A sedentary lifestyle with little or no physical activity contributes to weight gain and obesity.

Genetic and hormonal factors also increase susceptibility to obesity in some individuals.

(c) Obesity increases the risk of type 2 diabetes due to impaired regulation of blood sugar levels.

It raises the chances of cardiovascular diseases such as hypertension, heart attacks, and stroke.

Obesity also causes joint problems like osteoarthritis due to excessive pressure on bones and muscles.

8. Analyse the importance of nutrition education in schools.

Nutrition education helps children understand the value of balanced diets, reducing the risk of malnutrition and unhealthy eating habits.

It builds lifelong healthy eating practices by encouraging the consumption of fruits, vegetables, and whole grains.

Nutrition education raises awareness about the dangers of excessive sugar, fat, and salt intake, lowering risks of obesity and lifestyle diseases.

It also empowers students to influence their families and communities positively by sharing what they learn about healthy food choices.

9. Explain five traditional methods of food preservation.

Drying removes moisture from food, preventing the growth of bacteria, molds, and yeast.

Salting preserves fish and meat by drawing out moisture, creating an environment where microbes cannot survive.

Smoking both preserves and flavors food, adding antimicrobial compounds from smoke.

Fermentation uses beneficial bacteria or yeasts to produce acids or alcohol that inhibit spoilage, as in traditional beverages or sour milk.

Sun-drying cereals like maize and millet extends their storage period by reducing microbial growth.

10. Discuss the relationship between poverty and poor nutrition.

Poverty limits access to sufficient food, forcing families to rely on cheap, nutrient-poor diets.

Poor nutrition caused by poverty leads to underweight and stunted growth, especially in children, reducing their ability to learn in school.

Lack of money also prevents families from accessing healthcare, making untreated illnesses worsen malnutrition.

At the same time, poor nutrition reduces productivity in adults, keeping families trapped in the cycle of poverty.

Thus, poverty and poor nutrition reinforce each other, weakening communities and economies.