

**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: 2004

Instructions

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

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1. (a) Define malnutrition.

(b) Mention four forms of malnutrition.

(c) Explain three major causes of malnutrition in developing countries.

(a) Malnutrition is a condition that results from eating a diet lacking in essential nutrients or having an imbalance of energy and nutrients, leading to poor health outcomes such as stunted growth, weakness, or disease.

(b) The first form of malnutrition is undernutrition, which includes wasting, stunting, and underweight due to inadequate food intake. Another form is micronutrient deficiency, which occurs when the body lacks essential vitamins or minerals such as vitamin A, iron, or iodine. Overnutrition is also a form of malnutrition, where excessive intake of calories leads to overweight and obesity. Protein-energy malnutrition is another form, where insufficient protein and energy intake results in diseases like marasmus and kwashiorkor.

(c) Poverty is a major cause because people cannot afford enough food or diverse diets, leading to nutrient deficiencies. Poor agricultural practices also cause malnutrition as they limit food production and variety, making households dependent on a few staples. Limited access to healthcare contributes since untreated diseases such as diarrhea reduce nutrient absorption and increase the risk of malnutrition.

2. (a) Differentiate between water-soluble and fat-soluble vitamins.

(b) Give two examples of each.

(c) State two deficiency diseases caused by water-soluble vitamins.

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

(b) Examples of water-soluble vitamins are vitamin C and vitamin B complex such as thiamine. Examples of fat-soluble vitamins are vitamin A and vitamin D.

(c) Deficiency of vitamin C leads to scurvy, which causes bleeding gums, weakness, and delayed wound healing. Deficiency of vitamin B1 (thiamine) leads to beriberi, which causes nerve and heart problems.

3. (a) Describe four functions of iron in the human body.

(b) State three effects of iron deficiency.

(a) Iron is essential for the formation of hemoglobin, which transports oxygen in the blood. It helps in the production of myoglobin, which stores oxygen in muscles for use during activity. Iron is also needed for energy production in cells through enzymes that support metabolism. It strengthens the immune system by enabling white blood cells to fight infections effectively.

(b) Iron deficiency causes anemia, which results in fatigue, dizziness, and weakness. It can impair cognitive development and learning ability, especially in children. It also reduces immunity, making individuals more prone to infections.

4. (a) What is food fortification?

(b) Give three examples of fortified foods in Tanzania.

(c) Explain two advantages of food fortification.

(a) Food fortification is the process of adding essential vitamins and minerals to foods to improve their nutritional value and prevent deficiencies in the population.

(b) Examples of fortified foods in Tanzania include iodized salt, wheat flour enriched with iron and folic acid, and cooking oil fortified with vitamin A.

(c) One advantage of food fortification is that it prevents widespread deficiencies such as goiter, anemia, and night blindness at a low cost. Another advantage is that it does not require changes in eating habits since nutrients are added to commonly consumed foods.

5. Examine the role of nutrition education in improving community health.

Nutrition education helps communities understand the importance of balanced diets, reducing the prevalence of malnutrition and diet-related diseases.

It encourages healthy eating habits such as choosing natural foods over processed foods, lowering the risk of obesity and hypertension.

Education empowers mothers and caregivers with knowledge on proper infant and child feeding, which improves child growth and survival.

It also promotes awareness about food hygiene and safety, reducing foodborne illnesses. In the long term, nutrition education improves productivity and reduces healthcare costs by promoting healthier lifestyles.

6. (a) Explain the term food hygiene.

(b) State four principles of food hygiene.

(a) Food hygiene refers to all the conditions and practices that preserve the safety and quality of food from production to consumption, ensuring that it is free from contamination and safe for human health.

(b) Cleanliness is one principle, which involves washing hands, utensils, and surfaces before handling food. Proper storage of food is another principle, ensuring food is kept at appropriate temperatures to prevent spoilage. Cooking food thoroughly to destroy harmful microorganisms is an important principle. Avoiding cross-contamination between raw and cooked foods is also a principle of food hygiene.

7. Discuss the impact of climate change on food security in Africa.

Climate change leads to unpredictable rainfall patterns, causing droughts and floods that disrupt farming and reduce crop yields. Rising temperatures increase pest and disease outbreaks, further damaging crops and livestock.

Water scarcity from prolonged dry spells limits irrigation and reduces agricultural productivity. Coastal areas face saltwater intrusion due to rising sea levels, making soils less fertile.

Altogether, climate change increases hunger and malnutrition risks in Africa by making food supplies unstable and less reliable.

8. (a) Define food additives.

(b) Give two types of food additives and provide examples.

(c) State two disadvantages of using food additives.

(a) Food additives are substances added to food during processing to improve flavor, appearance, shelf life, or texture.

(b) One type is preservatives, such as sodium benzoate, which prevent microbial spoilage. Another type is colorants, such as tartrazine, which improve food appearance.

(c) Some additives may cause allergic reactions or health problems in sensitive individuals. Overreliance on additives encourages consumption of highly processed foods, which may be less nutritious.

9. Analyse the relationship between poverty and poor nutrition.

Poverty limits household income, preventing families from affording a variety of nutritious foods, leading to reliance on low-cost staples.

Poor nutrition reduces physical and mental productivity, keeping people trapped in poverty through low performance at work or school.

Poverty also reduces access to healthcare, which means illnesses affecting nutrient absorption remain untreated, worsening malnutrition.

In turn, poor nutrition weakens communities and economies, creating a cycle of poverty and ill health.

10. Describe six methods used in meal planning to meet nutritional needs of different groups.

One method is considering age, since children require more proteins and energy for growth while adults need balanced nutrients for maintenance.

Gender is important because men often require more calories due to higher muscle mass.

Health status should be considered, with sick individuals needing special diets such as soft or low-fat foods.

Income levels influence meal planning, so meals should fit within available resources while meeting nutritional needs.

Cultural and religious food preferences must be respected to ensure acceptability.

Physical activity levels must also be taken into account, as highly active people require more energy-rich diets than sedentary individuals.