THE UNITED REPUBLIC OF TANZANIA
NATIONAL EXAMINATIONS COUNCIL OF TANZANIA
ADVANCED CERTIFICATE OF SECONDARY EDUCATTION EXAMINATION

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

(For Both School and Private Candidates)

Time: 3 Hours **ANSWERS** **Year: 2021**

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).

1. (a) Briefly explain the stages which bacteria undergo when introduced into a fresh food.

When bacteria are introduced into fresh food, they first enter the **lag phase**, where they adjust to the new environment without multiplying immediately as they prepare for growth.

Next is the **log phase**, where bacteria start to multiply rapidly, doubling in number at a constant rate as long as conditions like temperature, moisture, and nutrients are favorable.

This is followed by the **stationary phase**, where the growth rate slows and stabilizes because of reduced nutrients, accumulation of waste products, and competition for space.

Lastly, the **death phase** occurs when the number of dying bacteria exceeds the number of new bacteria being produced, caused by depletion of nutrients and accumulation of toxic waste products.

(b) Briefly explain what would happen when a culture of lactic acid bacteria is introduced to a glass containing fresh cow's milk.

When a culture of lactic acid bacteria is added to fresh cow's milk, the bacteria begin to ferment the lactose (milk sugar) into lactic acid. As lactic acid accumulates, the pH of the milk decreases, causing milk proteins like casein to coagulate, leading to the formation of curd. This process results in souring of the milk and is the basis of products like yogurt and fermented milk.

2. (a) Differentiate outdoor catering from leisure-linked catering establishments.

Outdoor catering refers to the provision of food and beverage services at places away from the caterer's premises, such as weddings, parties, and conferences.

Leisure-linked catering establishments provide food and beverages to customers engaged in leisure activities, such as at sports stadiums, amusement parks, cinemas, and recreational centers.

(b) Briefly describe the common types of transport catering establishments.

Railway catering provides meals and snacks to passengers on trains during their journey.

Airline catering involves preparing and serving food to passengers on board aircraft, often including special meals for dietary needs.

Ship catering supplies food and drinks to passengers and crew members on ships, ranging from short ferry rides to long cruises.

Road transport catering offers food services to travelers at roadside restaurants, service stations, and bus stops.

3. (a) Give the importance of nutrition education.

Nutrition education helps individuals make informed food choices, promoting healthy eating habits and preventing nutrition-related diseases. It also raises awareness about the importance of proper nutrition in growth, development, and disease management. Additionally, it supports community health by addressing local nutrition problems and improving overall well-being.

(b) Outline the points to be included in the nutrition education presentation on the prevention of protein-energy malnutrition among pre-school children.

Emphasize the importance of exclusive breastfeeding for the first six months.

Advocate for timely introduction of nutritious complementary foods at six months.

Promote the use of locally available protein-rich foods like beans, fish, milk, and eggs.

Educate caregivers on maintaining hygiene during food preparation to prevent infections.

Encourage regular growth monitoring of children at health clinics.

Provide information on the signs and symptoms of malnutrition for early detection.

Discuss the importance of immunization in preventing disease-related undernutrition.

Promote balanced diets that include energy-giving, body-building, and protective foods.

Raise awareness on the value of nutrition supplementation programs where available.

4. (a) State the ways through which food becomes contaminated by the salmonellae found in faeces.

Food can become contaminated if handlers fail to wash hands properly after using the toilet.

Contamination occurs through contact with infected animal feces during slaughter or processing of meat.

Using contaminated water for washing food or utensils introduces salmonella.

Cross-contamination from raw to cooked food via unwashed surfaces or utensils spreads bacteria.

Flies and other insects can transfer salmonella from feces to exposed food.

(b) Give the control measures of salmonella food poisoning.

Ensure proper handwashing after using the toilet and before handling food.

Cook all meat, poultry, and eggs thoroughly to kill bacteria.

Prevent cross-contamination by using separate utensils for raw and cooked foods.

Store perishable food at safe temperatures to inhibit bacterial growth.

Use clean, safe water for food preparation and washing.

Control insects and pests in food preparation areas.

Dispose of animal waste and fecal matter hygienically.

5. (a) Explain the causes of nutritional anaemia.

Nutritional anaemia is caused by inadequate intake of iron-rich foods like meat, beans, and dark leafy vegetables.

Poor absorption of iron due to intestinal infections or certain dietary inhibitors like excessive tea consumption can also lead to anaemia.

Folic acid and vitamin B12 deficiencies impair red blood cell formation, contributing to nutritional anaemia.

Frequent blood loss from menstruation, childbirth, or parasitic infections like hookworm reduces blood iron levels.

(b) Explain the ways of preventing nutritional anaemia to vulnerable age groups.

Encourage consumption of iron-rich foods such as liver, spinach, beans, and fortified cereals.

Promote iron and folic acid supplementation programs for pregnant women and children.

Treat intestinal worms and other infections promptly to reduce blood loss and improve nutrient absorption.

Educate the community on proper meal planning and combining iron-rich foods with vitamin C-rich fruits to enhance iron absorption.

6. Explain the natural methods of birth control.

Abstinence involves refraining from sexual intercourse, providing 100% protection against pregnancy.

Calendar method relies on tracking the menstrual cycle to identify fertile days and avoiding intercourse during that period.

Withdrawal method (coitus interruptus) involves the male partner withdrawing before ejaculation to prevent sperm from entering the female reproductive tract.

Breastfeeding (lactational amenorrhea method) delays the return of fertility in women exclusively breastfeeding during the first six months after childbirth.

Basal body temperature method monitors daily body temperature to detect ovulation, with couples avoiding intercourse during fertile days.

Cervical mucus observation tracks changes in vaginal mucus to identify fertile and infertile periods in the menstrual cycle.

7. Describe the anthropometric methods of assessing the nutritional status of an individual and give the advantages and limitations of using anthropometry.

Anthropometric methods involve the measurement of the physical dimensions and composition of the human body to assess nutritional status. The most common measurements include weight, height, mid-upper arm circumference (MUAC), head circumference for infants, and skinfold thickness to estimate body fat percentage.

One important method is weight-for-age, which compares a child’s weight with the standard weight of healthy children of the same age. It helps to identify underweight conditions in children.

Another method is height-for-age, which compares a child’s height with standard height values for their age. It is useful in detecting stunted growth caused by long-term undernutrition.

Weight-for-height assesses the relationship between a child's weight and height, identifying wasting, which is a sign of acute malnutrition.

Mid-upper arm circumference (MUAC) measures the circumference of the upper arm and is a quick screening tool for severe acute malnutrition, especially in children under five.

Skinfold thickness is used to estimate body fat by measuring the thickness of subcutaneous fat at specific body sites, like the triceps or subscapular region.

The advantages of anthropometric methods include their low cost, non-invasiveness, simplicity, and ease of application in both community and clinical settings without the need for advanced equipment.

However, the limitations include possible measurement errors if not done by trained personnel, variations in results due to age, sex, and ethnic differences, and the inability to detect micronutrient deficiencies or early stages of malnutrition without visible physical signs.

8. (a) Describe the importance of food menu.

A food menu serves as a communication tool between the kitchen and customers, informing them of the available food options, prices, and special dishes.

It helps kitchen staff in planning food production, managing resources efficiently, and ensuring the availability of necessary ingredients for each meal.

Menus aid in nutritional planning by guiding the selection of balanced and healthy meals that meet dietary requirements.

They support budgeting by predicting food costs and portion sizes, which controls wastage and maintains profitability.

Menus also help maintain customer satisfaction by offering variety and meeting different dietary needs and preferences.

(b) Describe the types of menus.

A **table d'hôte menu** offers a set number of courses with a limited choice at a fixed price, often found in banquets or formal dining.

An **à la carte menu** lists individual food items separately, each with its own price, giving customers flexibility to choose dishes according to preference.

A **cyclical menu** is planned for a specific period, such as a week or a month, and repeats itself after that period, commonly used in hospitals, schools, and institutions.

A **special menu** is prepared for specific occasions or seasons, like holiday meals or themed nights.

A **static menu** remains unchanged over a long period, often found in fast-food outlets and casual restaurants.

9. Describe the common nutrition interventions used to prevent malnutrition in children in developing countries.

One intervention is **promotion of exclusive breastfeeding** for the first six months, providing optimal nutrients and immunity to infants.

Timely introduction of complementary feeding at six months, combined with continued breastfeeding, ensures that children receive adequate nutrients for growth.

Growth monitoring and promotion programs help track a child's growth regularly to detect and manage malnutrition early.

Nutrition education programs for mothers and caregivers raise awareness about child feeding practices, hygiene, and dietary diversity using locally available foods.

Micronutrient supplementation, such as vitamin A, iron, and zinc tablets, is provided to prevent deficiencies that contribute to undernutrition.

Food fortification programs enhance staple foods with essential vitamins and minerals to improve the population's overall nutritional status.

Immunization campaigns protect children from infectious diseases that can worsen nutritional status through loss of appetite and nutrient depletion.

Treatment of common infections and deworming programs improve nutrient absorption and reduce the nutrient losses caused by illnesses.

Emergency feeding programs and provision of therapeutic foods like Ready-to-Use Therapeutic Foods (RUTF) are used during crises and for children suffering from severe acute malnutrition.