

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

155/1

FOOD AND HUMAN NUTRITION 1

(For Both School and Private Candidates)

Time: 3 Hours

Year: 2022

Instructions

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

SECTION A (60 Marks)

Answer all questions in this section.

1. (a) "Fortification being a food based method offers several benefits in health and food processing and preservation". Justify this statement in four points.

(b) Identify two major methods of food fortification.
2. Not all dietary iron is absorbed equally in the body. Support this statement by analysing,
(a) Three groups of food which enhance the body's ability to absorb iron.
(b) Two groups of food which hinder the body's ability to absorb iron.
3. Suppose you were invited to a training on baking process to present about raising agents;
(a) Briefly explain four types of chemical raising agents you would include in your presentation.
(b) Advise the participants on how they should store the chemical raising agents.
4. (a) Differentiate chronic food insecurity from transitory food insecurity.

(b) Analyse the effects of the following factors on food production in Tanzania:
(i) Rapid population growth.
(ii) Civil conflicts.
(iii) Acquired Immune-Deficiency Syndrome (AIDS).
(iv) Environmental degradation.
5. A patient who is suffering from diabetes mellitus has been referred to you by a physician for nutritional counseling. Recommend five dietary practices of managing his/her illness.
6. (a) Briefly explain:
(i) How food safety differs from other characteristics of food quality.
(ii) The aim of food quality assurance system in a food company.
(b) What are the reasons for implementation of food quality assurance programmes in food industry? Give four points.

SECTION B (60 Marks)

Answer two questions from this section.

7. Explain six primary causes of food losses in the post-harvest food chain.
8. Dr. Aggrey is a lecturer at the university, he is 38 years old and weighs 65 kilograms. On 5th August 2021, he recorded the activities and the time he spent on each activity as shown in the following table.

S/N	Activity	Time used (minutes)	Energy expenditure in each activity (kcal/kg/min)
1.	showering	20	0.047
2.	dresssing	10	0.038
3.	driving	50	0.056
4.	Walking upstairs	10	0.254

5.	Walking down stairs	7	0.098
6.	Walking normally	70	0.069
7.	Having meals and drinks	50	0.020
8.	Marking assignments	188	0.029
9.	lecturing	240	0.035
10.	Watching TV	65	0.017
11.	Attending natural calls	15	0.027
12.	Sitting and chatting	60	0.026
13.	Writing journal	165	0.027
14.	sleeping	494	0.016

- (a) Describe the three major components of total energy expenditure.
 - (b) Calculate the components mentioned in (a) and the total energy expenditure by Dr. Aggrey. Use the factorial method where applicable.
 - (c) If Dr. Aggrey consumed 540gm carbohydrate, 250 gm protein, 80 gm fat and 2,750 mills water; compare the energy consumption and expenditure then advise him accordingly.
9. Describe six traditional methods used in storing food grains in order to minimize losses during storage.

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155/2

FOOD AND HUMAN NUTRITION 2

(For Both School and Private Candidates)

Time: 3 Hours

Year: 2022

Instructions

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

SECTION A (60 Marks)

Answer all questions in this section.

1. The elderly are at a high risk of being affected by undernutrition in our country.
 - (a) Identify eight causes of undernutrition to this group.
 - (b) Suggest two nutritional strategies to help elders maintain a healthy diet and good eating habits.
2.
 - (a) Elaborate three ways in which the amount of water present in food can be made unavailable for microbial growth.
 - (b) Identify four methods of reducing the water available for microbial growth to prevent growth of spoilage and poisoning microorganisms that may be present in raw foods.
3. It is recommended that weaning should start at the age of 4 to 6 months for the growth and health of infants to be normal. In view of this statement, briefly explain;
 - (a) Two characteristics of proper weaning foods.
 - (b) Three reasons for the malnourishment of infants in Africa countries during the weaning period.
4. The Maliasili Hotels Ltd has hired you to train its kitchen managers on recipe formulation. Briefly explain ten factors to be considered in formulating recipes for the customers which you would include in your presentation.
5. Marasmus is one of the severe forms of Protein – Energy Malnutrition affecting most under-five children in developing countries; yet many people are not able to detect the problem for immediate control. Identify six indicators and four control measures of the condition.
6.
 - (a) Why mothers are advised to breast-feed their newborns instead of feeding them with breast-milk substitutes? Give eight points.
 - (b) Briefly explain how feeding the newborns with breast-milk substitutes may lead to undernutrition in developing countries.

SECTION B (40 Marks)

Answer two questions from this section

7. You have been invited to a meeting to address the issue on the management of catering establishments. The specific agenda is “the principles of catering which form basic guidelines to managing catering operations.” Analyse nine principles which you would include in your presentation.
8. In a ward meeting, the members were given a nutritional education message stating, “Every mother should provide her children with meat or fish every day.”
 - (a) In three points, justify why the message may be considered unsuitable for the nutritional education program in our country.

- (b) Recommend six suitable techniques for coming up with a successful nutritional education program with the same objective.
9. It has been observed that microbial food poisoning is one of the leading problems which affect the catering business. Suggest six approaches that can be used to control the situation.

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155/3

FOOD AND NUTRITION 3

(For Both School and Private candidates)

Time: 3 Hours

Year: 2022

Instructions

1. This paper consists of **three (3)** questions.
2. Answer **all** questions.
3. Question **one (1)** carries **twenty (20)**, and question **two (2)** and **three (3)** carry **fifteen (15)** marks each.
4. Cellular phones and any unauthorized materials are **not** allowed in the examination room.
5. Write your **Examination Number** on every page of your answer booklet (s).

1. You are provided with a slice of white bread and a piece of beef. Perform the experiment I and II by following the given procedures.

In Experiment I, Place the slice of bread on a hot pan and heat each side at high temperature (above 70°C) for 3 to 5 minutes. Record the observations on the changes in colour, texture and aroma.

Questions:

- (a) name and define the reaction which led to the observed characteristics,
- (b) briefly explain three steps involved in the reaction to obtain the observed characteristics
- (c) provide two roles of high temperature in this reaction.
- (d) outline two methods of cooking food which can result into the characteristic observed in the experiment I above.

In Experiment II, wash the piece of beef provided and directly place it on a hot pan. Heat each side at high temperature above (70°C) for 5 minutes. Record the observations on the changes in texture and aroma.

Questions:

- (a) Provide reasons for the changes in texture and aroma observed which differ in Experiment I and II.
- (b) Show how the texture of the beef sample observed in Experiment II is improved during processing.

2. You provided with table sugar, glucose, baking soda and yeast. Perform two experiments by following the procedures given under each experiment.

Experiment I: (a) Dissolve 10g of table sugar in 50ml of tap water in a flask and add 5g of yeast. Repeat procedure (a) by using glucose. Fill two gas jars with tap water and place each upsidedown supported by a beehive shelf in a trough/basin of water. Warm the flask

to 30°C. Immediately fit each flask with one end of delivery tube (using a tight fitting rubber stopper) and insert the other end into the beehive shelf in a trough/basin of water. Observe the changes that take place after two intervals of 15 minutes.

Questions:

- (a) write balanced equations for the observed reactions,
- (b) write roles played by sugar/glucose and yeast in the reactions and
- (c) give the property of yeast observed in this experiment.

Experiment II: Mix 2g of baking soda with 3ml of tap water in a clean and dry test tube. Fit the test tube with one end of delivery tube using a tight fitting rubber stopper and then deep the other end in a solution of lime water placed in another test tube. Gently heat the mixture while observing.

Questions:

- (a) Explain briefly the reaction which took place when heat was applied to the test tube containing baking soda,
- (b) write a balanced equation for the reaction explained in part (a) and
- (c) to write the importance of this reaction in baking.

3. You are provided with the samples **A**, **B**, **C** and **D**. Perform the Experiment **I** to **IV**. Record the observations and provide inferences of what you have observed and answer the question that follow.

Experiment I: In a test tube containing 2ml of sample **A** add 3 drops of dilute hydrochloric acid. Boil the mixture under low heat for a minute and allow it to cool. Add 3 drops of dilute sodium hydroxide solution followed by equal volume of Benedict's solution. Shake and boil the mixture again.

Question: Explain the bases of the observed changes, by providing two points.

Experiment II: In a test tube containing 2 ml of sample **B** add equal volume of dilute sodium hydroxide solution and mix thoroughly. Add 2 to 3 drops of 1% copper (II) sulphate solution and mix the mixture thoroughly.

Question: Provide the basis of the observed changes.

Experiment III: In a test tube containing 2g of sample **C** add 5ml of dilute hydrochloric acid and mix thoroughly. Filter the mixture and then neutralize the filtrate by adding ammonium hydroxide solution (Note: neutral filtrate will turn red litmus paper purple). Add equal volume of 5% ammonium oxalate solution to a portion of filtrate.

Question: Provide reason why dilute hydrochloric acid was added to sample **C**, and give a balanced equation for the reaction.

In Experiment IV: Dissolve 1g of sample **D** in concentrated nitric acid in a test tube. Filter the mixture and then add a few drops of 10% ammonium molybdate solution to a portion of the filtrate. Warm the mixture.

Question: Give two plant foods which are the best sources of the inference they have provided and reasons for warming the mixture.