

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

155/3

FOOD AND NUTRITION 3

(For Both School and Private candidates)

Time: 3 Hours

Year: 2021

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 food samples **J**, **K** and **L**. Perform the Experiments I and II by following the given procedures.

In Experiment I:

Procedures:

- (i) Mix sample **J** and **K** with distilled water in separate beakers, stir and let them settle for 3 minutes.
- (ii) Filter the liquid for each sample to remain with white sediments. Use spatula to take some white sediments from each sample into a slide and examine them under a light or compound microscope in low and high magnification.

In Experiment II: Place 2 g of sample **L** in a crucible and heat it by using dry heat (without burning the sample) and record the observation.

Questions

Answer the following items:

In Experiment I,

(a) of the question:

- (i) draw the structures of each sample observed under microscope,
- (ii) give the properties of each structure observed under the microscope,
- (iii) give the plant group from which each sample was obtained
- (iv) identify the samples **J** and **K** and
- (v) Outline the common properties of samples **J** and **K**.

In Experiment II,

(b) (i) Name the compound formed after heating the sample.

(ii) outline the properties of the compound formed after heating sample **L**

(c) Briefly describe the forms of long chains of glucose units that are usually present in

samples **J, K, and L** before heating.

2. You provided with a fresh egg. Break the egg and separate the contents into two different beakers. Perform the Experiments **I, II, and III** by undergoing through the given procedures:

In Experiment I, the procedures are:

- (i) Put 2 ml of egg white into a test tube and then add 1 ml of 10% sodium hydroxide solution.
- (ii) Put 2 ml of egg white into another test tube and then add 2 drops of concentrated nitric acid and leave the mixture to stand for 5 minutes.
- (iii) Heat the mixture obtained in step (ii) in the boiling water from the water bath.

In Experiment II, the procedures are:

- (i) Put 3 ml of egg white into a clean and dry test tube and then add equal volume of distilled water.
- (ii) Shake the mixture well, place a filter paper on a funnel, wet it with distilled water and then filter the mixture into another test tube.
- (iii) Put 2 ml of the filtrate into a test tube and then perform the Biuret test and record the observation.

In Experiment III, put a small portion of the egg yolk in an evaporating dish, heat it on dry heat while observing the changes in colour with increase in temperature, then write the observations and give an explanation.

Questions:

In Experiment I,

- (a) Record the observations and give explanations in each procedure
- (b) Give the purpose of the experiment

In Experiment II,
state the principle behind the Biuret test.

In Experiment III,
Justify the statement that, “The property of egg proteins observed in the experiment make eggs useful in preparing various food products”.

3. You are provided with baker’s yeast, white sugar, wheat flour, bicarbonate of soda and solution A . Perform the Experiments I and II by following the given procedures.

In Experiment I,

- (i) Place 2 g of bicarbonate of soda into a clean dry test tube. Fit the test tube with a tight-fitting rubber stopper connected into a delivery tube.
- (ii) Put 2 ml of solution A into another test tube and then fit the test tube with a tight-fitting rubber stopper connected into a delivery tube. (
- (iii) Connect the two delivery tubes from each test tube using a rubber tube. Record the observation on the changes in solution A before heating.
- (iv) Heat gently the test tube containing bicarbonate of soda. Record the observed changes and give an explanation

In Experiment II, the candidates were instructed to:

- (v) Put 30 ml of warm water (40°C) into a clean dry beaker.
- (vi) Add 3 g of baker’s yeast and 5 g of sugar then stir.
- (vii) Carefully sprinkle a thin layer of wheat flour over the mixture.
- (viii) Leave the mixture for about 15 minutes while observing the changes. Record the observed changes in smell and appearance of the thin layer of wheat flour and give explanations.

Questions

- (a) To identify solution **A**
- (b) write balanced chemical equations for the reaction during the heating of bicarbonate of soda and for the resulted colour change in solution **A**.
- (c) Briefly describe the application of Experiment I in the process of making bread and burns.
- (d) briefly explain what would happen if the environment in Experiment II was maintained at 10°C
- (e) Explain what Experiment II demonstrates.