THE UNITED REPUBLIC OF TANZANIA

NATIONAL EXAMINATIONS COUNCIL

ADVANCED CERTIFICATE OF SECONDARY EDUCATION EXAMINATION

155/3 **FOOD AND HUMAN NUTRITION 3**

(For Both School and Private Candidates)

Time : 3 Hours **Year: 2000**

Instructions

1. This paper consists of sections **three (3)** questions.
2. Answer all questions.
3. Question **one (1)** carries **twenty (20)** marks and question **two (2)** and **three (3)** carries **fifteen (15)** marks each.
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. You are provided with wheat flour, water, and clean bowls. Perform the experiment by following the procedures below:

   (i) Weigh 30 g of wheat flour and add about 15 ml of clean water in a bowl. Mix them thoroughly to form a dough.

   (ii) Knead the dough for 10 minutes until smooth. Record its texture and explain.

   (iii) Place the dough in a muslin cloth, wash under running tap water while squeezing, and collect the first washing in a beaker. Leave it to stand for 15 minutes. Record observations.

   (iv) Continue washing until the water runs clear. Collect the residue in a petri dish and observe its elasticity.

   (v) Take 2 g of the residue, add concentrated nitric acid, heat gently, cool under running water, then add ammonia solution. Observe the colour changes.

   Questions:

   (a) Identify the substance obtained in step (iv).

   (b) Explain the importance of the substance obtained in step (iv) in bread making.

   (c) What does step (v) demonstrate?

   (d) Briefly explain the principle behind separation of starch and protein in this experiment.

2. You are provided with fresh apple slices, lemon juice, hot water, and plain paper. Perform the experiment as follows:

   (i) Place one slice on plain paper at room temperature.

   (ii) Dip the second slice in lemon juice.

   (iii) Place the third slice in boiling water for 3 minutes.

   (iv) Leave all the slices for 15 minutes and record the colour changes.

   Questions:

   (a) What process causes the colour changes in step (i)?

(b) Explain the effects of lemon juice and boiling water in preventing changes.

(c) State two advantages of this reaction in food processing.

3. You are provided with an egg. Separate the white and yolk and perform the following procedures:

   (i) Put 2 ml of egg white in a test tube, add 1 ml of 10% sodium hydroxide, then 2 drops of dilute copper sulphate solution. Record observations.

   (ii) Heat another 2 ml of egg white in boiling water for 5 minutes. Record observations.

   (iii) Place a small portion of egg yolk in a dry porcelain dish and heat strongly. Record colour changes and odour.

Questions:

(a) Identify the test performed in step (i) and state what it confirms.

(b) Explain what happened in step (ii).

(c) What does step (iii) demonstrate about the nature of egg yolk?

(d) State two uses of these properties of egg proteins in food preparation.