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: 2007**

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 potatoes, water, and iodine solution. Conduct the following:

   (a) Cut the potato into two pieces. Boil one piece and leave the other raw.

   (b) Test both pieces with iodine solution and record the colour change.

   (c) Prepare a potato paste by mashing 50 g of raw potato with 20 ml of water. Heat the paste and observe any changes.

   (d) Explain scientifically:

   i. Why raw potato starch gives a blue-black colour with iodine.

   ii. What happens to starch granules on heating.

2. You are provided with milk, vinegar, and distilled water. Perform the following:

   (a) Add 10 ml of vinegar to 50 ml of milk and stir. Observe any coagulation.

   (b) Filter the mixture and collect the precipitate (casein). Record the appearance.

   (c) Wash the casein with distilled water and test for protein using Biuret reagent. Describe the observation.

   (d) Explain the role of acid in protein coagulation and its relevance in cheese production.

3. You are provided with fresh banana, lemon juice, and boiling water. Conduct the following:

   (a) Slice the banana and divide into three portions. Leave one as control, dip the second in lemon juice, and boil the third in water for 2 minutes.

   (b) Observe and record any colour changes in each portion after 5 minutes.

   (c) Explain the scientific basis of enzymatic browning and how it can be prevented.

   (d) Suggest one industrial application of controlling browning reactions in fruits.