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: 2017**

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 sample R (milk) and solutions S and T. Carry out the experiment as follows:

   (i) Add 20 ml of sample R to a beaker and warm gently to about 40 °C.

   (ii) Introduce 2 ml of solution S and stir continuously. Record your observations.

   (iii) Add 3 drops of solution T to the mixture and stir. Leave for 10 minutes.

   Questions

   (a) Identify the precipitate formed in procedure (ii).

   (b) What does solution S represent?

   (c) What reaction is shown in procedure (iii)?

   (d) State the nutritional importance of the main nutrient tested.

   (e) Suggest one industrial application of this principle.

2. You are provided with sample U (egg white). Place 10 ml in each of four test tubes and treat them as follows:

   (i) Boil the first tube for 5 minutes.

   (ii) Add 1 ml of concentrated hydrochloric acid to the second tube and shake.

   (iii) Add 1 ml of sodium hydroxide solution to the third tube.

   (iv) Leave the fourth tube untreated as control.

   Questions

   (a) What reaction occurred in (i), (ii), and (iii)?

   (b) What property of proteins is demonstrated here?

   (c) Give two food-processing applications of this reaction.

3. You are provided with samples V, W, X, Y and Z. Perform the following:

   (i) Weigh 5 g of sample V into a conical flask.

   (ii) Add 50 ml of solution W, then 1 ml of solution X. Shake well.

   (iii) Warm in a water bath at 75 °C for 5 minutes.

   (iv) Titrate the mixture against solution Y until a colour change is observed.

   (v) Repeat the titration for accuracy.

Questions

(a) Identify the function of solution X.

(b) Calculate the iodine value of sample V.

(c) From literature, normal vegetable oils have iodine values between 90–110. Compare your result and interpret.

(d) State two uses of iodine value in food chemistry.