

**CHRISTIAN SOCIAL SERVICE COMMISSION (CSSC)  
NORTH ZONE JOINT EXAMINATION SYNDICATE (NZ – JES)**



**FORM SIX PRE-NATIONAL EXAMINATION 2026**

**155/3**

**FOOD AND HUMAN NUTRITION 3**

**Time 3:20Hours**

**Wednesday, 4<sup>th</sup> March 2026 a.m.**

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**Instructions**

1. This paper consists of **three (3)** questions.
2. Answer **all** questions.
3. All communication devices and any unauthorized material are **not** allowed in the examination room.
4. Write your **examination number** on every page of your answer booklets.

1. Crush finely the food sample **Q** with clean and dry motor and pestle. Divide the crushed food sample into two portions and transfer each portion into a clean dry test tube using dry spatula. Perform the following:
  - (a) To the first portion:
    - (i) Add ethanol to cover the food sample. Shake the test tube thoroughly and safely and allow the solid to settle for 3 minutes.
    - (ii) Decant the solution carefully into clean, dry test tube.
    - (iii) To the solution obtained in 3(a)(ii). Add 2mls of distilled water.
    - (iv) Make observations.

### Questions

- (i) Write your observation.
  - (ii) Interpret your observation.
  - (iii) State the function of ethanol in this experiment.
  - (iv) Briefly explain the reasons for performing the following procedures experiment:
    - Thorough shaking of the test tube containing the mixture.
    - Allowing the solution to stand for few minutes.
    - Crushing the food sample to fine powder.
    - Using dry and clean apparatus.
- (b) To the second portion:
    - (i) Add distilled water to cover the food sample then thoroughly shake the test tube.
    - (ii) Decant the liquid.
    - (iii) To a clean test tube containing 2 mls of the liquid obtained in 3(b)(ii), add 2mls of Biuret reagent.
    - (iv) Shake well and allow the mixture to stand for 5 minutes.
    - (v) Observe the colour changes of the solution.

### Questions

- (i) Write your observations.
  - (ii) State the aim of this experiment.
  - (iii) Why ethanol emulsion test cannot be used in the place of Biuret reagent in this experiment.
  - (iv) Briefly explain how Biuret reagent caused a colour change observed in this experiment.
2. You are provided with baker's yeast, white sugar, wheat flour, bicarbonate of soda and solution **A** (Lime water/calcium hydroxide solution).

### Experiment I

- (i) Place 2g 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 2ml of solution **A** into another test tube and then fit the 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.

**Questions.**

- (a) Identify solution **A**.
- (b) Write balanced chemical equations
- (c) What is application of this experiment in buns and bread making.

**Experiment II**

- (d) Briefly explain what would happen if the environment in experiment II was maintained at 8°C.

- (e) What experiment II demonstrates:

3. You are provided with food samples **J**, **K** and Perform the following experiments:

**Experiment I**

- (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.

**Questions**

- (a) (i) Draw the structures of each sample observed under microscope:
- (ii) State properties of each structure observed under microscope:
- (iii) Name plant group from which each sample obtained:
- (iv) What are common properties of sample **J** and **K**.

**Experiment II.**

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

**Questions:**

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