THE UNITED REPUBLIC OF TANZANIA

NATIONAL EXAMINATIONS COUNCIL

CERTIFICATE OF SECONDARY EDUCATION EXAMINATION

033/2C **BIOLOGY 2C**

(ACTUAL PRACTICAL C)

(For Both School and Private Candidates)

Time: 2:30 Hours **ANSWERS** **Year: 2017**

Instructions

1. This paper consists of two questions.

2. Answer all questions.

1. You have been provided with solution A. The solution contains various food substances.

(a) Use the chemicals and reagents provided to identify the food substances present in solution A. Tabulate your work as shown in Table 1.

Table 1

FOOD TESTED	PROCEDURE	OBSERVATION	INFERENCE
Starch	iodine solution was added to solution A	Blue-black color appears	Starch was present
Reducing sugar	Add Benedict's solution and warm	Solution turns brick-red	Reducing sugar was present
Protein	Add sodium hydroxide then copper(II) sulfate (Biuret test)	Solution turns purple	Protein was present

(b) State the importance of each food identified in 1(a) in the human body.
- Starch: Provides long-term energy storage
- Reducing sugar: Offers quick and readily available energy
- Protein: Builds body tissues, repairs cells, forms enzymes and hormones

(c) Give two types of food sources from which each food substance identified in 1(a) could have been extracted.
- Starch: rice, cassava
- Reducing sugar: honey, ripe bananas
- Protein: beans, meat

(d) One of the food substances identified in 1(a) is very important for children under five years.
(i) Name the disease which develops when the diet provided to a child lacks that food substance.
Kwashiorkor (due to protein deficiency)

(ii) State the symptoms of a disease mentioned in (d)(i).
- Swollen abdomen
- Stunted growth
- Wasting of muscles
- Skin and hair discoloration

2. You have been provided with specimens T_1, T_2 and T_3.

(a) Using a hand lens, study the specimens carefully and:

(i) Identify each specimen by its common name.
- T_1: Bean seed

- T_2: Maize seed
- T_3: Fern leaf

(ii) Classify each specimen T_1, T_2 and T_3 from Kingdom to Phylum/Division level.

T_1:
- Kingdom: Plantae
- Division: Angiospermophyta

T_2:
- Kingdom: Plantae
- Division: Angiospermophyta

T_3:
- Kingdom: Plantae
- Division: Pteridophyta

(iii) Why specimen T_2 is said to have advantages to a farmer?
- Provides food and income
- Can be processed into various products (flour, oil, feed)
- Grows quickly and yields well

(iv) Identify four general characteristics which influenced you to place specimen T_3 in the Phylum/Division you named in (a)(ii).
- Has vascular tissues (xylem and phloem)
- Reproduces by spores
- Lacks flowers and seeds
- Has true roots, stems, and leaves

(v) Draw a well-labelled diagram of specimen T_3.

(b) Study carefully specimen T_1 and T_2 and:

(i) State two observable differences between T_1 and T_2.
- T_1 has two cotyledons; T_2 has one cotyledon
- T_1 shows visible split line; T_2 has a smooth grain surface

(ii) State the habitats of each specimen T_1, T_2 and T_3.
- T_1: Farmlands with loamy soil
- T_2: Tropical fields and plantations
- T_3: Shady, moist forest floors