THE UNITED REPUBLIC OF TANZANIA

NATIONAL EXAMINATIONS COUNCIL

CERTIFICATE OF SECONDARY EDUCATION EXAMINATION

033/2A **BIOLOGY 2A**

(ACTUAL PRACTICAL A)

(For Both School and Private Candidates)

Time: 2:30 Hours **ANSWERS** **Year: 2016**

Instructions

1. This paper consists of two questions.

2. Answer all questions.

1. You have been provided with solution Z.

(a) Perform experiments using the reagents provided to identify the type of food substance(s) present in solution Z. Tabulate your results as shown in Table 1.

Table 1

FOOD TESTED	PROCEDURE	OBSERVATION	INFERENCE
starch	2mls of iodine solution was added to solution Z	Solution Z turned Blur-black	Starch was present
Reducing sugar	2mls of Benedict's solution and warm was added	Solution Z turned brick-red	Reducing sugar was present
protein	2mls of sodium hydroxide was added, then copper(II) sulfate (Biuret test)	Solution z turned purple	Protein was present

(b)(i) Name two sources of food from which each of the food substances identified in 1(a) could have been extracted.
- Starch: rice, cassava
- Reducing sugar: honey, ripe bananas
- Protein: milk, beans

(ii) For each food substance identified in 1(a), give the name of the end product of digestion in human being.
- Starch: glucose
- Reducing sugar: glucose
- Protein: amino acids

(c) Why is it important to use iodine solution in this experiment?
To test for the presence of starch by producing a blue-black coloration when starch is present.

(d) Explain what happens in human body when the end products named in (b)(ii) are in excess.
- Excess glucose is converted to glycogen and stored in liver and muscles
- Further excess is converted to fat and stored in adipose tissues
- Excess amino acids are deaminated in the liver and the remaining part converted to urea and excreted

2. You have been provided with specimens R, S, T, and U.

(a) Study specimens R, S, T, and U carefully, then:

(i) Identify specimens R, S, T, and U using their common names.
- R: Maize cob

- S: Butterfly
- T: Moss
- U: Spider

(ii) Classify specimens S and U to Class level.

Specimen S:
- Kingdom: Animalia
- Phylum: Arthropoda
- Class: Insecta

Specimen U:
- Kingdom: Animalia
- Phylum: Arthropoda
- Class: Arachnida

(b) (i) State six advantages of specimen R.
- Used as food for humans
- Used as livestock feed
- Source of industrial products like starch and alcohol
- Source of vegetable oil (from maize germ)
- Used in making biodegradable plastics
- Provides income to farmers

(c) Observe the structures of specimen T.

(i) Name the Kingdom and Division in which the specimen T belongs.
- Kingdom: Plantae
- Division: Bryophyta

(ii) Explain five general characteristics of the Division in which specimen T belongs.
- Small in size and non-vascular
- Lack true roots, stems, and leaves
- Possess rhizoids for attachment
- Reproduce by spores
- Require water for fertilization