

**THE UNITED REPUBLIC OF TANZANIA
NATIONAL EXAMINATIONS COUNCIL OF TANZANIA
CERTIFICATE OF SECONDARY EDUCATION EXAMINATION**

033/2A

**BIOLOGY 2A
(ACTUAL PRACTICAL A)
(For Both School and Private Candidates)**

Time: 2:30 Hours

Tuesday, 12th November 2019 a.m.

Instructions

1. This paper consists of **two (2)** questions. Answer **all** the questions.
2. Each question carries **25** marks.
3. All writings should be in blue or black ink, except for diagrams which must be drawn in pencil.
4. Cellular phones 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 have been provided with four test tubes labeled **1**, **2**, **3** and **4**, a beaker, measuring cylinder, test tube rack, specimen **M** and the table reagents. Carry out experiments using procedures (i) - (viii), then answer the questions that follow.

Procedures

- (i) Take all 5 specimens **M** provided, peel them to remove the outer cover, and grind them using mortar and pestle to obtain a paste.
- (ii) Put the paste in a beaker, then add 30 ml of water and stir a mixture.
- (iii) Filter the mixture by using a sieve to obtain a clear solution of **M**.
- (iv) Put 2 ml of solution **M** into each of the test tubes **1**, **2**, **3** and **4**.
- (v) Add 2 drops of iodine solution into the test tube **1**.
- (vi) Add 2 ml of Benedict's solution into the test tube **2**, and then warm the contents.
- (vii) Add 2 ml of sodium hydroxide solution into the test tube **3**, followed by 3 drops of copper II sulphate solution.
- (viii) Add 2 ml of Sudan III solution into the test tube **4**. Shake the mixture and leave it on the test tube rack to settle.

Questions

- (a) What was the aim of the experiment?
 - (b) Based on the observations in the test tubes **1**, **2**, **3** and **4**, what are the types of food substances contained in the specimen **M**? Give reasons to justify your answer.
 - (c) Why warmth is important in procedure (vi) of the experiment?
 - (d) Outline two importance of food substances identified in specimen **M** to the body of human being.
 - (e) Why the skills used in this experiment useful for preparation of balanced diet in your daily life?
2. You have been provided with specimens **A**, **B**, **C** and **D**. Study them carefully, then answer the following questions:
- (a)
 - (i) Classify each of the specimens **A** and **B** to the Phylum level.
 - (ii) Why it is important to classify the specimens **A** and **B** to their respective Taxon? Give two reasons.
 - (b)
 - (i) Identify the habitat of specimen **B**.
 - (ii) Draw a diagram of specimen **B** and label the locomotive structures.
 - (iii) Why specimen **B** should be placed in the Class Osteichthyes?
 - (c) Give two observable features which distinguish specimens **C** and **D** at Class level.
 - (d) What are the advantages of members of the Class Insecta in the growth and development of industry? Give three points.