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

133/3A

BIOLOGY 3A
(ACTUAL PRACTICAL A)
(For Both School and Private Candidates)

Time: 3:20 Hours **Year: 2023**

Instructions

1. This paper consists of **three (3)** questions.
2. Answer **all** the questions.
3. Question one (1) carries **twenty (20)** marks and the other two (2), carry **fifteen (15)** marks each.
4. All writing must be in **blue** or **black** ink **except** diagrams which must be in pencil.
5. Cellular phones and any unauthorised materials are **not** allowed in the examination room.
6. Write your **Examination Number** on every page of your answer booklet(s).

1. You have been provided with specimen **B**. Dissect the specimen in a usual way to fully display the digestive system.

   (a) Draw a large diagram of your dissection and label ten parts.

   Leave your dissection properly displayed for assessment.

   (b) Explain five adaptations of the digestive system to its role in specimen **B**.

   (c) (i) Identify two structures of digestive system which are more developed in specimen **B** than in human being.

   (ii) What effects will specimen **B** face if the structures you mentioned at 1(c)(i) will fail to function normally?

2. You are provided with solution **Q**. Carry out the experiments in item (i) – (v), then answer the questions that follow:

   (i) Take three test tubes and label them as test tube **A**, **B** and **C**.

   (ii) Put 2 ml of the solution **Q** to each of the test tubes **A**, **B** and **C**.

   (iii) Add 2 ml of dilute hydrochloric acid to test tube **A** and warm the mixture. Then add 4 ml of Benedict's solution and observe the changes.

   (iv) Add 2 ml of dilute hydrochloric acid to test tube **B** and warm the mixture. Then add 3 ml of sodium hydroxide solution followed by 4 ml of Benedict's solution and observe the changes.

   (v) Warm the solution contained in test tube **C**, then add 2 ml of Benedict's solution and observe the changes.

   Questions

   (a) Present your observations in experiments (iii) – (v) as shown in Table 1.

   Table 1

Experiment	Observation
(iii)	
(iv)	
(v)	

   (b) Name the type of food substance contained in solution **Q**.

   (c) Why the experiments (iii) – (v) provided different results on Benedict's test? Give two reasons for each.

   (d) Briefly explain how the following factors affect enzyme activity in experiment (iv):
   (i) Temperature
   (ii) pH.

3. You have been provided with specimens **P_1**, **P_2**, **P_3**, **P_4** and **P_5**. Observe the specimens carefully then, answer the following questions:

(a) Why were specimens **P_1**, **P_2**, **P_3**, **P_4** and **P_5** formally placed in the same Phylum? Give two reasons.

(b) Use the following classification key to identify the specimens **P_1**, **P_2**, **P_3**, **P_4** and **P_5**:

1a	Wings present.....	2
1b	Wing absent.....	3
2a	Outer wings are soft.....	_____
2b	Outer wings are harder	_____
3a	Have numerous similar limb	_____
3b	Similar limbs absent	4
4a	The first appendage bear prehensile chelicerae	_____
4b	The first appendage serves as jaw.....	_____

(c) Identify the structures concerned with gaseous exchange in each of the specimens **P_1**, **P_2**, **P_3**, **P_4** and **P_5**.

(d) Outline two common adaptation features for the structures you named in 3(c).

(e) Draw a large, neat and well labeled diagram of specimen **P_1**.