THE UNITED REPUBLIC OF TANZANIA

NATIONAL EXAMINATIONS COUNCIL OF TANZANIA

ADVANCED CERTIFICATE OF SECONDARY EDUCATION

EXAMINATION

133/3B **BIOLOGY 3B**

(ACTUAL PRACTICAL B)

(For Both School and Private candidates)

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

Instructions

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

1. You are provided with the specimen **S_1**. Dissect it to display its digestive system and pin the ileum to their right hand side.

Questions

(a) Draw a large diagram of the specimen **S_1** and label nine parts,

(b) Explain the adaptations of a structure used for mechanical digestion in specimen **S_1**

(c) (i) State the enzymes found in the structure used for mechanical digestion.

(ii) Give the digestive role played by each of the enzymes named in (c)(i).

(d) State two locations in specimen **S_1** where absorption takes place in its body.

2. You are provided with a sample labeled **M,** boiled and unboiled potatoes, water trough, knife/scalpel, scooper and water. Perform the following procedure:

(i) Cut the cross section to obtain two equal halves for each Irish potato by using a knife/scalpel.

(ii) Label the 2 halves of the unboiled Irish potato as **A** and **B** respectively, and one half of the boiled potato as **C**.

(iii) Use a scooper to make the holes of about 2.5 cm deep from the cut surface for the three halves of Irish potatoes **A, B** and **C** while making sure that the wall of the holes must be thin (about 5 - 8 mm thick) to create a semi-permeable membrane and not damaged.

(iv) Put 3 g of sample **M** in each hole of **B** and **C** while keeping hole **A** empty.

(v) Place all the three Irish potatoes in a trough.

(vi) Put water in a trough until the Irish potatoes are half immersed. Carefully observe the experiment and note the set up and the level of water at the beginning.

(vii) Leave the experiment for 30 minutes thereafter observe the experiment again and note the changes.

Questions

(a) State the changes observed after 30 minutes of the experiment,

(b) Explain how the solute potential in hole **A, B** and **C** acted to bring about the observed results of the experiment,

(c) Explain the necessity of potato **A** for this experiment.

(d) Explain the six ways in which the investigated process is important in nature.

3. You are provided with specimens **S_2 , S_3** and **S_4**, study them carefully and answer the following questions:

(a) Name the phylum in which the specimen **S_3** and **S_4** belong,

(b) Classify the specimen **S_2, S_3** and **S_4** to class level,

(c) Identify features in both specimen **S_3** and **S_4** which justify their representation of their respective classes,

(d) State where specimen **S_3** is found naturally,

(e) Give ways in which specimen **S_2** is useful for economic development.

(f) Explain to how specimen **S_4** adapted to its environment.