THE UNITED REPUBLIC OF TANZANIA

NATIONAL EXAMINATIONS COUNCIL OF TANZANIA

ADVANCED CERTIFICATE OF SECONDARY EDUCATION

EXAMINATION

133/3C **BIOLOGY 3C**

(ACTUAL PRACTICAL C)

(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 specimen **T**, dissect it in a usual way to fully display the urinogenital system and pin the alimentary canal to the left hand side of the specimen.

Questions

(a) Draw a large neat diagram of a dissected specimen **T** and label eight parts,

(b) Identify the sex of the specimen **T** and give one external feature used for identification,

(c) (i) Name the type of nitrogenous waste excreted by specimen **T**

(ii) State the structure of the kidney responsible for excretion of nitrogenous waste in Specimen **T**

(iii) State specific part of the structure named in (c) (ii) where glucose and salt ions are reabsorbed and

(d) Explain the adaptations of specimen **T** to its environment.

2. You are provided with 2% hydrogen peroxide solution and fresh liver tissue. Carry out a guided experiment to investigate the reaction of hydrogen peroxide with substance **X** present in the liver tissue. Perform the following procedures:

(i) Label three test tubes 1, 2 and 3.

(ii) Cut the liver tissue to obtain three cubes of about 1 cm^3 .

(iii) Place one of the cube in test tube 1. Add 2ml of hydrogen peroxide solution. Observe the changes.

(iv) Take the second cube of the liver tissue and grind it. Place the ground liver in test tube 2. Add 2 ml of hydrogen peroxide in the test tube. Observe the changes.

(v) Take the third cube of the liver tissue and grind it. Place the ground liver in test tube 3. Boil it and allow it to cool. Add 2 ml of hydrogen peroxide solution, and then observe the changes

Questions

(a) Present their observations of test tubes 1, 2 and 3 in tabular form and give reasons for the observed changes,

(b) (i) Identify a cellular organelle where substance **X** can be found

(ii) Name the biochemical reaction catalyzed by substance **X** in the liver,

(c) State the purpose of grinding and boiling the liver and

(d) (i) write the balanced chemical equation for the reaction between substance **X** and hydrogen peroxide

(ii) state the biological significance of the reaction in living organisms.

3. You are provided with specimen $\mathbf{Z_4}$, $\mathbf{Z_5}$ and $\mathbf{Z_6}$. Observe them carefully and:

(a) (i) Explain why it is not advised to identify specimens $\mathbf{Z_4}$, $\mathbf{Z_5}$ and $\mathbf{Z_6}$ by their common names.

(ii) Identify the habitat of each of the specimen $\mathbf{Z_5}$ and $\mathbf{Z_6}$,

(b) Classify each of the specimen $\mathbf{Z_4}$, $\mathbf{Z_5}$ and $\mathbf{Z_6}$ to Class level,

(c) (i) Identify two observable differences between specimen $\mathbf{Z_5}$ and $\mathbf{Z_6}$ at Class level

(ii) State three observable features shared by specimen $\mathbf{Z_5}$ and $\mathbf{Z_6}$.

(d) Give three observable features of specimen $\mathbf{Z_6}$ at Class level.