

231/3(b)
Inst. Sc.

— **BIOLOGY** —
(PRACTICAL)
Apr. 2021

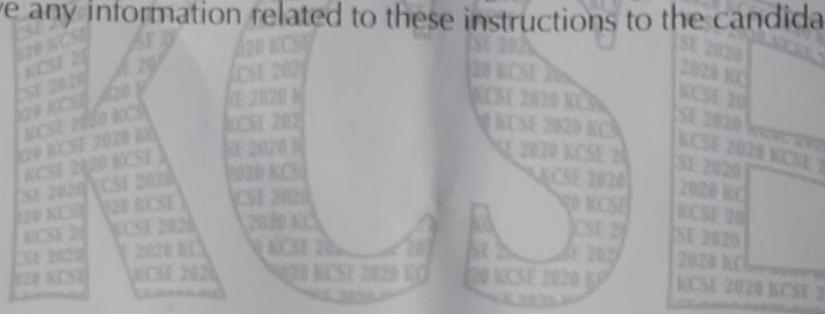
Paper 3



INSTRUCTIONS TO SCHOOLS

The information contained in this paper is to enable the head of the school and the teacher in charge of Biology to make adequate preparations for this year's Biology practical examination.

No one else should have access to this paper or acquire knowledge of its contents. Great care must be taken to ensure that the information herein does not reach the candidate either directly or indirectly. The teacher or laboratory technician in charge of Biology should not perform any of the experiments or give any information related to these instructions to the candidates.



This paper consists of 2 printed pages.



1. Besides other laboratory fittings and apparatus, every candidate would require the following:

(a) **Apparatus:**

- A scalpel;
- A white tile;
- Three test tubes;
- A 10 ml measuring cylinder;
- Means of labelling, three per candidate;
- A dropper;
- A hand lens;
- A white tile;
- A piece of tissue paper.

(b) **Specimens:**

- Three weeks' old bean seedling, labelled specimen **J**;
- Three weeks' old maize seedling, labelled specimen **M**;
- A medium-sized fish about, 12 cm long (tilapia/trout), labelled specimen **P** and supplied on a tile. Label the operculum, **Q**;
- A twig with cones and leaves (of any tree species), labelled specimen **G**;
- A block of irish potato, measuring 2 cm by 1 cm, specimen **N**;
- A mature fern leaf labelled specimen **L**.

(c) Each examination centre will be required to provide the following:

- Hydrogen peroxide (about 12 ml for every candidate);
- Hydrochloric acid (about 8 cm³ of concentrated acid for 4000 candidates).

(d) Preparation of solutions

1. **Solution E**

Is prepared using hydrochloric acid procured by the school. 8.6 cm³ of the concentrated acid is diluted with 1,000 cm³ of distilled water and supplied to the candidates as dilute hydrochloric acid. Supply each candidate with 4 cm³ of the solution.

2. **Solution F**

Hydrogen peroxide is procured by the school (20 volume) and supplied to candidates as hydrogen peroxide. Supply each candidate with about 12 m³ of the solution.

3. **Solution G**

Is prepared using substance **G** supplied. 4 g of substance **G** is dissolved in 1 litre of distilled water and supplied to candidates as sodium hydroxide. Supply each candidate with about 5 cm³ of the solution.

4. **Solution H**

Is prepared using substances **J** and **K** supplied. Dissolve 1 g of **J** and 0.5 g of **K** in 100 ml distilled water and supply to candidates as iodine solution. Supply each candidate with about 2 cm³ of the solution.

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