EXAMINATIONS COUNCIL OF ZAMBIA

Examination for School Certificate Ordinary Level

Biology

Paper 6 Alternative to Practical

5090/6

Wednesday

22 NOVEMBER 2017

Additional Materials:
Answer paper
Diagram Booklet

Print Version of Braille Paper

Time 1 Hour 15 Minutes

Instructions to Candidates

Write your name, centre number and candidate number on the answer paper.
There are three (3) questions in this paper.
Answer all questions.
Write your answers on the answer paper.

Information for Candidates
The number of marks is given in brackets [ ] at the end of each question or part question.
Cell phones are not allowed in the examination room.

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A learner carried out an experiment to show the action of salivary amylase at room temperature. The preparations were done as follows:

**Test tube A** = contained 3.0cm$^3$ of saliva with 1% starch solution.

**Test tube B** = contained 3.0cm$^3$ of boiled saliva with 1% starch solution.

**Test tube C** = contained 3.0cm$^3$ of distilled water with 1% starch solution.

After 30 minutes, the solutions were tested with iodine solution.

(a) What observations were seen in each of the test tubes?

Test tube A: ................................................................. [1]

Test tube B: ................................................................ [1]

Test tube C: ................................................................ [1]

(b) (i) With the results obtained in test tube A above, what is the conclusion?

.................................................................................... [1]

(ii) Give a reason for your answer in (b) (i) above.

.................................................................................... [3]

(c) (i) What was the purpose of test tube C?

.................................................................................... [1]

(ii) Give a reason for the results obtained in test tube B.

.................................................................................... [1]

(iii) State two other properties of an enzyme.

.................................................................................... [2]

[Total: 11 marks]
Two potted maize seedlings A and B were used in an experiment to investigate a plant response. Seedling A was put in a box with a small opening on one side while seedling B was placed in another box with a small opening on top. Both seedlings were left outside the room for five days.

(a) (i) Describe the direction of growth of each of the seedlings.

Seedling A: ................................................................. [1]

Seedling B: ................................................................. [1]

(ii) Name the stimulus in this experiment.

............................................................................................ [1]

(iii) State the type of response exhibited by the two seedlings.

............................................................................................ [1]

(iv) What is the significance of the response mentioned in (a) (iii) above to the plant?

............................................................................................ [2]

(v) Name a plant hormone responsible for the response observed in the seedlings.

............................................................................................ [1]

(b) How do roots respond to light?

............................................................................................ [1]

(c) Name three other responses which are exhibited by plants in their environment.

............................................................................................ [3]

(d) Write two differences between the type of response exhibited by maize plants and that exhibited by cockroaches to light.

............................................................................................ [2]

[Total: 13 marks]
A grade twelve learner was provided with a leaf with white and green patches which had been exposed to sunlight for eight hours. The learner tested the leaf for starch using the following steps:

Step 1: The leaf was first boiled in water for 2 minutes.

Step 2: The leaf was then boiled in ethanol using a water bath.

Step 3: The leaf was then submerged in warm water.

Step 4: The leaf was spread on a white tile.

Step 5: The leaf was flooded with iodine solution on the white tile.

(a) (i) State the reason why the leaf was boiled in water.

........................................................................................................................................ [1]

(ii) Why was the leaf boiled in ethanol?

........................................................................................................................................ [1]

(iii) Give a reason why the leaf in ethanol was heated using a water bath.

........................................................................................................................................ [1]

(iv) State the colour and the texture of the leaf after boiling it in ethanol.

Colour: ........................................................................................................... [1]

Texture: ............................................................................................................. [1]

(v) Give a reason for placing the leaf in warm water in step 3.

........................................................................................................................................ [1]

(vi) Why was the leaf spread on a white tile in step 4?

........................................................................................................................................ [1]

(vii) After flooding the leaf with iodine solution, what colour changes were observed in the white patches and green patches?

White patch: ........................................................................................................... [1]

Green patch: ........................................................................................................... [1]
(b) What term is used to describe a leaf with green and white patches? ................................................................. [1]

(c) Name the raw materials necessary for photosynthesis to take place. .................................................................................................................................................................................................................................................. [2]

(d) What is the importance of photosynthesis to human beings? ........................................................................................................... .................................................................................................................................................................................. [2]

(e) Name two organs in which the plants store the end products of photosynthesis. .................................................................................................................................................................................................................................................. [2]

[Total: 16 marks]
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