

EXAMINATIONS COUNCIL OF ZAMBIA

Examination for School Certificate Ordinary Level

Biology

5090/6

Paper 6 Alternative to Practical

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 provided.

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.

- 1 A potted plant was destarched by leaving it in the dark cupboard for three days. After which a leaf was detached and dipped in boiling water for one minute.
- (a) (i) Why was the leaf dipped in boiling water? [2]
 - (ii) The leaf was then dipped in boiling alcohol in a beaker using a water bath for three minutes. State what happened to the leaf after three minutes. [1]
 - (iii) State the texture of the leaf after putting it in boiling alcohol for a minute. [1]
 - (iv) The leaf was spread on a white tile and three drops of iodine solution were added to the leaf. The experiment was left to stand for a few minutes. State what happened to the leaf. [1]
- (b) Name the chemical that was used to test for the nutrient present. [1]
- (c) Why was the nutrient absent in the leaf? [2]
- (d) Why was the water bath used to boil the leaf in alcohol? [1]
- (e) State **three** external adaptive features of the leaf that enable it to photosynthesize. [3]

[Total: 12 marks]

- 2 In a given ecosystem, students on a field trip observed the following living and non-living things: rats, snakes, birds, trees, grass, stream, rocks and fish.
- (a) From the list above, identify **two**:
- (i) biotic factors. [2]
 - (ii) abiotic factors. [2]
- (b) Construct a food chain consisting of three trophic levels from the list above. [3]
- (c) State the habitat of the fish in the given ecosystem. [1]
- (d) What would be the effect in your constructed food chain above if the primary consumers were removed? [2]
- (e) What is the ultimate source of energy in the ecosystem? [1]
- (f) What term is used to describe the role of an organism in the ecosystem? [1]
- (g) State the adverse effects of cutting down trees in the ecosystem. [3]

[Total: 15 marks]

- 3 A man who is heterozygous for blood group **B** married a woman whose blood group is **AB**.
- (a) State the possible blood group genotypes of
- (i) the man.
 - (ii) the woman. [2]
- (b) Which blood group is called a
- (i) universal donor?
Give a reason. [2]
 - (ii) universal recipient?
Give a reason. [2]
- (c) The sex of an individual is determined at fertilization. Outline all the steps in the determination of the sex of a human being using genetic symbols. [7]

[Total: 13 marks]