



TEST CODE **01207020**

FORM TP 2010040

MAY/JUNE 2010

CARIBBEAN EXAMINATIONS COUNCIL

**SECONDARY EDUCATION CERTIFICATE
EXAMINATION**

BIOLOGY

Paper 02 – General Proficiency

2½ hours

REFERENCE

READ THE FOLLOWING DIRECTIONS CAREFULLY.

- 1. This paper consists of SIX questions in two sections. Answer ALL questions.**
- 2. For Section A, write your answers in the spaces provided in this booklet.**
- 3. For Section B, write your answers in the spaces provided at the end of each question, in this booklet.**
- 4. Where appropriate, answers should be illustrated by diagrams.**

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01207020/F 2010

Answer ALL questions.

Do NOT spend more than 30 minutes on Question 1.

1. In an experiment on the plant species illustrated in Figure 1, the part identified as X was tested in several plants after they had grown in three different light intensities.

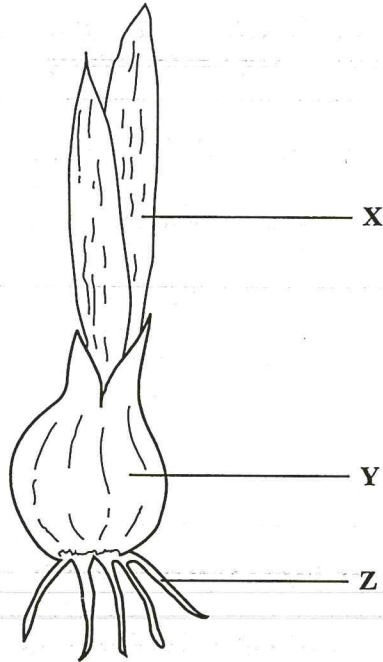


Figure 1. A plant species

- (a) Sets of three plants for each light intensity were tested for the following: starch, reducing sugar, protein, oil.
- (i) In the space provided below construct a table to show how the data from the experiment might be collected.

(5 marks)

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(ii) Explain why a sample of three plants was used for each test.

(2 marks)

(b) In the space provided below, draw a labelled diagram of the apparatus that can be used in an experiment to illustrate that Part Z will take in water for use by Part Y (in Figure 1 on page 2).

(4 marks)

(c) One function of the plant part shown at Y is storage. Identify ONE organ in the human body that serves the same function.

(1 mark)

- (d) Humans also carry out other functions similar to that shown by the plant species represented at Figure 1, for example, respiration. In investigating respiration in a human being and a plant, explain how you would demonstrate that the process carried out by both organisms is the same.

(3 marks)

- (e) Figure 2 represents the flower of the plant species shown in Figure 1.

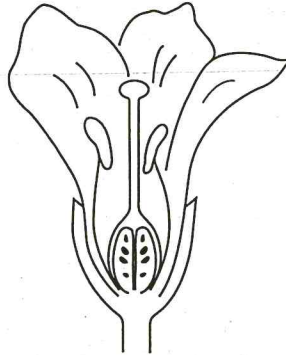


Figure 2. Longitudinal section through the flower of the plant species

- (i) On the diagram in Figure 2, label the following parts using the symbols indicated:

- **P** for the place where pollen is produced
 - **O** for the place that houses the ovum
 - **S** where pollen is deposited
- (3 marks)

- (ii) Suggest how this flower might be pollinated. Explain your answer.

(3 marks)

- (f) Some plant storage organs give rise to offspring. Suggest TWO advantages to the plant of having a storage organ that gives rise to both offspring and flowers.

(4 marks)

Total 25 marks

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2. In an experiment on germinating seedlings, a group of Biology students made the drawings shown in Figure 3 to illustrate the changes over a five-day period.

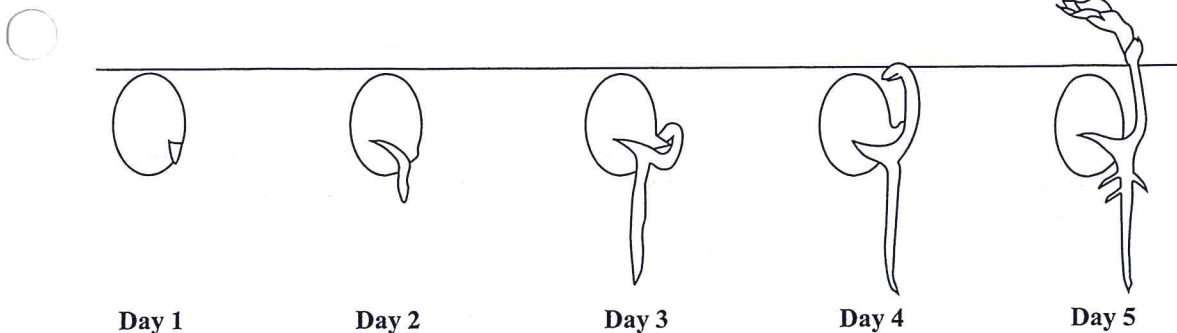


Figure 3. Stages in a germinating seedling

- (a) Label on the drawing in Figure 3, THREE parts of the seedling shown on Day 5. **(3 marks)**

- (b) Outline the changes that took place in the seed to allow the development shown in Figure 3.

(3 marks)

- (c) (i) The development shown by the seedling is a type of 'movement'. What is the name given to this type of movement?

(1 mark)

- (ii) State TWO ways in which the movement shown by the seedling differs from that of an earthworm moving through its burrow.

(4 marks)

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- (d) (i) Identify TWO physical factors that can cause an earthworm to move deeper into its burrow.

(2 marks)

- (ii) Explain why moving deeper into its burrow is important to the earthworm.

(2 marks)

Total 15 marks

3. Figure 4 shows a terrestrial food web.

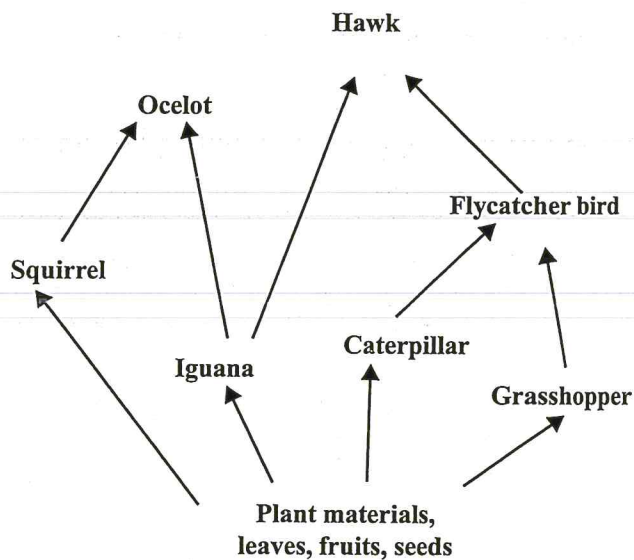


Figure 4. Terrestrial food web

- (a) Identify, from the food web shown in Figure 4, a food chain with FOUR trophic levels. Draw the food chain in the space provided below.

(5 marks)

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- (b) (i) Identify, from the food web in Figure 4, ONE predator and ONE organism which is likely to be its prey.

(2 marks)

- (ii) Identify TWO characteristics that will differentiate the predator population from that of the prey.

(4 marks)

- (c) (i) Apart from predator/prey, identify ONE other relationship that may exist in a food web, and provide an example.

(2 marks)

- (ii) Give ONE advantage of having special relationships among organisms in a food web.

(2 marks)

Total 15 marks

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SECTION B

Answer ALL questions.

Write your answers in the spaces provided at the end of each question.

4. (a) (i) Identify, with the aid of diagrams, the main stages in the life history of a **named** insect vector of disease.
- (ii) Explain how EACH stage in the life history of the insect you identified at (a)(i) might be controlled to keep the vector population in check. **(9 marks)**
- (b) (i) Some sexually transmitted infections are caused by viruses and have been found to be without cure. Explain why viral infections are usually very difficult, if not impossible, to cure.
- (ii) Apart from the nature of the AIDS virus, what OTHER factors make the control of this disease very difficult? **(6 marks)**

Total 15 marks

Space for diagrams





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6. (a) (i) With the aid of a diagram, explain how the hind limb in humans allows for movement from one place to another.
- (ii) Give THREE advantages to humans of their ability to move from one place to another. **(9 marks)**
- (b) Flowering plants are usually anchored to one spot but both their gametes and seeds need to be distributed or dispersed from one place to another.
- (i) Identify TWO means by which seeds are dispersed.
- (ii) Explain how any TWO characteristics of a seed may be adapted for dispersal. **(6 marks)**

Total 15 marks

Space for diagram



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