Cambridge Assessment International Education

Cambridge IGCSE™

CANDIDATE NAME									
CENTRE NUMBER						CANDIDATE NUMBER				

BIOLOGY **0610/52**

Paper 5 Practical Test **May/June 2023**

1 hour 15 minutes

You must answer on the question paper.

You will need: The materials and apparatus listed in the confidential instructions

INSTRUCTIONS

- Answer **all** questions.
- Use a black or dark blue pen. You may use an HB pencil for any diagrams or graphs.
- Write your name, centre number and candidate number in the boxes at the top of the page.
- Write your answer to each question in the space provided.
- Do **not** use an erasable pen or correction fluid.
- Do **not** write on any bar codes.
- You may use a calculator.
- You should show all your working and use appropriate units.

INFORMATION

- The total mark for this paper is 40.
- The number of marks for each question or part question is shown in brackets [ ].

For Examiner's Use	
1	
2	
Total	

This document has **12** pages. Any blank pages are indicated.

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1 Some animals live in cold places. They sometimes huddle together as shown in Fig. 1.1.



Fig. 1.1

You are going to investigate the effect of huddling on heat loss from model animals.

Test-tubes filled with hot water will represent the animals.

Read all the instructions but DO NOT DO THEM until you have drawn a table for your results in the space provided in 1(a)(i).

You should use the safety equipment provided while you are doing the practical work.

Raise your hand when you are ready for hot water to be poured into the beaker that is wrapped in foil.

Step 1 Half-fill one test-tube with hot water and place it in the empty beaker.

Step 2 Put the thermometer into the test-tube containing hot water.

Step 3 Measure the temperature of the hot water in the test-tube. Record this temperature in your table in **1(a)(i)**.

Step 4 Leave the thermometer in the test-tube and start the stop-clock.

Step 5 After one minute, measure the temperature of the hot water in the test-tube. Record the temperature in your table in **1(a)(i)**.

Step 6 Measure and record the temperature of the hot water in the test-tube every minute for a total of five minutes.

Step 7 Remove the thermometer from the test-tube and carefully empty the water from the test-tube into the beaker labelled **waste**.

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Step 8 Place three test-tubes together and keep them together with the elastic band, as shown in Fig. 1.2.

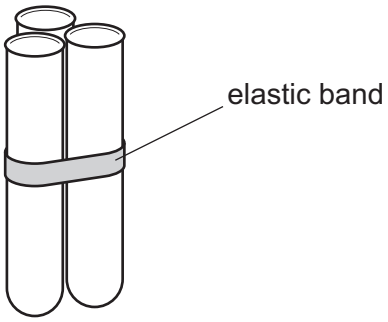

Fig. 1.2

Step 9 Place the group of three test-tubes into the empty beaker. Half-fill all three test-tubes with hot water.

Step 10 Place the thermometer into any one of the three test-tubes.

Step 11 Repeat step 3 to step 7 with this group of three test-tubes.

Step 12 Remove the elastic band from the group of three test-tubes. Make a group of seven test-tubes and keep them together with the elastic band, as shown in Fig. 1.3.

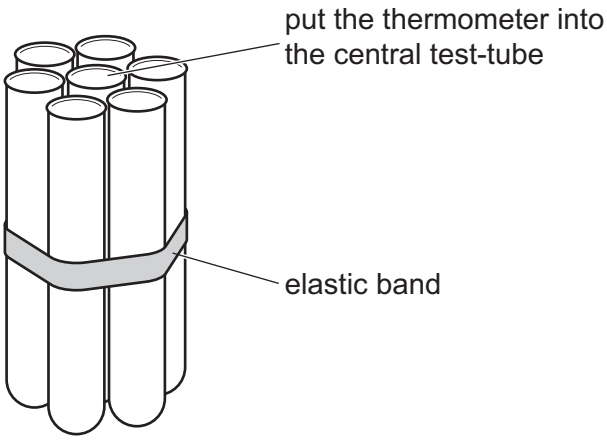

Fig. 1.3

Step 13 Place the group of seven test-tubes into the empty beaker. Half-fill all seven test-tubes with hot water.

Step 14 Place the thermometer into the central test-tube.

Step 15 Repeat step 3 to step 7 with this group of seven test-tubes.

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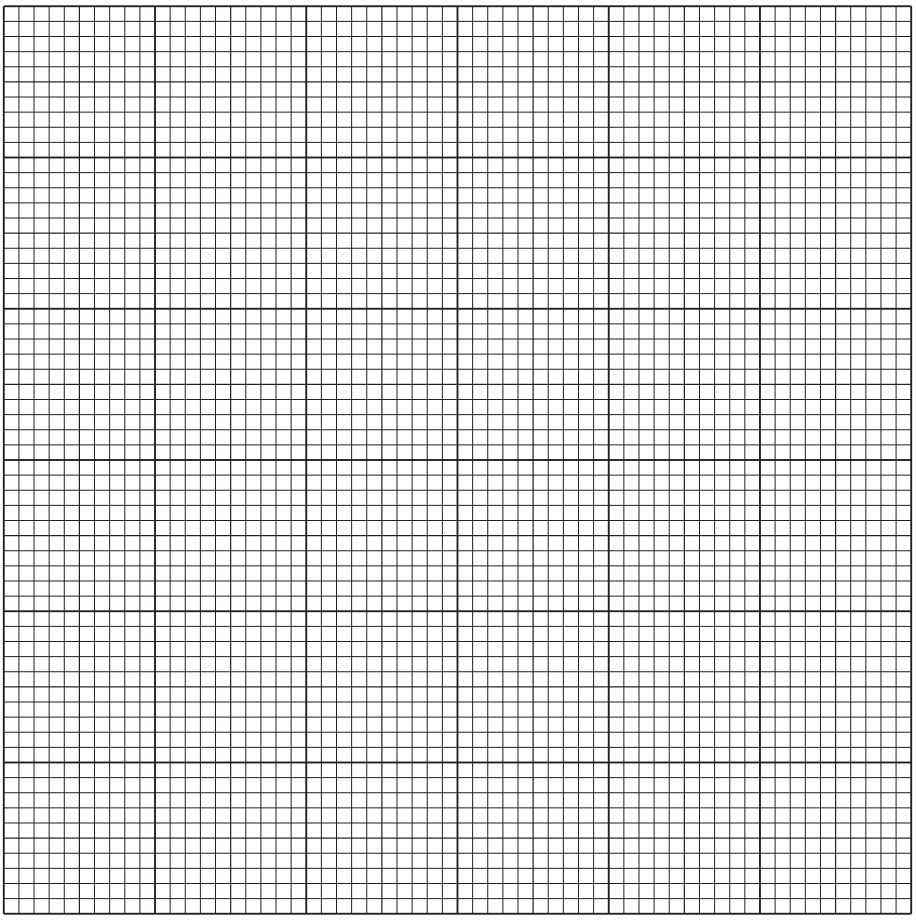
(a) (i) Prepare a table to record the results of this investigation.

View solution

[4]

(ii) Plot a line graph on the grid of temperature against time. Include all three sets of data from your table in **1(a)(i)** and a key.

View solution



[5]

(iii) State **two** conclusions for this investigation.

View solution

1 .....

.....

.....

2 .....

.....

..... [2]

(iv) State **two** variables that were kept constant during this investigation.

View solution

1 .....

2 ..... [2]

(v) Suggest **two** possible sources of error in this investigation.

View solution

1 .....

.....

2 .....

..... [2]

(vi) Suggest **one** improvement to the method that you used in this investigation.

View solution

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.....

..... [1]

(vii) Identify **one** hazard for this investigation.

View solution

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..... [1]

(b) In mammals, respiration releases heat energy to maintain an optimum temperature for enzyme activity in the body.


View solution

Amylase is an enzyme that catalyses the breakdown of starch into reducing sugars.

Plan an investigation to identify the temperature at which the enzyme amylase is most active.

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..... [6]

[Total: 23]

2 **(a)** Some plants lose their leaves in the winter and grow new leaves in the spring.

A scientist measured the total leaf area of the leaves on one grapevine plant. They repeated this on 100 grapevine plants and found the mean total leaf area per plant.

This procedure was done every two months for one year. The results are shown in Fig. 2.1.

View solution

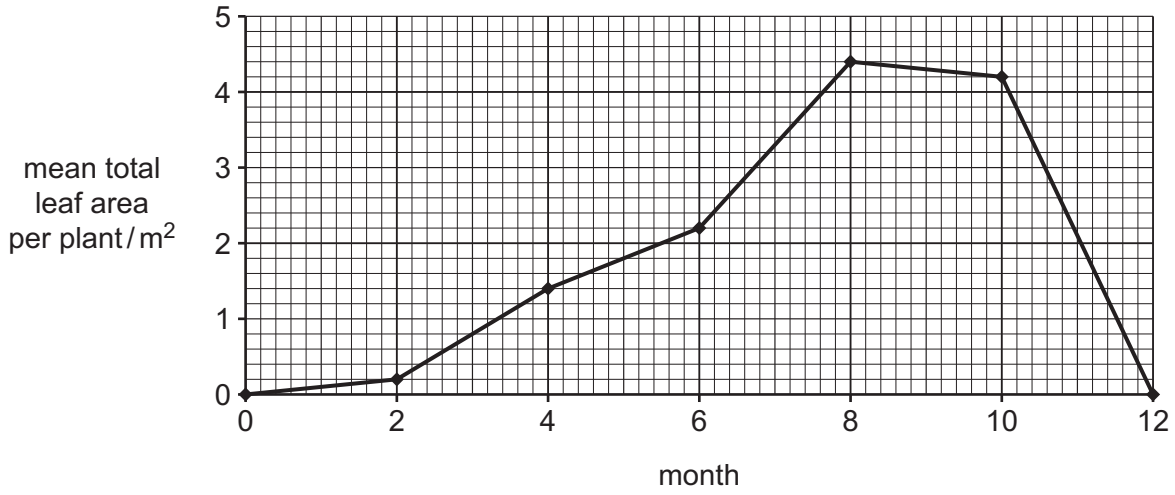

Fig. 2.1

(i) Suggest why a large number of plants were sampled.

.....

.....

..... [1]

(ii) Estimate the mean total leaf area per plant for month 7.

View solution

Show on Fig. 2.1 how you estimated this value.

..... m^2
[2]

(iii) Using the information in Fig. 2.1, calculate the percentage increase in the mean total leaf area per plant from month 4 to month 6.

View solution

Give your answer to **two** significant figures.

Space for working.

..... %
[3]

(b) Fig. 2.2 shows a leaf from a grapevine plant.

View solution

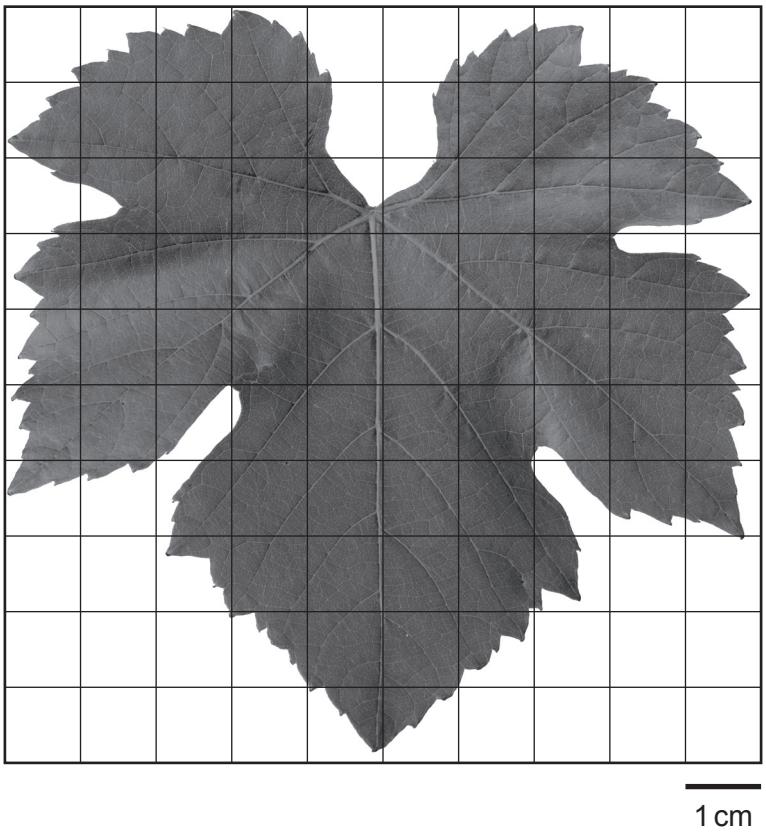

Fig. 2.2

Use the grid to determine the area of the grapevine leaf shown in Fig. 2.2 by counting the squares containing the leaf.

Only count squares that are more than half-filled by the leaf.

Include the unit.

..... [2]

(c) Grapevines produce fruits called grapes. A large leaf area is important when growing grapes because the leaves supply reducing sugars to the grapes.

View solution

Describe the method for testing for reducing sugars. Include the result for a positive test.

method .....

.....

.....

positive test .....

[3]

(d) Fig. 2.3 is a photograph of a leaf from a fig plant.

View solution



Fig. 2.3

Make a large drawing of the leaf shown in Fig. 2.3.

[4]

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(e) State **one** similarity and **one** difference between the grapevine leaf in Fig. 2.2 and the fig leaf in Fig. 2.3.

similarity .....

.....

difference .....

.....

[2]

[Total: 17]

View solution

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