



UNIVERSITY OF CAMBRIDGE INTERNATIONAL EXAMINATIONS
International General Certificate of Secondary Education

CANDIDATE
NAME

CENTRE
NUMBER

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CANDIDATE
NUMBER

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BIOLOGY

0610/63

Paper 6 Alternative to Practical

May/June 2011

1 hour

Candidates answer on the Question Paper

Additional Materials: ruler



READ THESE INSTRUCTIONS FIRST

Write your Centre number, candidate number and name on all the work you hand in.

Write in dark blue or black pen.

You may use a pencil for any diagrams or graphs.

Do not use staples, paper clips, highlighters, glue or correction fluid.

DO NOT WRITE IN ANY BARCODES.

Answer **all** questions.

At the end of the examination, fasten all your work securely together.

The number of marks is given in brackets [] at the end of each question or part question.

For Examiner's Use	
1	
2	
3	
Total	

This document consists of **9** printed pages and **3** blank pages.



1 Some students carried out tests for vitamin C.

They were provided with three vitamin C solutions, **S1**, **S2** and **S3**.

S1 had a concentration of 0.2% vitamin C.

S2 had a concentration of 0.05% vitamin C.

The concentration of **S3** was not known.

- The students measured 1 cm³ of starch solution into a test-tube.
- They added 1 cm³ of solution **S1**.
- The students added iodine solution, counting drop by drop, until a blue colour appeared. This was the end-point for solution **S1**.
- They repeated the test on solutions **S2** and **S3**.

These are the results that the students recorded.

A handwritten note on a piece of paper showing the results of the iodine test for three solutions. The results are recorded using tally marks. An arrow points to the end of the S2 row, and the word 'drops' is written next to it.

S1					
S2					
S3					

(a) Record the students' observations in a suitable table using the space below.

[4]

(b) Use these results to suggest the approximate vitamin C concentration of **S3**.

Give reasons for your answer.

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

(c) Suggest **four** ways in which you could improve this method to find the concentration of an unknown vitamin C solution.

1.
.....
2.
.....
3.
.....
4.
..... [4]

For
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Use

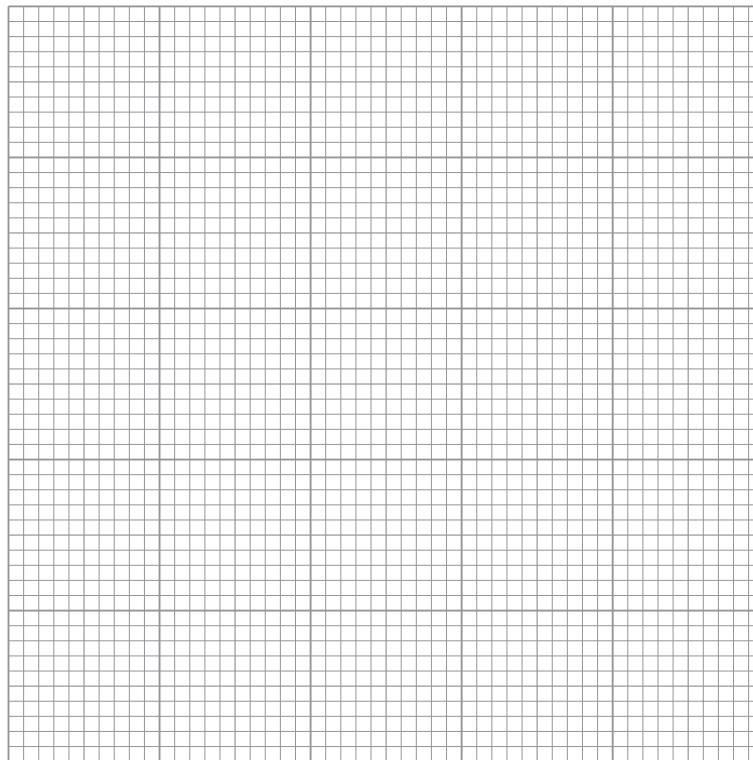
- (d) Fig. 1.1 shows the results of a similar investigation into the concentration of vitamin C in five fruit juices. The students counted the number of drops of iodine solution used to reach the end-point for each fruit juice.

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Blackcurrant 48	Pineapple 5
Orange 16	Lemon 12
Strawberry 22	

Fig. 1.1

- (i) On the grid below plot the data from Fig. 1.1 to show the variation in the number of drops of iodine solution required to reach the end-point.



[5]

- (ii) State which fruit juice has the highest concentration of vitamin C.

..... [1]

[Total: 17]

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Question 2 begins on Page 6

2 Fig. 2.1 shows a photograph of the larva of an insect.

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Fig. 2.1

(a) (i) In the space below make a large drawing of the larva shown in Fig. 2.1.

Labels are **not** needed.

[5]

(ii) Measure the length of the larva in Fig. 2.1 and in your drawing.

length of larva in Fig. 2.1

length of larva in your drawing [2]

(iii) Calculate the magnification of your drawing compared with the larva in Fig. 2.1.

Show your working.

magnification [2]

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(b) The larva eats through leaf tissue making tunnels in which it lives.

Fig 2.2 shows part of a leaf that has been damaged by these tunnels.

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Use

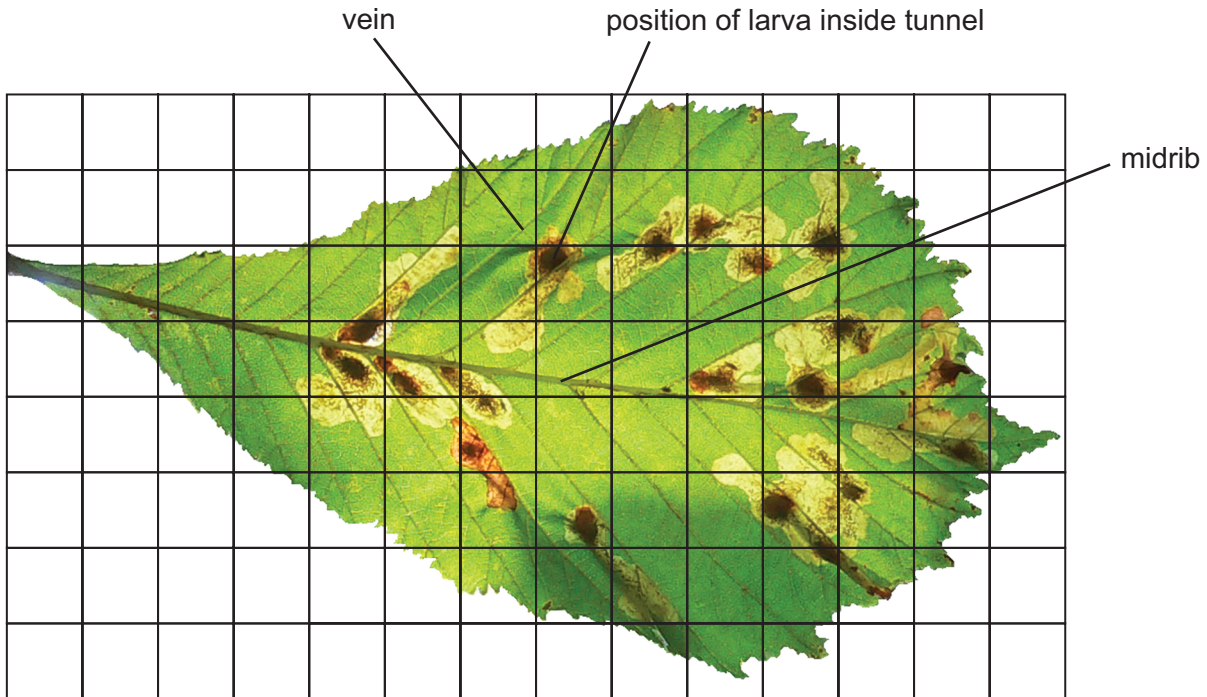


Fig. 2.2

(i) Calculate the percentage of the leaf area which has been damaged by the tunnels.

Show your working.

answer% [3]

(ii) Suggest and explain why the tunnels do not extend across the leaf midrib.

.....

.....

.....

..... [2]

(iii) Suggest two reasons why the leaf in Fig. 2.2 may die and fall off.

1.
.....
 2.
.....
- [2]

(c) The larva in Fig. 2.1 becomes a moth.

Fig. 2.3 and Fig. 2.4 show the moth.



Fig. 2.3

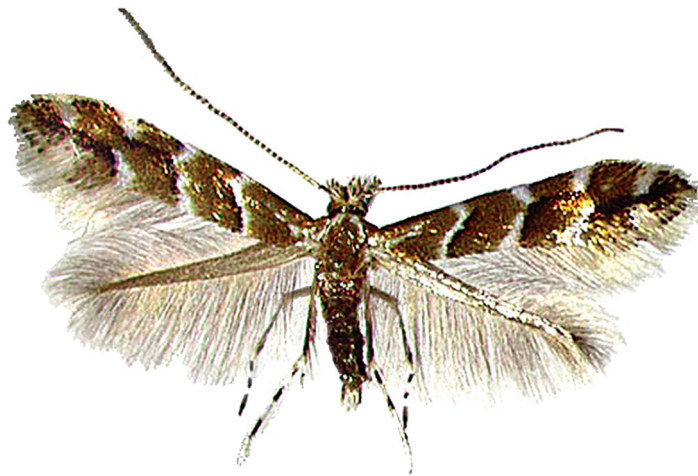


Fig. 2.4

Look at Fig. 2.3 and Fig. 2.4.

(i) State **one** visible feature of this moth which is used to classify it as an arthropod.

..... [1]

(ii) State three visible features of this moth which are used to classify it as an insect.

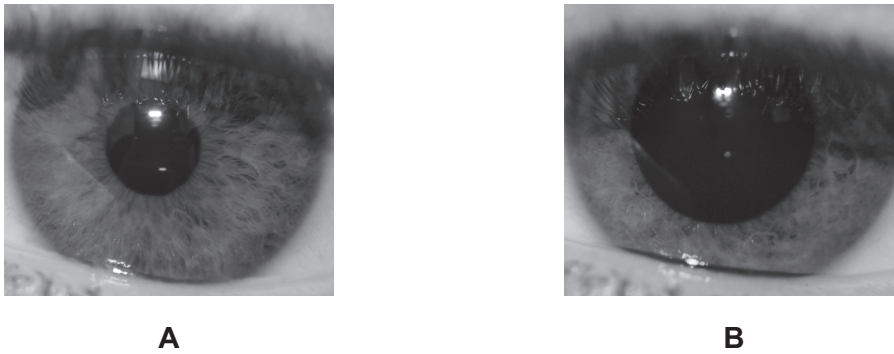
1.
2.
3. [3]

[Total: 20]

3 Fig. 3.1 shows two photographs of a person's eye.

In photograph **A** the person was looking out of a window.

In photograph **B** the person had turned away from the window.



(a) Describe what happened to the diameter of the pupil in photograph **B**.

..... [1]

(b) Explain your observation.

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

[Total: 3]

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