Cambridge
O Level

Cambridge International Examinations
Cambridge Ordinary Level

CANDIDATE NAME									
CENTRE NUMBER						CANDIDATE NUMBER			

5973083179

BIOLOGY **5090/62**

Paper 6 Alternative to Practical **May/June 2014**

1 hour

Candidates answer on the Question Paper.

No Additional Materials are required.

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 an HB pencil for any diagrams or graphs.
Do not use staples, paper clips, glue or correction fluid.
DO **NOT** WRITE IN ANY BARCODES.

Answer **all** questions.
Electronic calculators may be used.
You may lose marks if you do not show your working or if you do not use appropriate units.

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.

This document consists of **8** printed pages.

© UCLES 2014

CAMBRIDGE
International Examinations

1 Fresh food is often cooked before it is eaten.

Fig. 1.1 shows a fresh living green plant cell before cooking, as seen under a microscope.

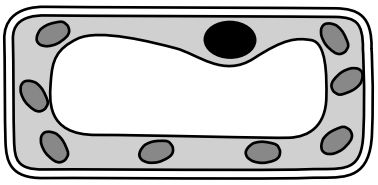


Fig. 1.1

(a) (i) On Fig. 1.1, label the cell membrane and a chloroplast. [2]

Some green cabbage leaves were cut into small pieces and placed in **clean** water and then boiled for 10 minutes. After that time the water was green.

(ii) Suggest how the membranes may have been changed by boiling to cause the water to become green.

.....

.....

.....

.....

.....

.....[2]

(b) An investigation was carried out to discover what happens to the vitamin C in cabbage leaves during cooking.

100 g of fresh cabbage leaves were cut up, placed into boiling water and left to continue boiling for 10 minutes.

Samples of cabbage leaves and of the water they were boiled in were taken at intervals, cooled, and the vitamin C content was measured.
There is no vitamin C in clean water.

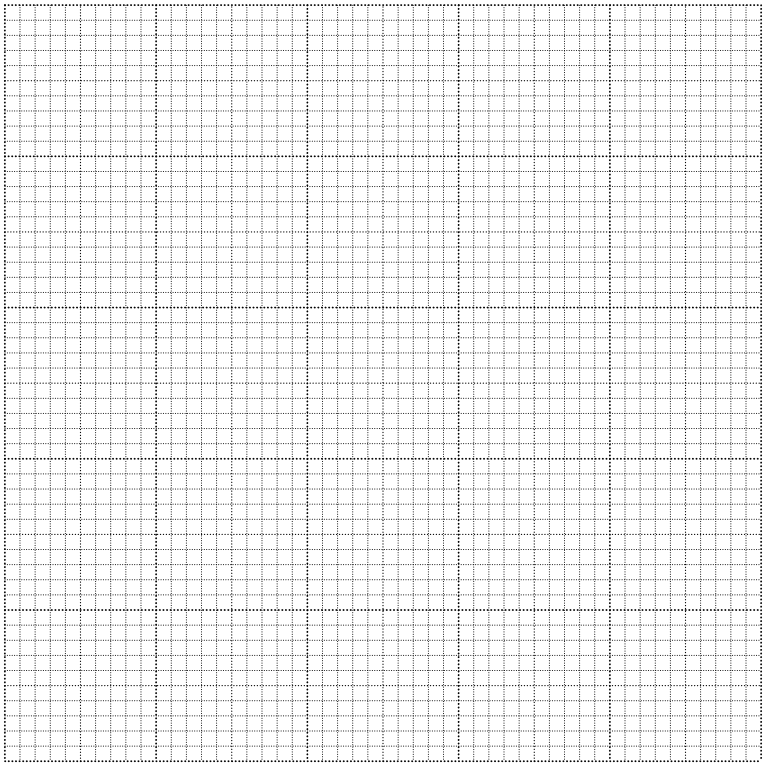
These measurements are shown in Table 1.1.

Table 1.1

boiling time / min	vitamin C / mg per 100 g	
	cabbage	water
0.0	50.0	0.0
1.0	33.0	17.0
2.0	27.0	23.0
4.0	24.0	26.0
8.0	20.0	22.0
10.0	17.0	20.0

© UCLES 2014

(i) Construct a graph of the data in Table 1.1.
Use the same axes for both sets of data.



[5]

(ii) After boiling for 10 minutes only about one third of the vitamin C remained in the cabbage leaves.

Use your graph to find the time at which the vitamin C content in cabbage had fallen to half.
Show your working.

answer ..... [2]

(iii) Describe the changes in vitamin C content of the cabbage and the water during the 10 minutes.

in cabbage .....

.....

.....

in water .....

.....

.....
[4]

(c) To extend this investigation, some students wanted to compare what happens to the vitamin C in a sample of fresh cabbage leaves when they were cooked in oil, safely, instead of water.

Describe **four** factors that would need to be kept the same to make a fair comparison.

.....

.....

.....

.....

.....

.....

.....

.....[4]

(d) Suggest **two** ways of improving the method used in these investigations.

.....

.....

.....

.....[2]

[Total: 21]

© UCLES 2014

Turn over for Question 2

2 Fig. 2.1 shows two rose hips, fruit of the rose.



×2

Fig. 2.1

(a) (i) Make a large drawing of the rose hip shown in the box in Fig. 2.1. Label a sepal on your drawing.

[5]

© UCLES 2014

(ii) Measure the widest part of the rose hip, between **X** and **X** on Fig. 2.1, and record it below.

.....

Measure the widest part of the rose hip on your drawing and record it below.

.....

Calculate the magnification of your drawing compared to the actual size of the rose hip.

Show your working.

magnification × .....[5]

(iii) Describe how you could practically demonstrate that a rose hip is a fruit.

.....

.....[1]

Fig. 2.2 shows fruits from another plant.

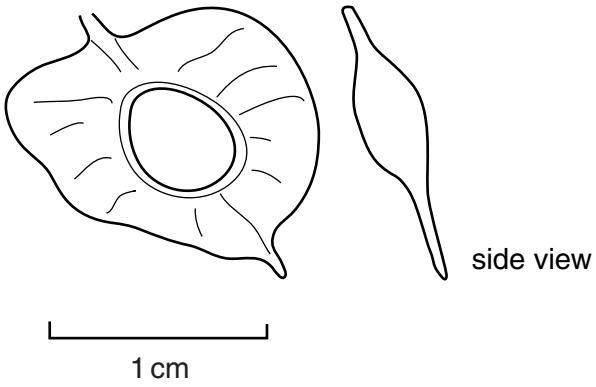


Fig. 2.2

(b) List the physical adaptations that can be seen in Fig. 2.2 that help dispersal of this fruit.

1 .....

2 .....
[2]

(c) (i) Explain why it is important that fruits are dispersed away from the plant that produced them.

.....

.....

.....

.....[2]

(ii) You are provided with a packet of seeds, two Petri dishes, two filter papers and water.

Describe how you might use these to investigate the effect of overcrowding on the growth of seedlings.

.....

.....

.....

.....

.....

.....

.....

.....[4]

[Total: 19]

Copyright Acknowledgements:

Fig. 2.1 ANN PICKFORD/SCIENCE PHOTO LIBRARY.

Permission to reproduce items where third-party owned material protected by copyright is included has been sought and cleared where possible. Every reasonable effort has been made by the publisher (UCLES) to trace copyright holders, but if any items requiring clearance have unwittingly been included, the publisher will be pleased to make amends at the earliest possible opportunity.

Cambridge International Examinations is part of the Cambridge Assessment Group. Cambridge Assessment is the brand name of University of Cambridge Local Examinations Syndicate (UCLES), which is itself a department of the University of Cambridge.