Cambridge
O Level

Cambridge International Examinations
Cambridge Ordinary Level

CANDIDATE NAME

CENTRE NUMBER

CANDIDATE NUMBER

BIOLOGY **5090/62**

Paper 6 Alternative to Practical **October/November 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.
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.

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

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

CAMBRIDGE International Examinations

1 Some students carried out an investigation to find the effect of the shape of an animal's body on heat loss from the body. Heat loss was measured as a decrease in temperature in °C.

They used two plastic containers, **A** and **B**, to represent two differently shaped bodies of an equal volume.

The containers used are shown in Fig. 1.1.

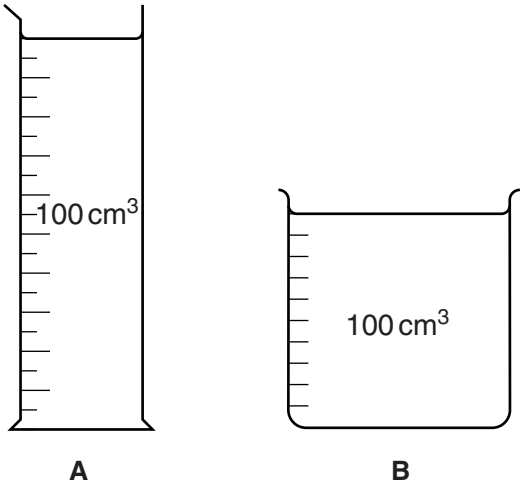


Fig. 1.1

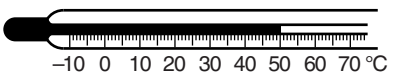
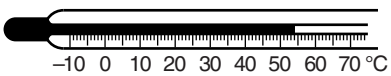
The two containers, **A** and **B**, were each filled with 100 cm^3 of hot water. A thermometer was used to measure the temperature of the hot water in each container immediately. These temperatures were recorded at 0 minutes.

Temperatures were then recorded for each container every two minutes, for a total of eight minutes.

Table 1.1 is an incomplete results table from this investigation.

(a) Complete Table 1.1.

Table 1.1

.....	**temperature / °C**	
	A	.....
0	65	65
2	55	58
4		 .....
.....	46	50
.....	40	47

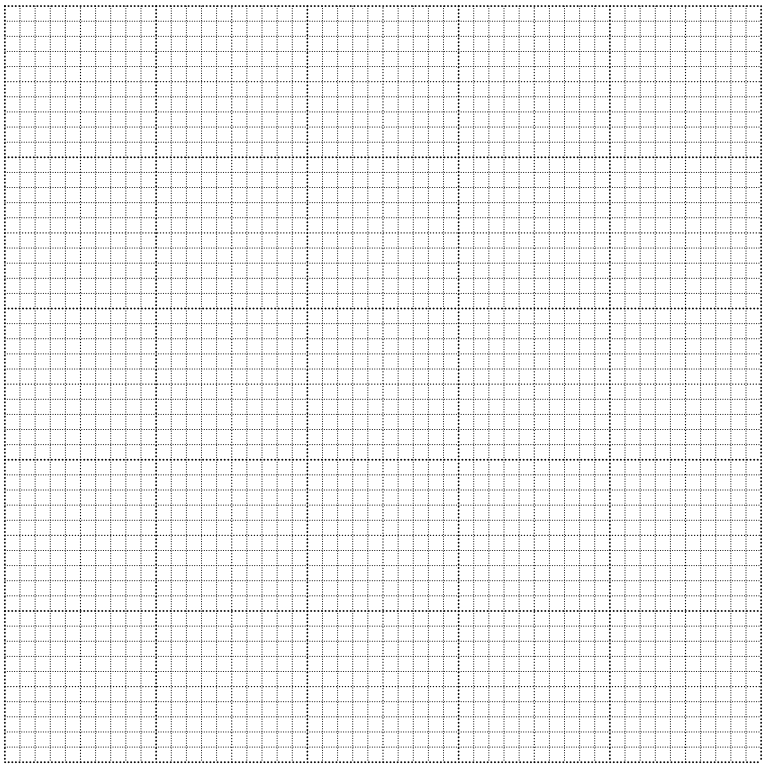
[5]

(b) Calculate and record the overall decrease in temperature of the water for each container and record these two values below.

Show your working.

A ..... °C **B** ..... °C [2]

(c) **(i)** Construct a graph to show the decrease in temperature of the water with time, in containers **A** and **B**, using the results in Table 1.1. Use the same axes for both sets of data.



[5]

(ii) Describe these results.

.....

.....

.....

.....[2]

(iii) The shape of a container **does** affect the heat loss from the container.

Suggest an explanation for this.

.....

.....

.....

.....[2]

(d) State three factors that were kept constant in this investigation.

1 .....

2 .....

3 .....[3]

(e) Suggest and explain two possible improvements to the method used in this investigation.

improvement 1 .....

.....

explanation .....

.....

.....

improvement 2 .....

.....

explanation .....

.....

.....[4]

[Total: 23]

2 Fig. 2.1 shows the lower surface of a leaf. On the printed grid, each square measures 1 cm^2.

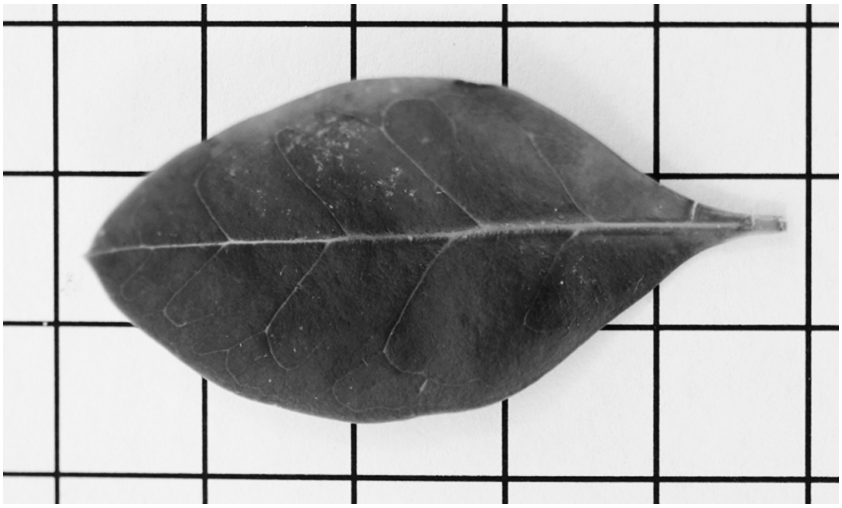


Fig. 2.1

(a) (i) Explain how you will calculate the area of the surface of this leaf.

.....

.....[1]

(ii) Calculate the area of the surface of this leaf.

Show your working.

..... cm^2 [2]

(b) Make a large, labelled drawing of the leaf in Fig. 2.1.

[4]

Fig. 2.2 shows a section through a similar leaf as seen under a microscope.

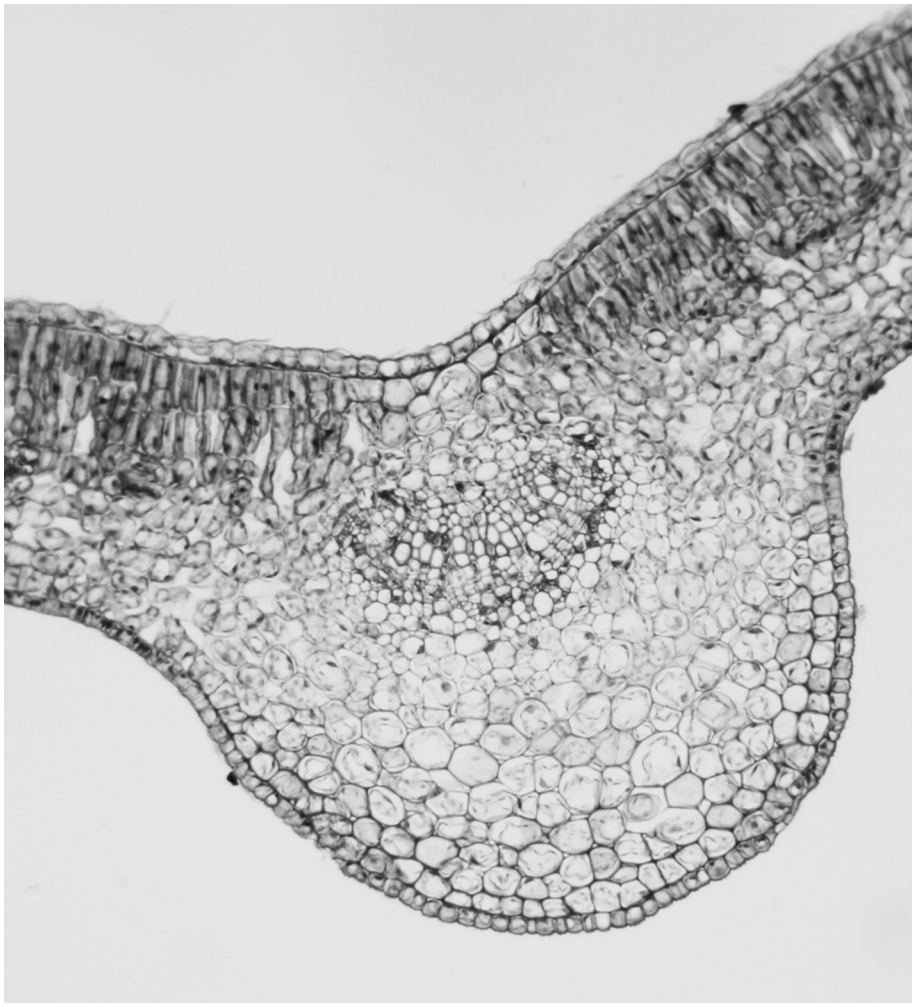


Fig. 2.2

(c) (i) On Fig. 2.2, using a labelling line, label and name each of the following:

- a palisade cell
- a xylem vessel [2]

(ii) Describe a feature of each of these cells that is related to the **function** stated.

- a palisade cell for **photosynthesis**

  feature .....

  .....

- a xylem vessel for **supporting** the leaf

  feature .....

  .....[2]

(iii) Explain how the position of the cell in the leaf is related to this stated function.

palisade cell .....

.....

xylem vessel .....

.....[2]

[Total: 13]

3 Food tests were carried out on some seeds and some of the results and conclusions are recorded in Table 3.1.

(a) Complete Table 3.1.

Table 3.1

reagent used	colour of reagent at the start	final colour of reagent	conclusion
Benedict's solution	blue		trace of reducing sugar present
biuret	blue		protein present
iodine solution		black	

[Total: 4]