Cambridge
O Level

Cambridge International Examinations
Cambridge Ordinary Level

CANDIDATE NAME									
CENTRE NUMBER						CANDIDATE NUMBER			

BIOLOGY **5090/32**

Paper 3 Practical Test **October/November 2014**

1 hour 15 minutes

Candidates answer on the Question Paper.

Additional Materials: As listed in the Confidential Instructions.

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.

For Examiner's Use	
1	
2	
Total	

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

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[Turn over

In order to plan the best use of your time, read through all the questions on this paper carefully before starting work.

1 You will carry out an investigation to find the effect of the shape of an animal's body on heat loss from the body. Heat loss will be measured as a decrease in temperature in °C.

You will use two containers, **A** and **B**, to represent two differently shaped bodies of an equal volume. Container **A** is taller and narrower than container **B**.

You are provided with a thermometer supported in a block or piece of card. Do **not** remove the thermometer from this.

The two containers will each be filled with 100 cm^3 of hot water. You will need to use the thermometer **immediately** to measure and record this temperature. This is the reading at the start time, 0 minutes.

Every two minutes, up to a total of eight minutes, you will measure the water temperature in containers **A** and **B**, and record them in Table 1.1.

Table 1.1 is an incomplete results table for this investigation.

(a) (i) Complete the headings and missing figures in the shaded parts of Table 1.1. [3]

Table 1.1

.....	**temperature / °C**	
	A	.....
0		
2		
4		
.....		
.....		

Raise your hand to indicate that you are ready for a supply of hot water to fill each container A and B to the 100 cm^3 level.

Care is required.

(ii) Carry out the investigation and complete Table 1.1 as follows:

- Immediately place the thermometer into container **A**.
- Record the temperature of the water in Table 1.1.
- Immediately place the thermometer into container **B**.
- Record the temperature of the water in Table 1.1.

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These will be the recordings for the start time, 0 minutes.

- At two minute intervals, up to a total of 8 minutes, repeat your temperature measurements and record each one in Table 1.1 until it is completed.

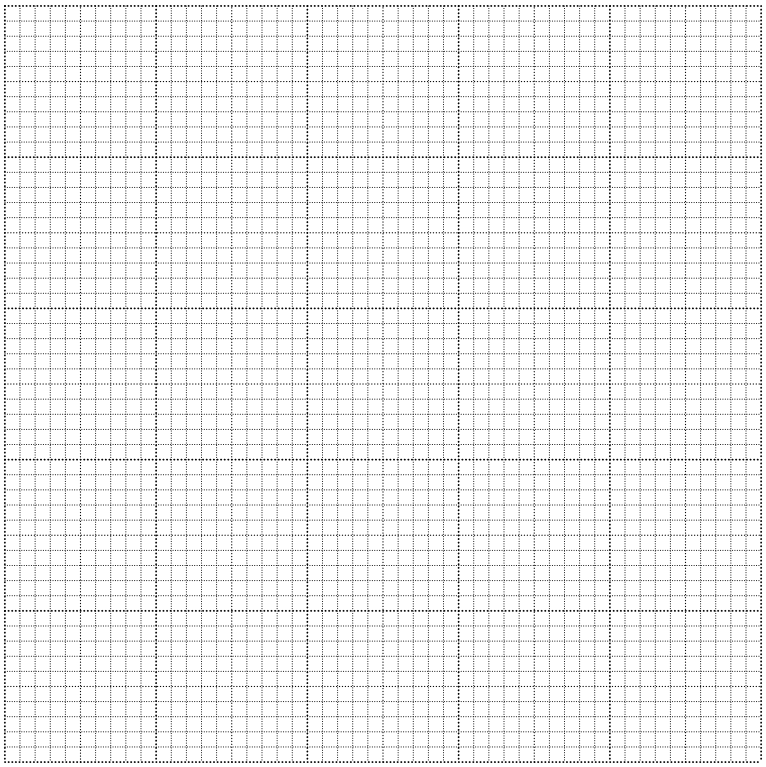
[4]

(b) Calculate and record the total 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) In another investigation it was found that 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 your investigation.

1 .....

2 .....

3 ..... [3]

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

improvement 1 .....

.....

explanation .....

.....

improvement 2 .....

.....

explanation .....

..... [4]

[Total: 25]

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2 You are provided with a leaf. Examine the leaf using a hand lens.

(a) (i) Explain how you can identify the lower surface of this leaf.

.....

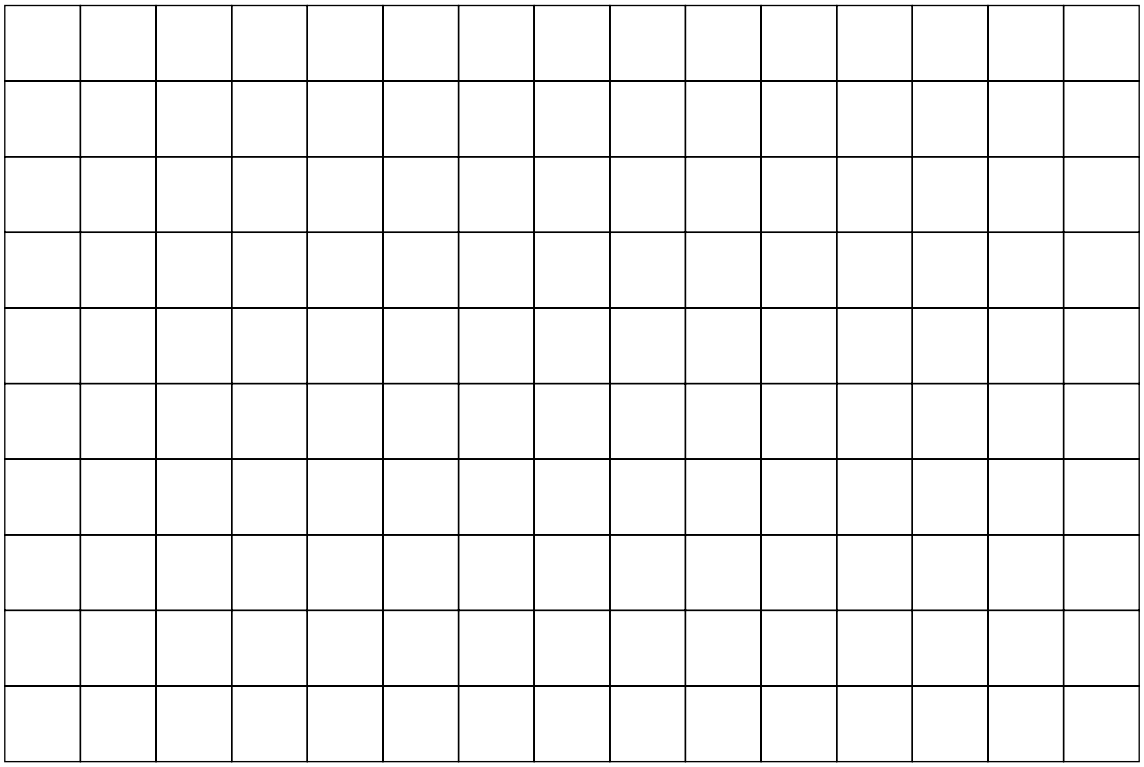
.....

..... [1]

(ii) Make a large labelled drawing to show the whole of the lower surface of this leaf.

[4]

(b) (i) Place the leaf on the grid below, and carefully draw around the edge of the leaf.



[1]

(ii) Explain how you will calculate the area of the lower surface of this leaf, using the outline you have drawn.

.....

.....

.....

..... [1]

(iii) Calculate the area of the lower surface of this leaf.

Show your working.

..... cm^2 [2]

(c) Fig. 2.1 shows a section through a similar leaf as seen under a microscope.

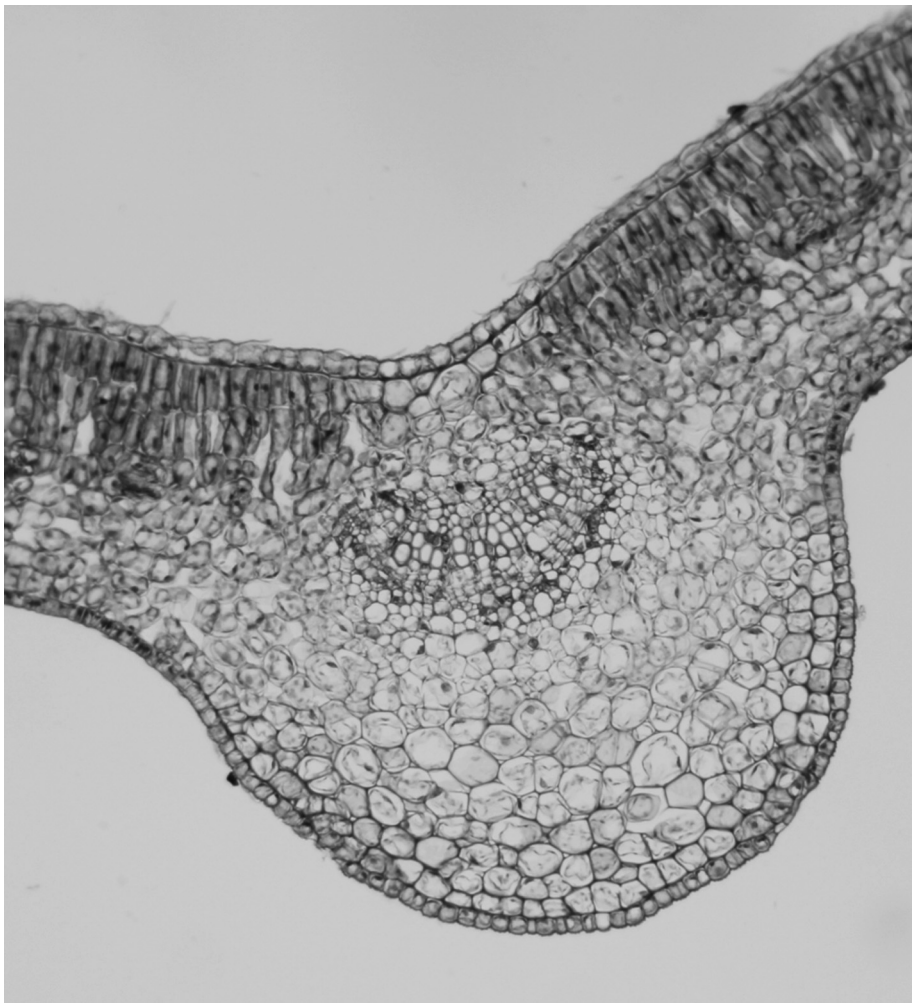


Fig. 2.1

(i) On Fig. 2.1, using a labelling line, label and name each of the following:

- a palisade cell
- a xylem vessel.

[2]

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[Turn over

(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: 15]

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