UNIVERSITY OF CAMBRIDGE INTERNATIONAL EXAMINATIONS
International General Certificate of Secondary Education

CANDIDATE NAME	

CENTRE NUMBER						CANDIDATE NUMBER				

Biology **0610/51**

Paper 5 Practical Test **October/November 2012**

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 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 **both** 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 **10** printed pages and **2** blank pages.

UNIVERSITY of CAMBRIDGE
International Examinations

[Turn over

For
Examiner's

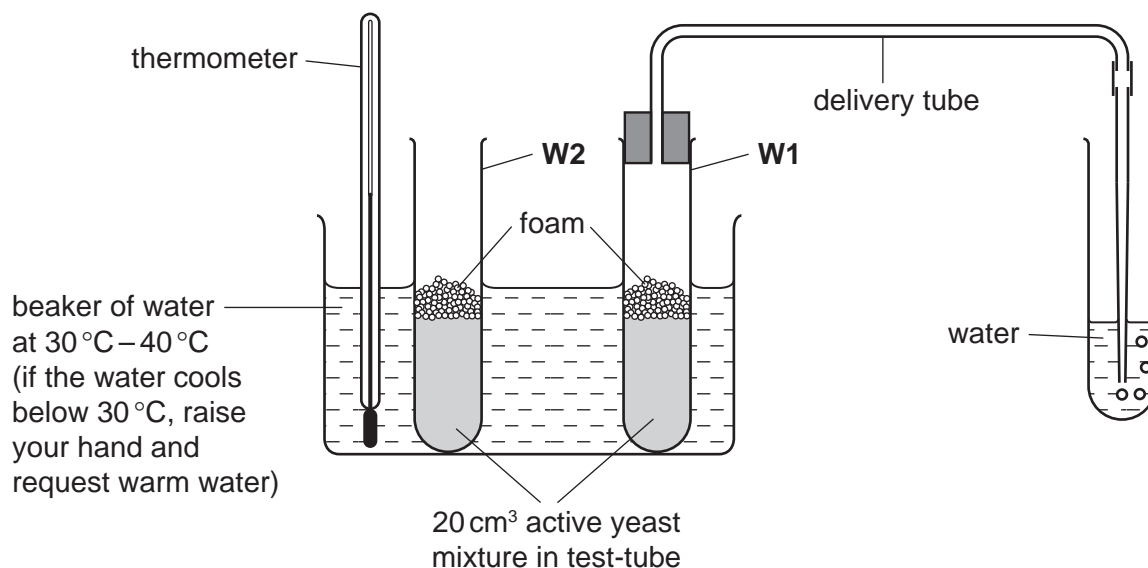1 **Read through all the questions on this paper carefully before starting work.**

You are going to compare the metabolism of two yeast mixtures in test-tubes **W1** and **W2**.

Both mixtures contain the same concentration of sucrose.

(a) Set up and use the apparatus provided, as shown in Fig. 1.1, to obtain the results needed to complete Table 1.1.

thermometer

delivery tube

W2   **W1**

foam

beaker of water
at 30 °C – 40 °C
(if the water cools
below 30 °C, raise
your hand and
request warm water)

water

20 cm³ active yeast
mixture in test-tube

Fig. 1.1

- Connect the bung and delivery tube to test-tube **W1**, as shown in Fig. 1.1.

- Wait for two minutes before placing the open end of the delivery tube in the water, as shown in Fig. 1.1.

- Note the time and **immediately** start counting the number of gas bubbles. After two minutes, record the number of bubbles as **trial 1** in Table 1.1.

- Repeat the counting process for two minutes and record this number of bubbles as **trial 2** in Table 1.1.

- Repeat the counting process for two minutes and record this number of bubbles as **trial 3** in Table 1.1.

- Remove the bung and delivery tube from test-tube **W1**.

- Connect the bung and delivery tube to test-tube **W2** and repeat the above procedures.

Table 1.1

yeast mixture	number of bubbles of gas released in two minutes		
	trial 1	**trial 2**	**trial 3**
W1	…….	…….	…….
W2	…….	…….	…….

[4]

(e) State **two** sources of error in the method of this investigation. Suggest how to i██████ the method to reduce **each** source of error.

source of error ....

....

improvement ....

....

source of error ....

....

improvement ....

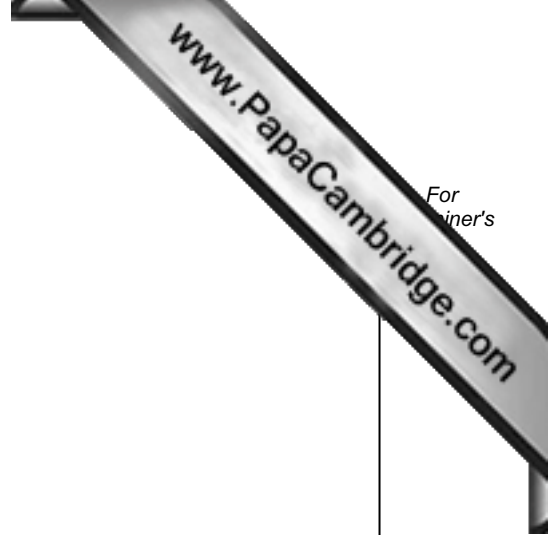.. [4]

[Total: 17]

2 You are provided with two leaves, **W3** and **W4**.

(a) Make a large, labelled drawing of leaf **W3**.

[4]

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(b) Use the hand lens to carefully observe leaf **W3** and leaf **W4**.

Describe **one similarity** and **two differences** that you can see. Do **not** include size
your comparison.

(i) similarity

....

.... [1]

(ii) differences

1 ....

....

2 ....

.... [2]

(iii) Leaf **W3** is from a dicotyledon.

Give one visible feature to support this statement.

....

.... [1]

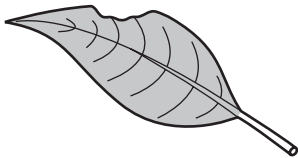Fig. 2.1 shows a photomicrograph of a section of a leaf similar to **W3**.
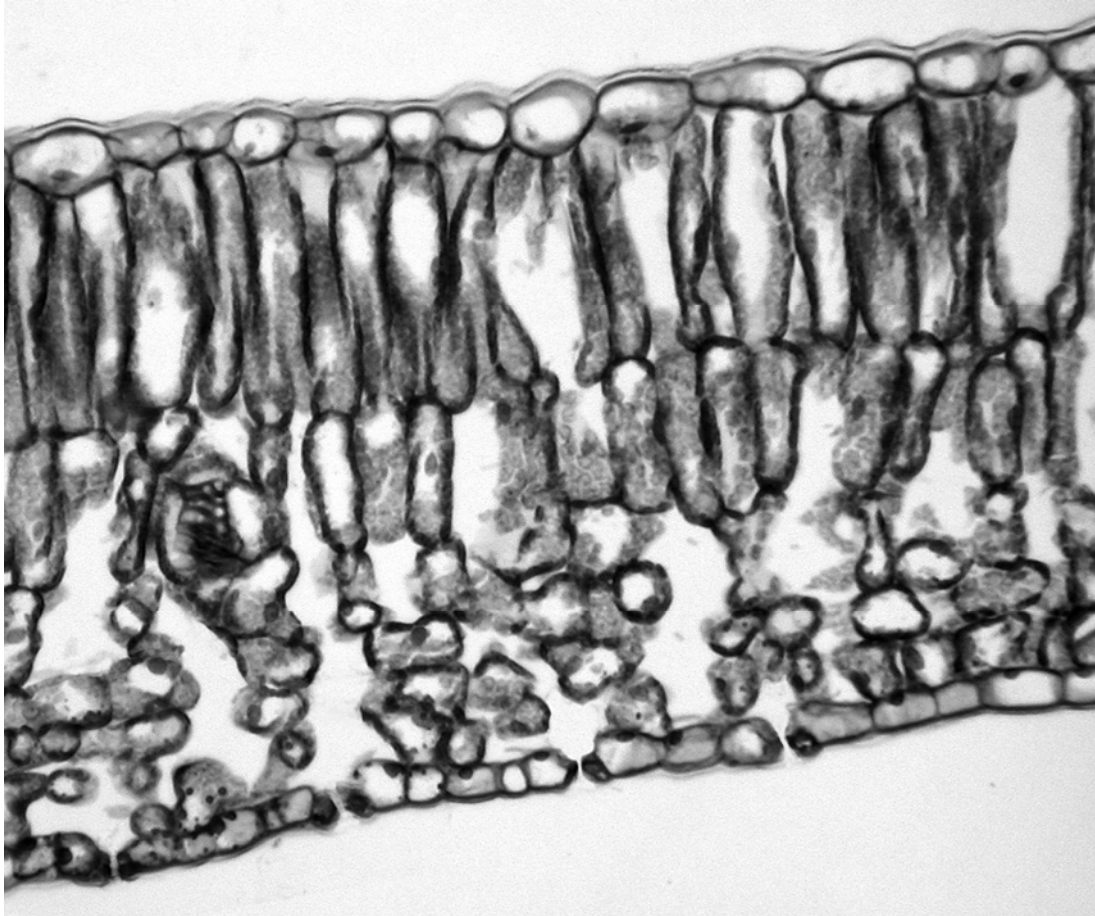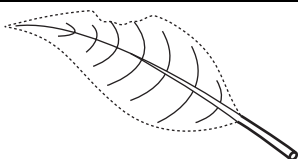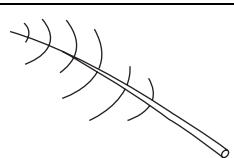
Fig. 2.1
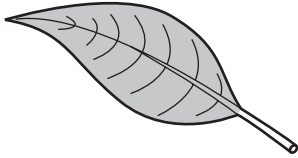
(c) (i) On Fig. 2.1, draw a line to label a photosynthetic cell in the palisade layer. [1]

  (ii) Draw arrows on Fig. 2.1 to show the pathway that carbon dioxide gas must take to reach the photosynthetic cell labelled in **(c)(i)** from the air outside the leaf. [2]

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iner's

When leaves die, they fall from the tree and are eventually decomposed.

Some students investigated the decomposition of samples of leaves. They made drawing
and weighed the samples at intervals over a period of two years.

Table 2.1 shows the results of this investigation.

Table 2.1

time / months	mass of leaves in sample / g	appearance of one leaf in the sample
0	42.5	
6	46.0	
12	32.5	
18	16.0	
24	7.5	

(d) (i) Describe **and** explain the changes in appearance of the leaves during the two
years.

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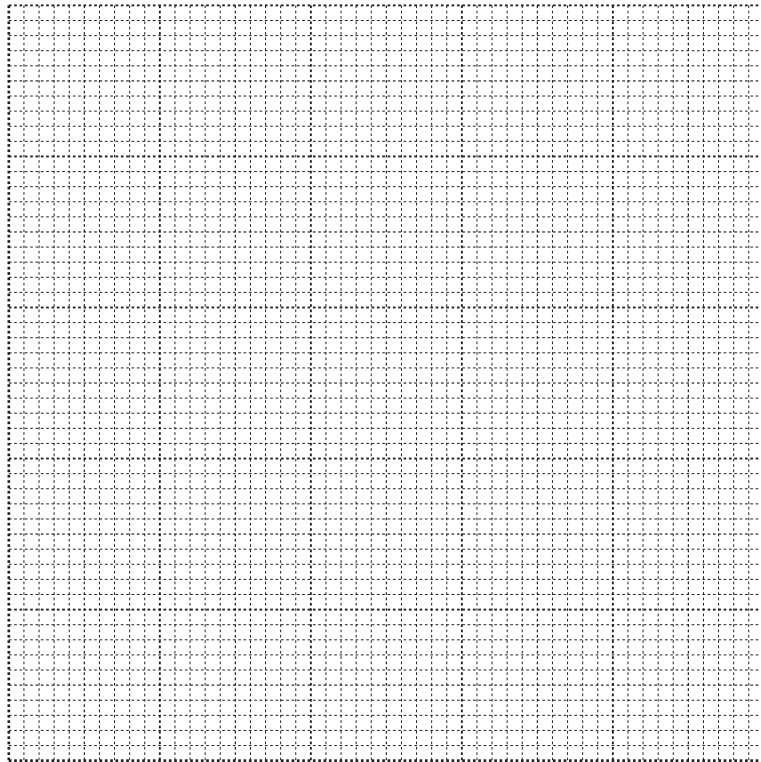.. [3]

For
iner's

(ii) Use the measurements from Table 2.1 to plot a graph to show how the mass
leaf samples change with time.

[4]

(iii) Describe the results for the change in mass shown on the graph.

....

....

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.... [3]
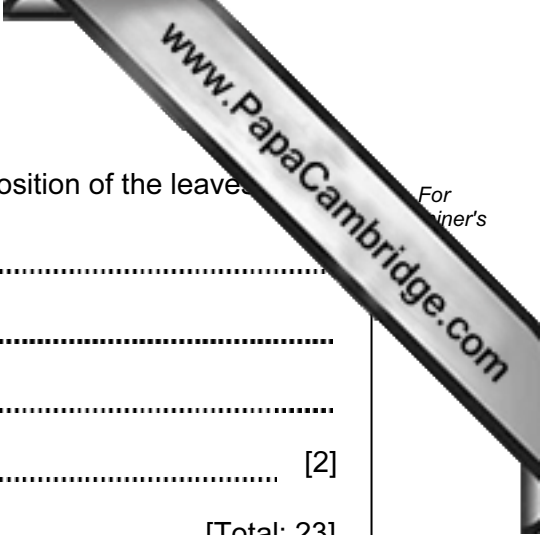
(iv) Suggest **two** factors that may change the rate of decomposition of the leaves.

1 ....

....

2 ....

.... [2]

[Total: 23]

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