UNIVERSITY OF CAMBRIDGE INTERNATIONAL EXAMINATIONS
International General Certificate of Secondary Education

CANDIDATE NAME									
CENTRE NUMBER						CANDIDATE NUMBER			

9938145318

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.

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1	
2	
Total	

This document consists of **10** printed pages and **2** blank pages.

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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.

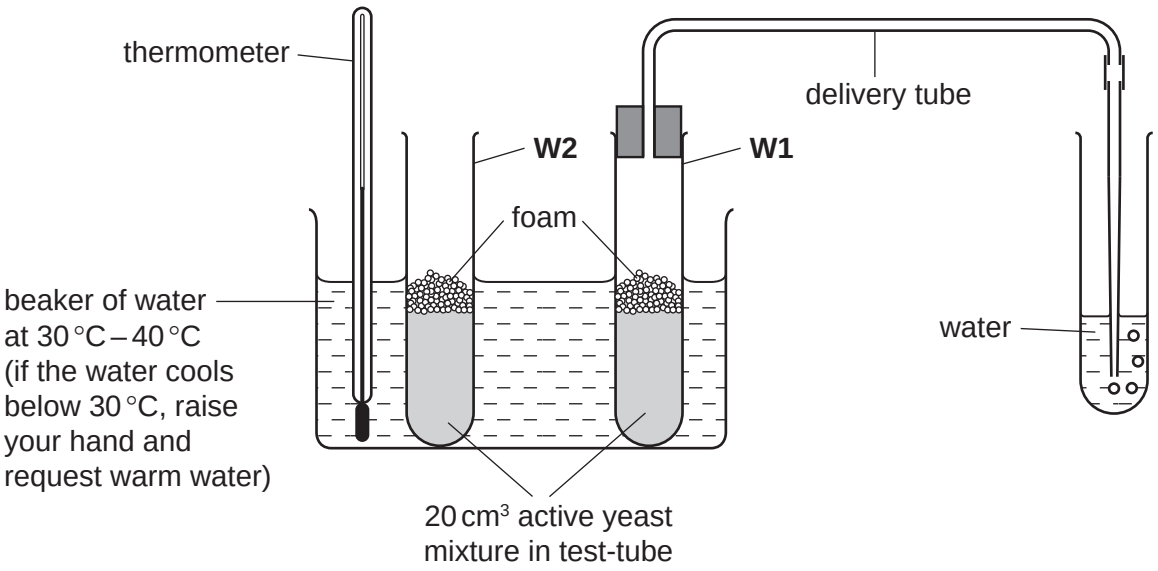


Fig. 1.1

- 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]

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(b) Gas bubbles are produced in this experiment.

(i) State which metabolic process is being carried out by the yeast cells to produce this gas.

.... [1]

(ii) Name this gas. .... [1]

(iii) Describe a test for this gas and the result that you would expect.

....

....

....

.... [2]

(c) Suggest why the test-tubes **W1** and **W2** were placed in a beaker of warm water during the experiment.

....

....

....

.... [2]

(d) Describe **and** explain any differences observed in the number of bubbles of gas released.

....

....

....

....

....

.... [3]

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

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source of error .....

.....

improvement .....

.....

source of error .....

.....

improvement .....

..... [4]

[Total: 17]

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

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(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 in 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]

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Fig. 2.1 shows a photomicrograph of a section of a leaf similar to **W3**.

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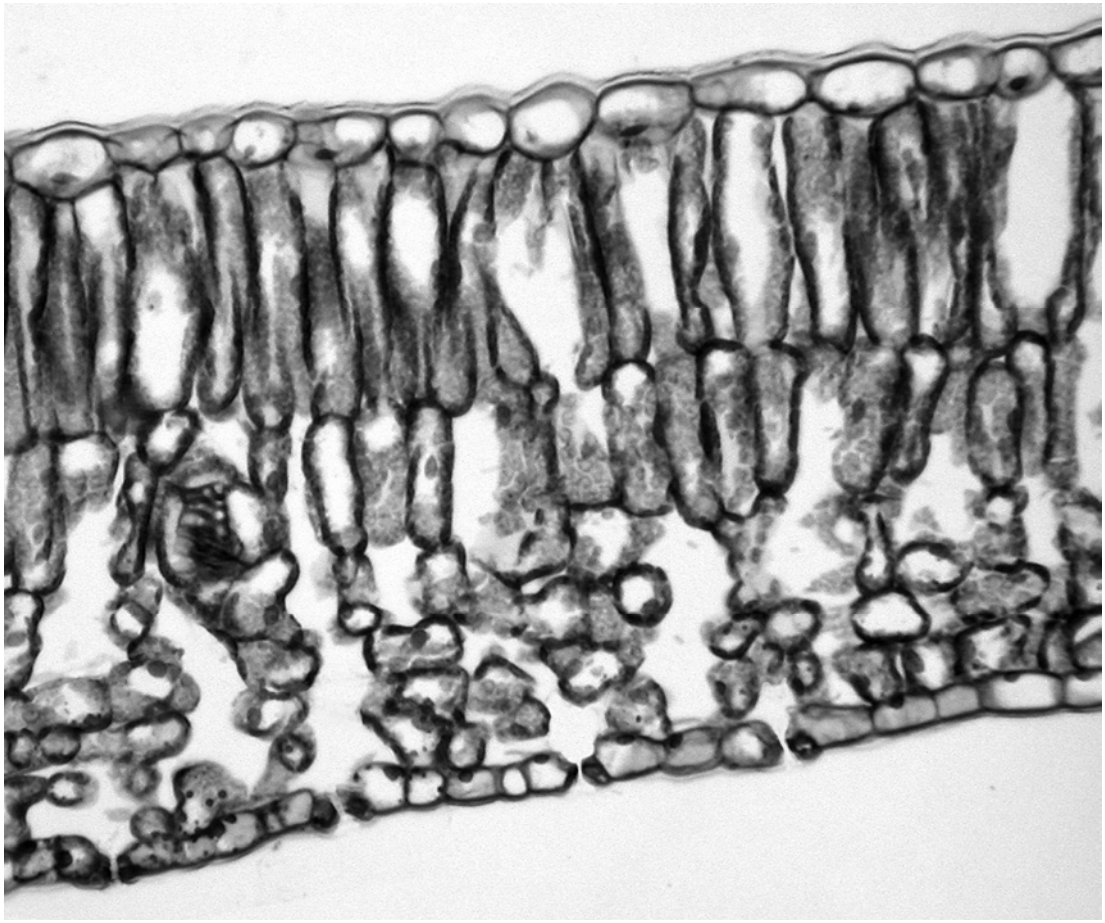


Fig. 2.1

(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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[Turn over

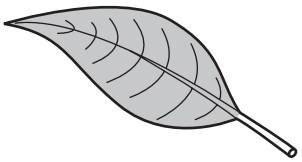
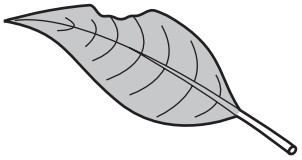
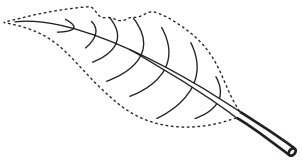
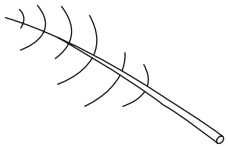
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When leaves die, they fall from the tree and are eventually decomposed.

Some students investigated the decomposition of samples of leaves. They made drawings 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.

.....

.....

.....

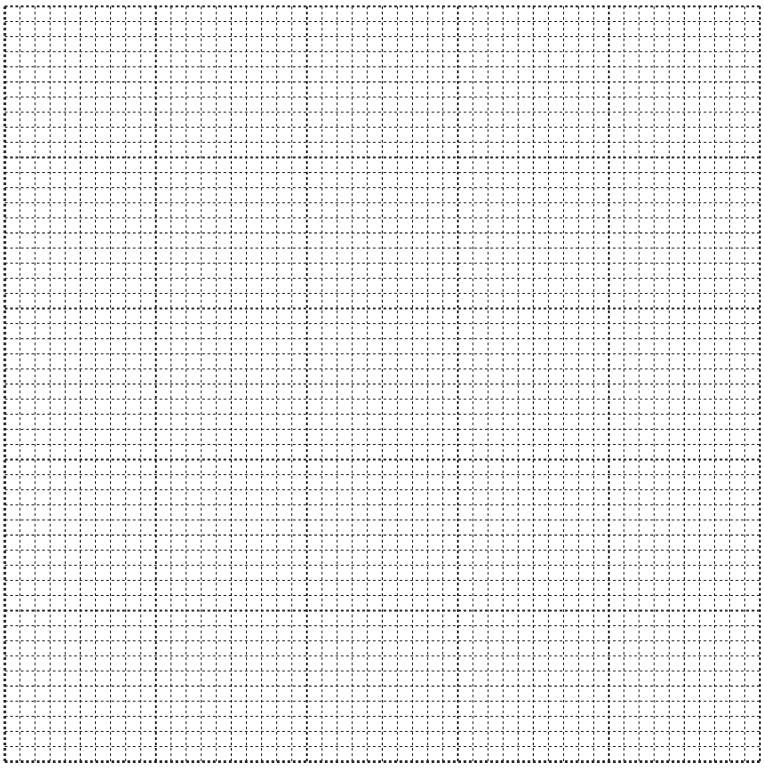
.....

.....

..... [3]

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



[4]

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

.....

.....

.....

.....

.....

..... [3]

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

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1 .....

.....

2 .....

..... [2]

[Total: 23]

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