UNIVERSITY OF CAMBRIDGE INTERNATIONAL EXAMINATIONS
International General Certificate of Secondary Education

CANDIDATE NAME	
CENTRE NUMBER	
CANDIDATE NUMBER	

2633815221

BIOLOGY **0610/61**

Paper 6 Alternative to Practical **October/November 2012**

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 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 **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.

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1	
2	
3	
Total	

This document consists of **13** printed pages and **3** blank pages.

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1 Some students compared the metabolism of two yeast mixtures in test-tubes **W1** and **W2**, using the apparatus shown in Fig. 1.1. Both mixtures contained the same concentration of sucrose.

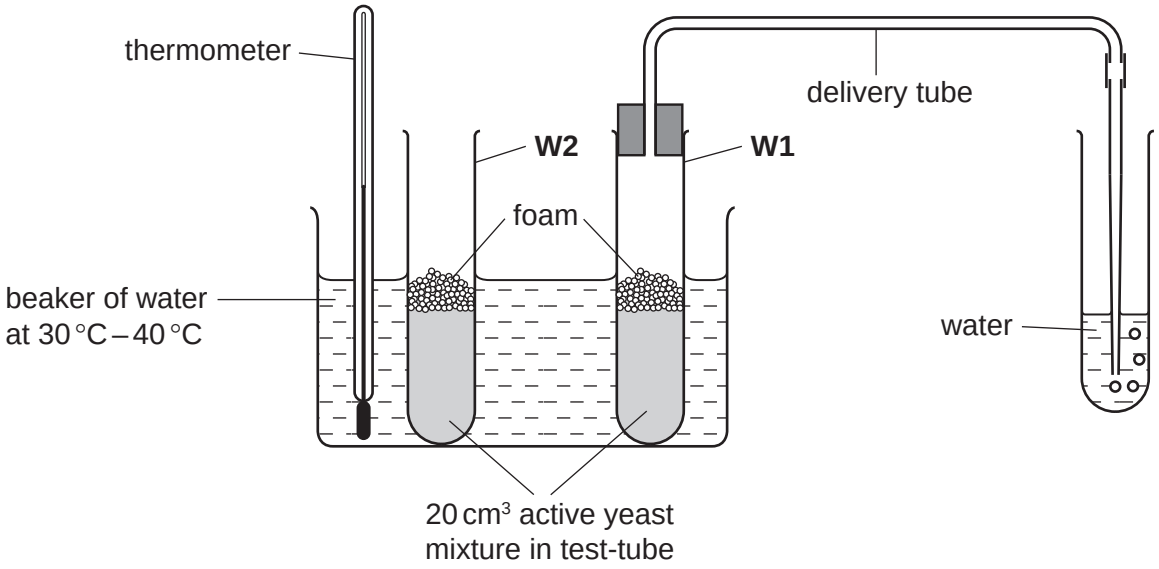


Fig. 1.1

The apparatus was left for two minutes. After this period, the number of gas bubbles released from the delivery tube was counted for two minutes. This number was recorded as **trial 1** in Table 1.1.

The yeast mixture was shaken and the number of bubbles was recorded for two more minutes as **trial 2**. This was repeated for **trial 3**.

The whole procedure was then repeated using test-tube **W2**.

The results for all three trials for test-tube **W2** were recorded in Table 1.1.

Table 1.1

yeast mixture	number of bubbles of gas released in two minutes		
	trial 1	**trial 2**	**trial 3**
W1	5	3	2
W2	20	15	10

(a) 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]

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

.....

.....

.....

..... [2]

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

.....

.....

.....

..... [2]

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

.....

.....

.....

.....

.....

..... [3]

(d) 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 .....

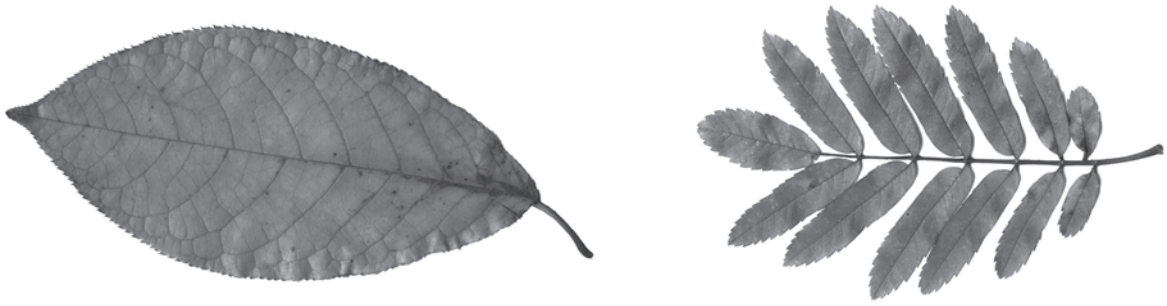
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[Total: 13]

Question 2 begins on page 6.

2 Fig. 2.1 shows the upper surface of two leaves, **W3** and **W4**.

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W3 **W4**

Fig. 2.1

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

[4]

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(b) Carefully observe leaf **W3** and leaf **W4** in Fig. 2.1.

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]

Fig. 2.2 shows a photomicrograph of a section of a leaf similar to **W3**.

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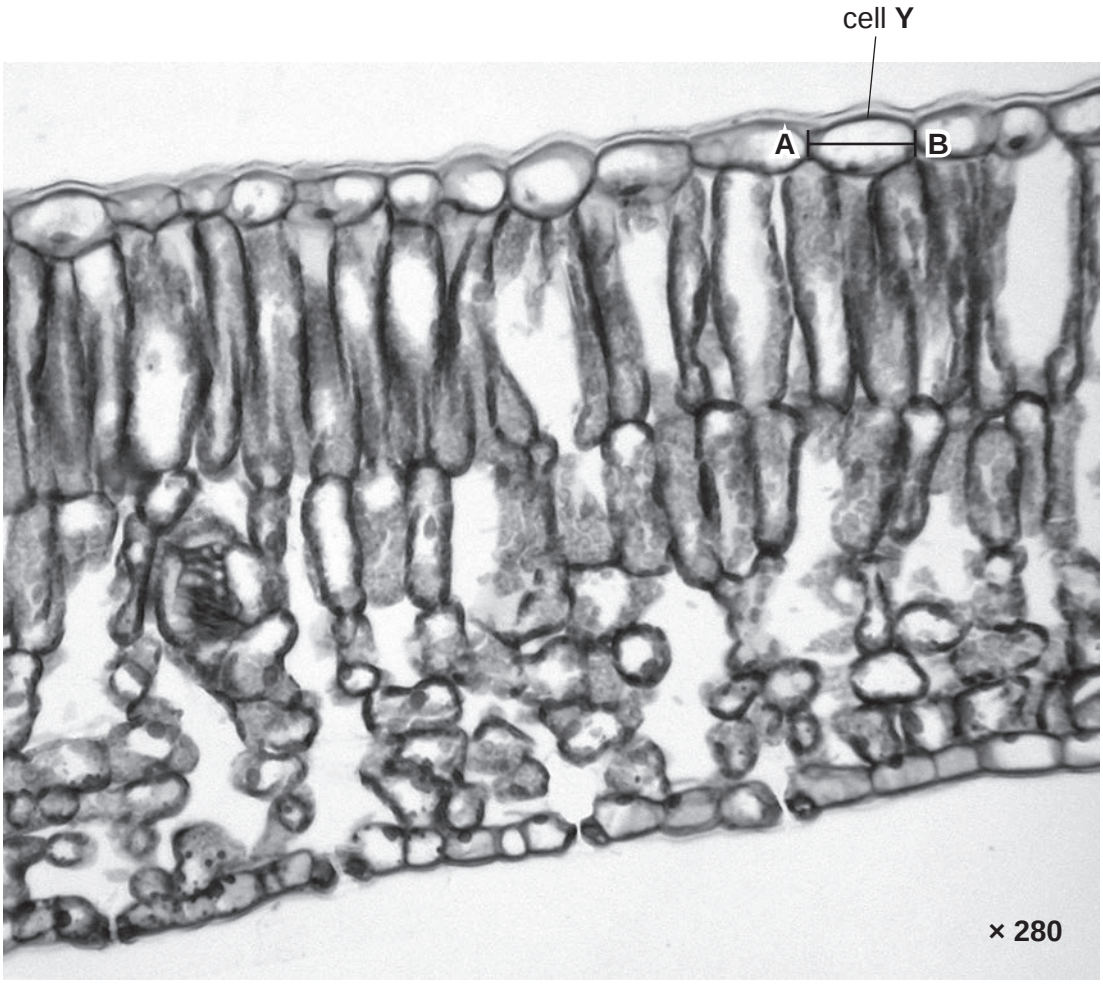


Fig. 2.2

(c) (i) On Fig. 2.2, draw a line to label a photosynthetic cell in the palisade layer. [1]

(ii) Draw arrows on Fig. 2.2 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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(d) Measure the length, from **A** to **B**, of cell **Y** on Fig. 2.2.

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Record your measurement.

length from **A** to **B** ..... mm

Calculate the actual length of cell **Y**.

Show your working.

actual length of cell **Y** ..... mm [3]

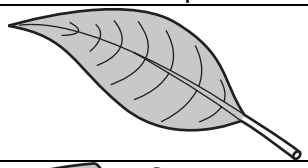
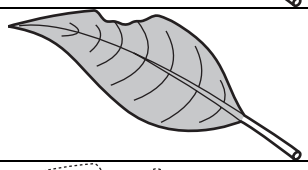
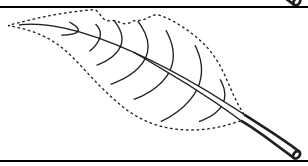
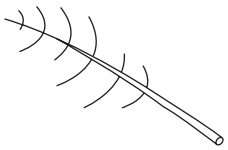
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When leaves die, they fall from the tree and are eventually decomposed.

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	

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

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.....

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.....

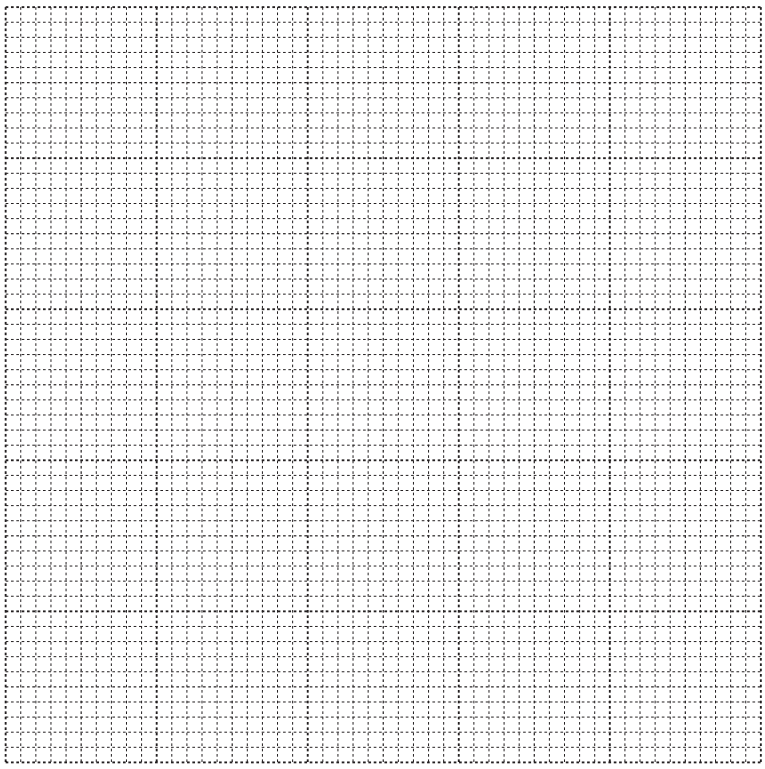
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(ii) Use the measurements from Table 2.1 to plot a graph to show how the mass of the leaf samples change with time.



[4]

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

.....

.....

.....

.....

.....

..... [3]

[Total: 23]

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3 Fig. 3.1 shows an invertebrate animal.



Fig. 3.1

Fig. 3.2 shows the external features of six other animals.

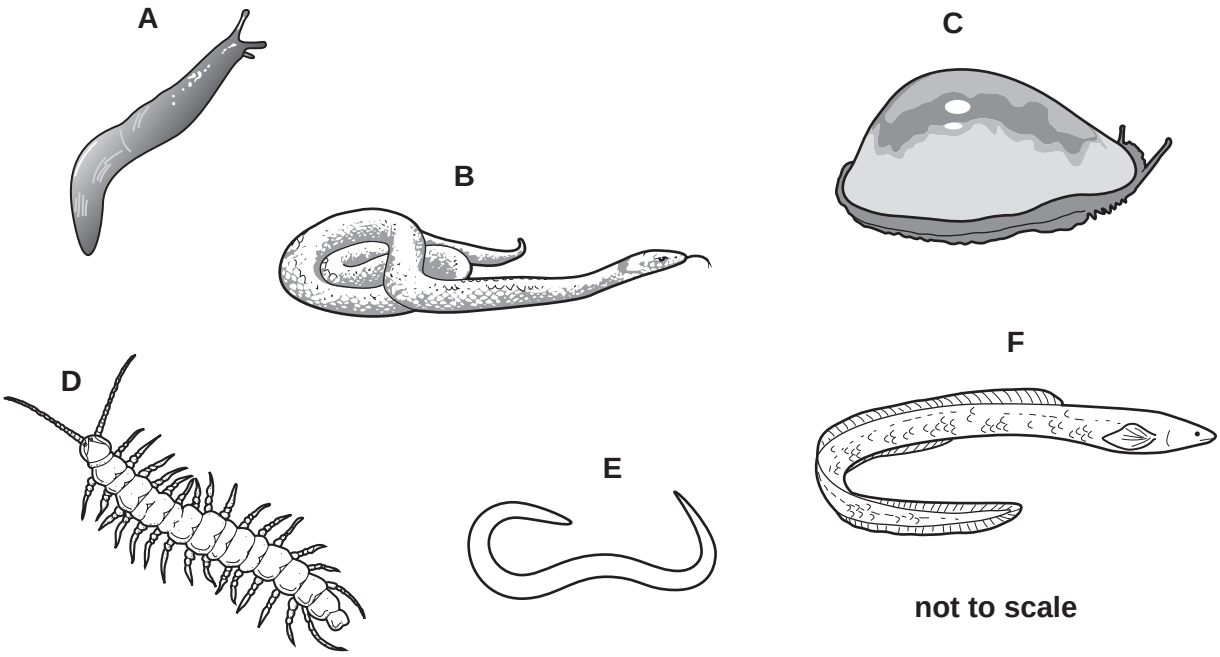


Fig. 3.2

(a) Give the letters of **two** animals that belong to the same group as the invertebrate shown in Fig. 3.1.

1 .....

2 ..... [2]

(b) Describe **two** similarities, **visible** in Fig. 3.2, between animal **B** and animal **F**.

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1 .....

.....

2 .....

..... [2]

[Total: 4]

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