



UNIVERSITY OF CAMBRIDGE INTERNATIONAL EXAMINATIONS  
International General Certificate of Secondary Education

CANDIDATE  
NAME

CENTRE  
NUMBER

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**BIOLOGY**

**0610/06**

Paper 6 Alternative to Practical

**October/November 2009**

**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.

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	
<b>1</b>	
<b>2</b>	
<b>3</b>	
<b>Total</b>	

This document consists of **9** printed pages and **3** blank pages.



- 1 Thin slices of dandelion stem were cut and placed into different salt solutions and left for 30 minutes.

Fig. 1.1 shows how these slices were cut. Fig. 1.2 shows the appearance of these pieces of dandelion stem after 30 minutes in the different salt solutions.

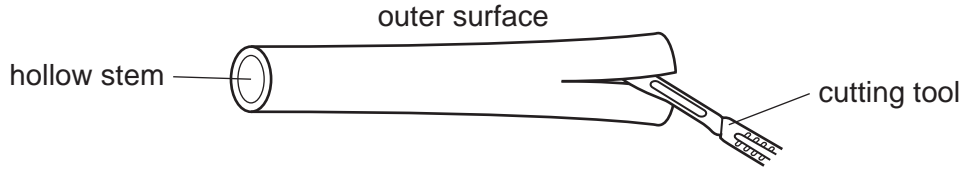


Fig.1.1

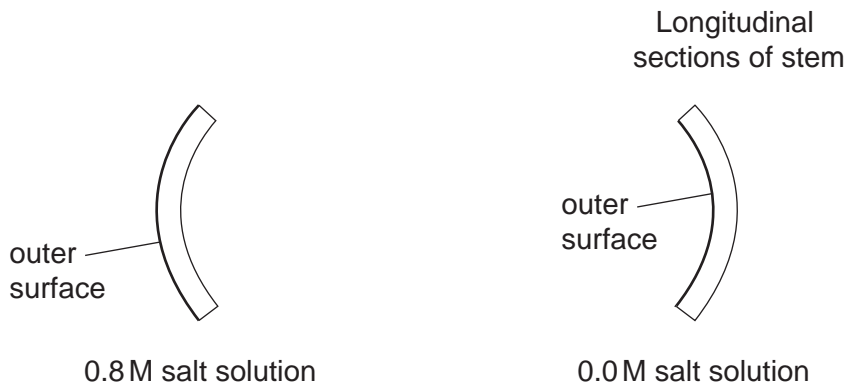


Fig. 1.2

- (a) (i) Describe the appearance of the pieces of dandelion stem in Fig. 1.2.

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..... [2]

- (ii) Explain what causes the two pieces of dandelion stem to change in the way you have described in (a)(i).

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..... [4]

**(b)** Suggest how you could plan an investigation to find the concentration of salt solution which would produce no change from that shown in the original dandelion stem before being cut in Fig. 1.1.

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[4]

[Total: 10]

2 Fig. 2.1 shows an insect-pollinated flower which has been cut vertically.



**Fig.2.1**

**(a)** Make a large, labelled drawing of the visible floral parts.

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[6]

Fig. 2.2 shows the structure of a wind-pollinated flower.

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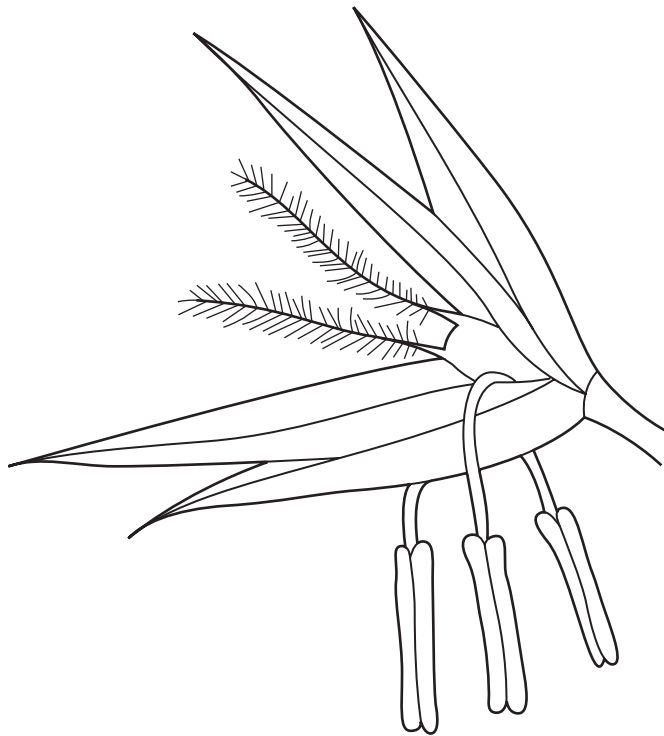


Fig. 2.2

(b) Label the visible floral parts of Fig. 2.2.  
Explain how each floral part is adapted for this type of pollination.

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[3]

- (c) (i) State **one** similarity in the adaptations for pollination of the flowers shown in Fig. 2.1 and Fig. 2.2.

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 ..... [1]

- (ii) Complete Table 2.1 to show four differences in the adaptations for pollination of the flowers shown in Fig. 2.1 and Fig. 2.2.

**Table 2.1**

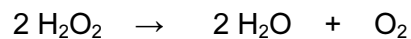
	<b>Fig. 2.1</b>	<b>Fig. 2.2</b>
<b>difference 1</b>	..... .....	..... .....
<b>difference 2</b>	..... .....	..... .....
<b>difference 3</b>	..... .....	..... .....
<b>difference 4</b>	..... .....	..... .....

[4]

[Total: 14]

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- 3 Catalase is an enzyme which breaks down hydrogen peroxide into water and oxygen.

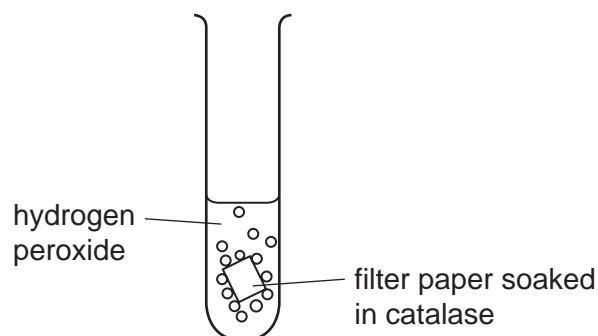


By using small pieces of filter paper soaked in a solution of catalase, it is possible to measure the enzyme activity.

The pieces are placed in a solution of diluted hydrogen peroxide in a test-tube.

The filter paper rises to the surface as oxygen bubbles are produced.

The time taken for these pieces of filter paper to rise to the surface indicates the activity of catalase.



**Fig. 3.1**

An experiment was carried out to find the effect of pH on the activity of catalase.

Five test-tubes were set up as shown in Fig. 3.1, each with a different pH.

The same volume and concentration of hydrogen peroxide was used in each test-tube.

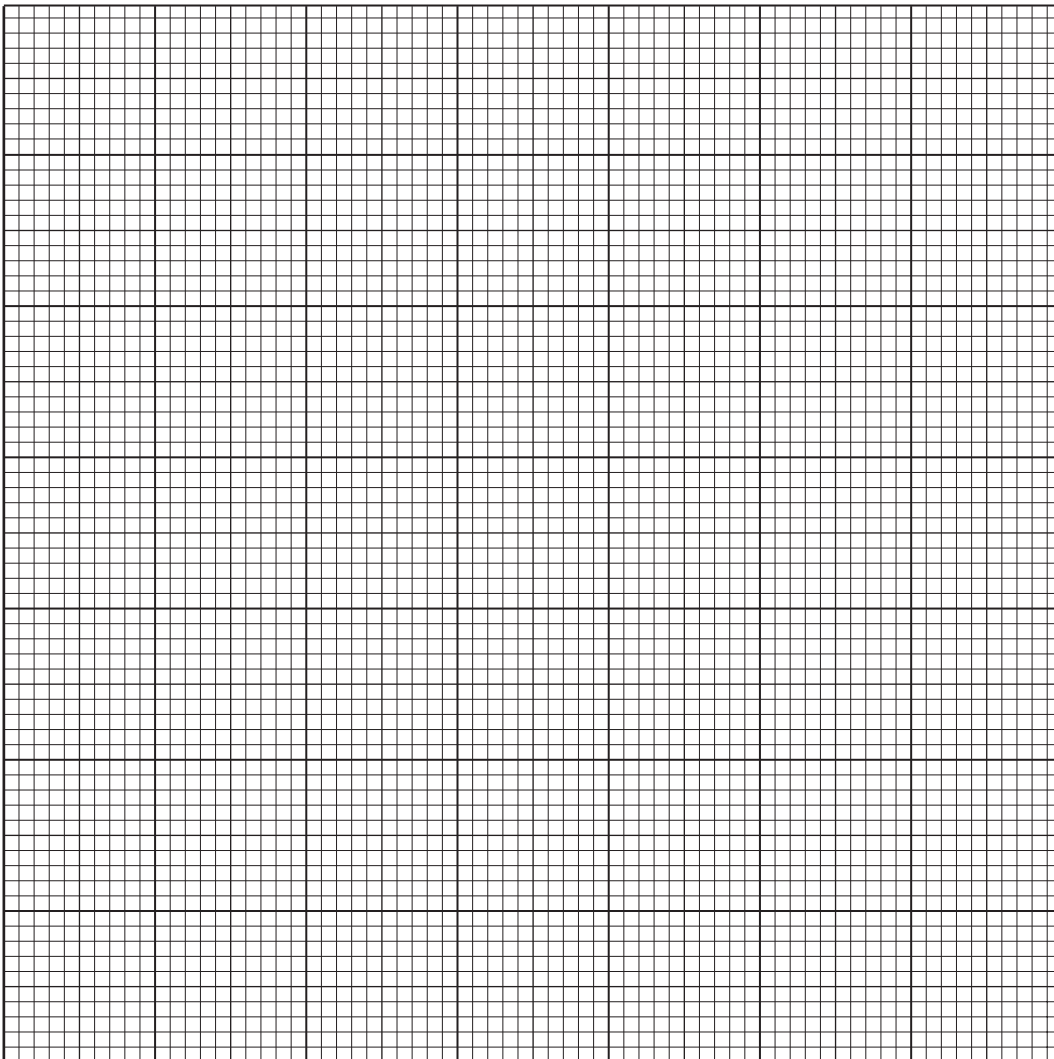
Table 3.1 on page 8 shows the results obtained for the experiment as described.

Table 3.1

pH	time taken for filter paper to rise / sec
3.0	62
4.0	54
5.0	35
6.0	25
7.0	20
8.0	50

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(a) (i) Plot a line graph to show the time taken for the filter paper to rise against pH.



[4]



(ii) Describe the relationship between pH and the time taken for the filter paper to rise.

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[2]

(b) Suggest four ways in which this experiment could be improved.

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[4]

(c) Suggest how this experiment could be changed to investigate the effect of temperature on the activity of catalase.

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[6]

[Total: 16]





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