Centre Number	Candidate Number	Name

UNIVERSITY OF CAMBRIDGE INTERNATIONAL EXAMINATIONS
International General Certificate of Secondary Education

BIOLOGY **0610/05**

Paper 5 Practical Test

May/June 2005

1 hour

Candidates answer on the Question Paper.
Additional Materials: As listed in Instructions to Supervisors

READ THESE INSTRUCTIONS FIRST

Write your Centre number, candidate number and name in the spaces provided at the top of this page.
Write in dark blue or black pen in the spaces provided on the Question Paper.
You may use a soft pencil for any diagrams, graphs or rough working.
Do not use staples, paper clips, highlighters, glue or correction fluid.

Answer **both** questions.
The number of marks is given in brackets [ ] at the end of each question or part questions.

FOR EXAMINER'S USE	
1	
2	
TOTAL	

This document consists of **7** printed pages and **1** blank page.

1 In this exercise you are going to investigate the effect of the enzyme catalase on hydrogen peroxide.

Catalase is present in all living cells. It speeds up the breakdown of hydrogen peroxide as shown by the following equation:

$$\text{hydrogen peroxide} \xrightarrow{\text{catalase}} \text{oxygen} + \text{water}$$

You are provided with two pieces of Irish potato, *Solanum tuberosum*, that will be used as your source of catalase. One of these is raw and one has been boiled.

- Label the large test tubes **S1**, **S2**, **S3** and **S4**.
- Into each test tube pour hydrogen peroxide to a depth of 2 cm.
- Cut two cubes, with sides measuring 1cm, from the **raw** potato.
- Add one cube to the test tube labelled **S1**.

1.	**Immediately** mark the height of the contents on the tube.
2.	Mark the maximum height reached during the next few minutes.
3.	Measure the change in height (if any) and record this in Table 1.1.

(a) **Table 1.1**

tube	contents of tube	maximum change in height / mm
S1	cube of raw potato	
S2	chopped, raw potato	
S3	cube of boiled potato	
S4	chopped, boiled potato	

[2]

- Chop the other cube of **raw** potato into small pieces.
- Add this chopped potato to the test tube labelled **S2**.
- Repeat steps **1**, **2** and **3** above.

- Cut two cubes, with sides measuring 1cm, from the **boiled** potato.
- Add one cube to the test tube labelled **S3**.
- Repeat steps **1**, **2** and **3** above.

- Chop the other cube of **boiled** potato into small pieces.
- Add this chopped potato to the test tube labelled **S4**.
- Repeat steps **1**, **2** and **3** above.

(b) Describe one similarity and one difference in the appearance of the contents of tubes **S1** and **S2** after adding the hydrogen peroxide.

similarity .....

.....

difference .....

..... [2]

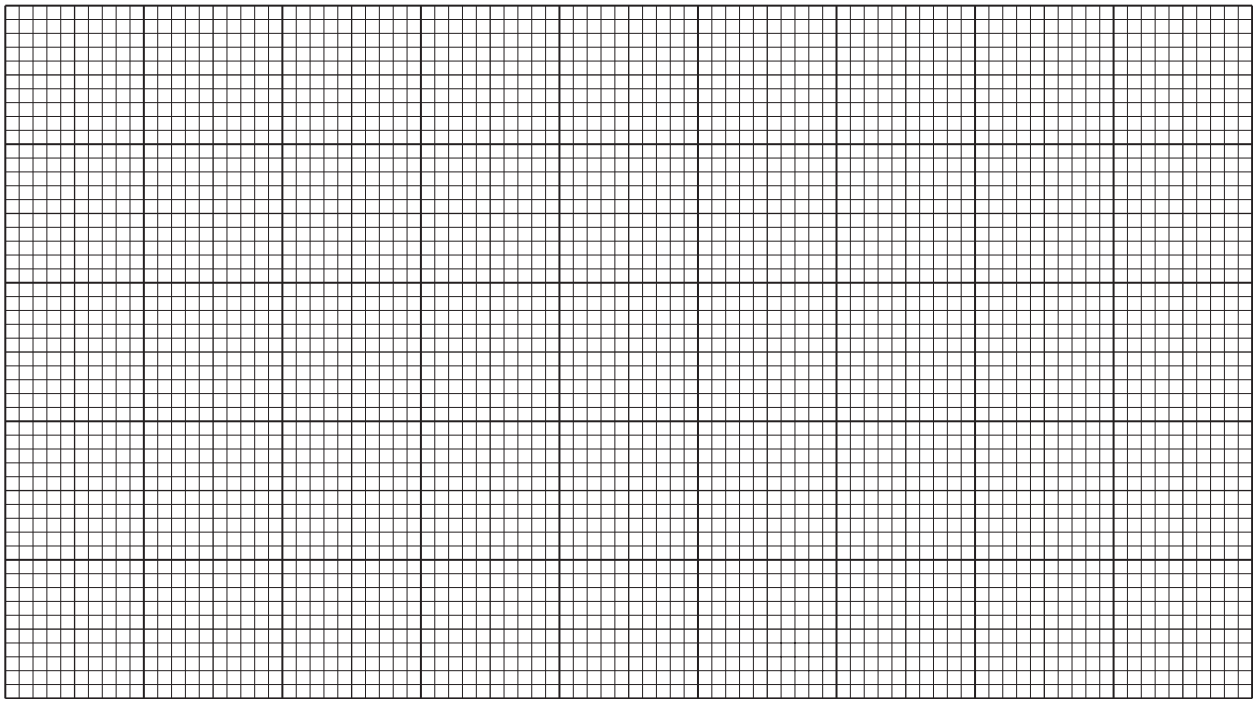
(c) Describe the appearance of the contents of tubes **S3** and **S4** after adding the hydrogen peroxide.

.....

.....

..... [2]

(d) (i) Plot the maximum change in height of the contents of each test tube as a bar chart on the grid below.



[4]

(ii) Explain the differences in your observations between

S1 and **S2**; .....

.....

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S1 and **S3**. .....

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..... [4]

(e) Suggest ways in which the method you have used could be improved to obtain more accurate and reliable results.

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..... [5]

[Total : 19]

2 You are provided with an insect-pollinated flower, labelled **F1**.

(a) (i) Cut the flower in half longitudinally.
Make a large labelled drawing of the cut surface of the flower.

[6]

(ii) Measure the length of your drawing, using a line to show where you made the measurement.

length of drawing .....

Measure the length of the flower.

length of flower .....

Calculate the magnification of your drawing.
Show your working.

Magnification = ... [3]

You are provided with a solution labelled **F2**.

The composition of **F2** is similar to nectar.

You are to test solution **F2** for reducing sugar and starch.

(b) Describe how you will test **F2** for the presence of

(i) reducing sugar; .....

.....

..... [2]

(ii) starch. .....

.....

..... [1]

Divide your sample of **F2** into two parts.

Test one part for reducing sugar and the other for starch.

(c) **(i)** Record your observations in Table 2.1.

Table 2.1

test	observation
reducing sugar	
starch	

[2]

(ii) Using your observations in **(c)(i)**, explain the importance of the composition of nectar for the insects that visit a flower such as **F1**.

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..... [3]

(d) It has been suggested that the colour of the petals is important in attracting insects to a flower.

Outline how you would carry out an investigation to determine which colour would attract most insects.

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..... [4]

[Total : 21]

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