| Centre Number | Candidate Number | Name |
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UNIVERSITY OF CAMBRIDGE INTERNATIONAL EXAMINATIONS
International General Certificate of Secondary Education

**BIOLOGY** **0610/05**

Paper 5 Practical Test

October/November 2004
**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 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 question.

If you have been given a label, look at the details. If any details are incorrect or missing, please fill in your correct details in the space given at the top of this page.

Stick your personal label here, if provided.

| FOR EXAMINER'S USE | |
|---|---|
| 1 | |
| 2 | |
| TOTAL | |

This document consists of **6** printed pages and **2** blank pages.



UNIVERSITY of CAMBRIDGE
International Examinations

## 1 Introduction

Many plant tissues change colour when exposed to the air. The enzymes that produce the coloured products may be affected by pH.

### Investigation

You will investigate the effect of pH on the production of these coloured products formed on the freshly cut surface of a plant tissue.

**Read the whole of question 1 section (a) before you begin.**
**You are advised to complete setting up this question immediately as it may take time for these coloured products to develop.**

**(a)** You are provided with 2 pieces of plant tissue, labelled **W1**, that have been cut before the start of the examination.

**(i)** Use **one** piece of **W1** to compare the colour of the exposed cut surface with the unexposed surface which is in contact with the dish.

Keep this piece of **W1** in the dish for part **(b)**.

*colour of exposed surface* .....

*colour of unexposed surface* .....[1]

**(ii)** You have been provided with 2 pieces of universal indicator paper and access to a pH colour chart.

Test the pH of solutions **A1** and **B1**.

Record the colours and pH values in **Table 1.1**.

**Table 1.1**

| | solution | |
|---|---|---|
| | **A1** | **B1** |
| colour | | |
| pH | | |

[3]

**(iii)** Cut the other piece of plant tissue **W1** into two pieces. Place one piece of **W1** into each of the dishes labelled **A** and **B**.

Slowly pour solution **A1** over the cut surface of **W1** in dish **A**.
Repeat this procedure with the tissue in dish **B** using solution **B1**.
Observe the colour of the plant tissue after approximately 20 minutes.

Construct a table and record your observations.

[3]

**(iv)** Describe and explain the effect of pH on the development of the coloured products in this plant tissue.

.....

.....

.....[2]

**(v)** Oxygen is required for coloured end products to form.
Suggest how you might show the need for oxygen to cause the colour change.

.....

.....

.....

.....

.....

.....[5]

**(b)** Cut the other piece of **W1** saved from **(a)(i)** into two.

**(i)** Test one piece of **W1** with iodine solution.
Record your observations and conclusions in **Table 1.2** below.

**(ii)** Cut the remaining piece of **W1** into smaller pieces and place in a large test-tube. Use the biuret test.
Record your observations and conclusions in **Table 1.2** below.

**Table 1.2**

| test | W1 | |
|---|---|---|
| | observation | conclusion |
| iodine solution | | |
| biuret | | |

[4]

**(iii)** Describe briefly how you would carry out a test for simple reducing sugars. State what observation would indicate the presence of a reducing sugar.

.....

.....

.....

.....[3]

[Total : 21]

**2** You have been provided with a leaf labelled **W2**.

**(a) (i)** Make a large labelled outline drawing of the whole leaf and show the details of one pair of leaflets. Include at **least three** labels.

[9]

**(ii)** To which group, monocotyledon or dicotyledon, does **W2** belong?

.....

Describe **one** feature of **W2** which supports your answer.

.....

.....[2]

**(b)** The electronmicrograph shown in Fig. 2.1 shows a section through part of leaf similar to **W2**.

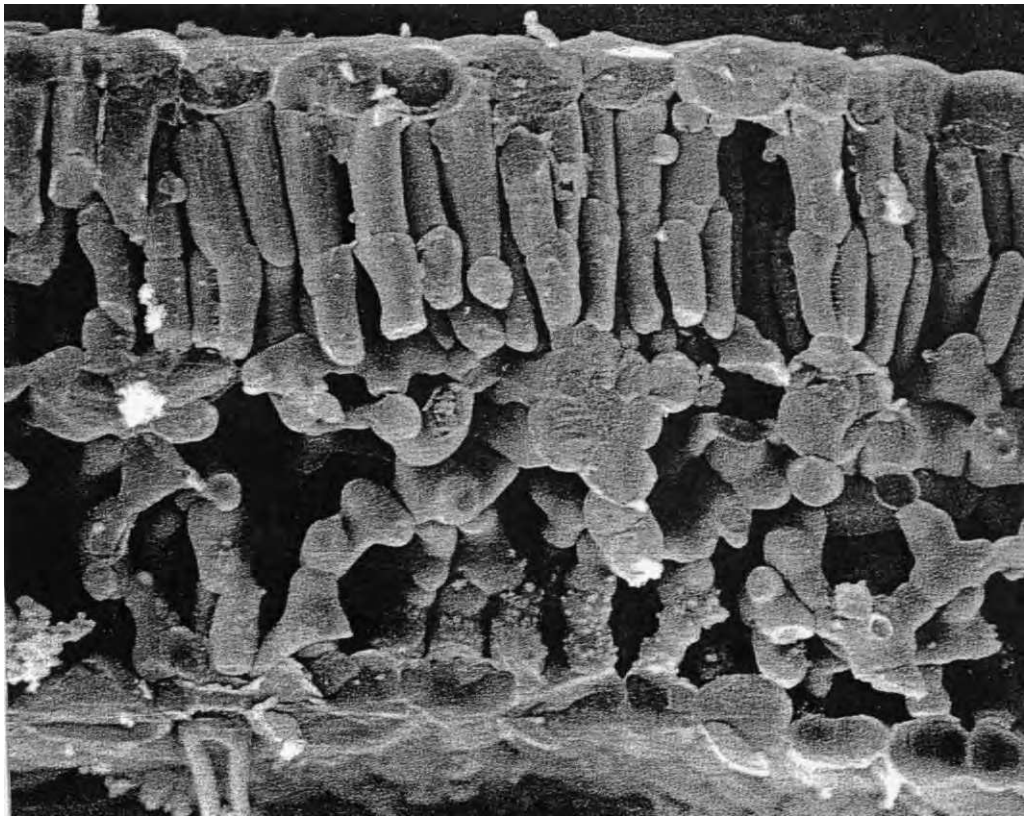

**Fig. 2.1**

**(i)** Name and label on Fig. 2.1, the different layers of cells. Identify clearly those cells which contain chloroplasts. [4]

**(ii)** Name and label a feature on Fig. 2.1 that enables gaseous exchange to occur. [1]

**(iii)** The section of the leaf is magnified by × 200. Calculate the thickness of the leaf.

*working*

*thickness of leaf* ..... [3]

[Total : 19]

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