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| Centre Number | Candidate Number | Name |
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UNIVERSITY OF CAMBRIDGE INTERNATIONAL EXAMINATIONS  
General Certificate of Education Ordinary Level

**BIOLOGY**

**5090/03**

Paper 3 Practical Test

October/November 2005

**1 hour 15 minutes**

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 question.

| For Examiner's Use |  |
|--------------------|--|
| 1                  |  |
| 2                  |  |
| <b>Total</b>       |  |

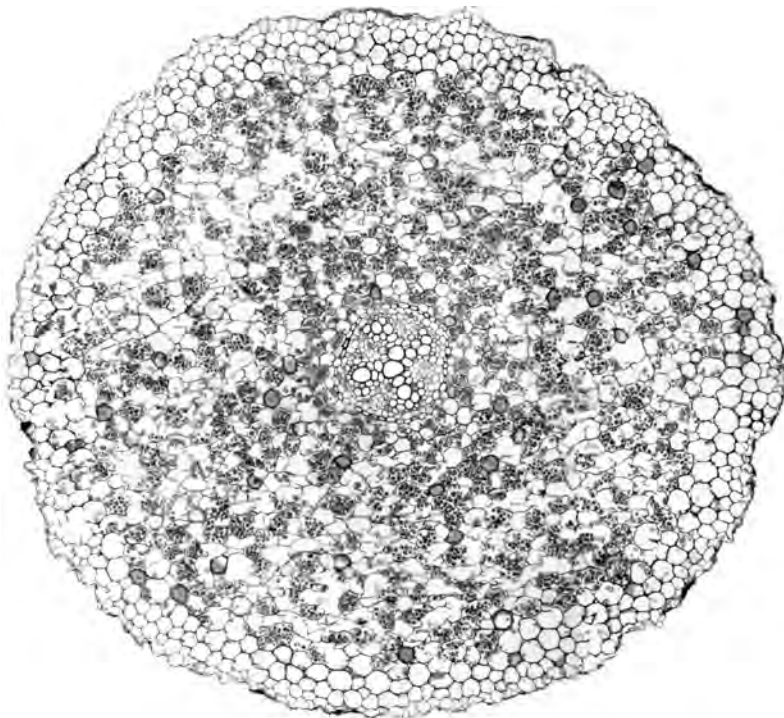
This document consists of **7** printed pages and **1** blank page.



- 1 ● Hold specimen **W1** on its side on the white tile then cut it in half from top to bottom.
  - Examine the cut surfaces, select the one that shows more detail of the structure.
- (a) Make a large, labelled drawing of the cut surface of **W1**, in the space below.

[4]

Fig. 1.1 is a photograph of a section through part of a plant.



**Fig. 1.1**

- (b) (i) List **three** visible features that show the similarity in structure of the plant part shown in Fig. 1.1 and the cut surface of specimen **W2**.

.....  
.....  
.....  
.....  
..... [3]

- (ii) Complete Table 1.1 to show two visible differences between the plant part shown in Fig. 1.1 and the cut surface of **W2**.

**Table 1.1**

| specimen in Fig. 1.1 | cut surface of <b>W2</b> |
|----------------------|--------------------------|
|                      |                          |
|                      |                          |

[2]

- Cut specimen **W2** across the middle to produce two complete discs of approximately equal thickness.
- Place one disc on the white tile with the newly cut surface on top.
- Cover this cut surface with iodine solution.
- Observe the effect for two to three minutes.

(c) (i) Describe and explain the appearance of the cut surface after 2–3 minutes.

.....  
.....  
.....  
..... [3]

- Cut six more, much thinner, slices from the other disc of **W2**.
- Cut these slices into small pieces.
- Place these pieces into a test-tube that is half filled with water.
- Mix the contents by shaking the test-tube, having covered the end with your thumb.
- Allow the contents to settle.
- Pour off the liquid into another test-tube.
- Test this liquid for the presence of reducing sugar.

(ii) Describe how the test was performed, what observation was made and the conclusion that could be drawn.

test .....

.....

.....

.....

observation .....

.....

conclusion .....

..... [4]

(iii) Suggest why the six slices were cut into very small pieces, placed in the test-tube and the liquid poured off to be tested.

.....

.....

..... [2]

[Total: 18]

- 2 ● You are required to prepare a neat, temporary, stained microscope slide.
  - Cut from specimen **W3** a small piece of stem that has on it 4–8 leaves.
  - Place this stem centrally on the microscope slide.
  - Mount in water under a cover glass.
- (a) (i) Make a large, fully labelled drawing of the whole slide, with the specimen in position.

[4]

(ii) Describe two ways in which you tried to ensure the neatness of your preparation.

1. ....

2. .... [2]

- Place a drop of the stain (iodine solution), on the slide so that the drop just touches one edge of the cover glass.
- Tear off a piece of filter paper and apply the torn edge to the opposite edge of the cover glass so that the filter paper touches the water under it.

(b) Observe what happens for about one minute and record what you see.

.....

.....

.....

.....

..... [4]

- (c) (i) Examine your completed slide with the hand lens and make a large, labelled drawing of **specimen W3 only**.

[5]

- (ii) Calculate the magnification of your drawing, as follows:

draw a line across your drawing;

measure the size of your drawing along this line and record it;

measure the actual size of specimen **W3** at the same points as the line across your drawing and record it;

use these figures to calculate the magnification of your drawing.

Show your working clearly.

*Magnification* = ..... [3]

- (iii) Suggest advantages of mounting material, such as specimen **W3**, on a microscope slide for examination.

.....

.....

.....

.....

..... [4]

[Total: 22]

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