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| 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 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 **8** printed pages.



2

- 1 In this exercise you are going to investigate the effect of placing potato pieces in solutions of different concentrations of sucrose.

You are provided with part of a fresh Irish potato, *Solanum tuberosum*, **P1**.

- Carefully cut three pieces from **P1**, each one as shown in Fig. 1.1.

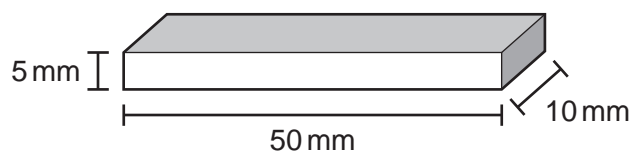


Fig. 1.1

- Place the three pieces of potato into the container labelled 'distilled water'.
- Make sure that the potato is completely covered by the water and that the pieces of potato are not stuck together.

Leave the experiment for 30 minutes.

During this time, complete (a)(i), (a)(ii), (c) and (d) and then start Question 2 if necessary.

- (a) You will be measuring the length of the potato pieces that have been in the distilled water after the 30 minutes has passed.

- (i) Suggest what you would expect to happen to the length of these potato pieces.

..... [1]

- (ii) In the space below, draw a table in which you can record the length of each potato piece and the mean length after 30 minutes in distilled water.

[3]

After 30 minutes

- Carefully remove the potato pieces from the container.
- Dry gently with paper towel.

(iii) Measure the length of each piece and record these values in your table. [1]

(iv) Calculate the mean length of the potato pieces after soaking in distilled water and enter this information in your table. [1]

The potato pieces soaked in distilled water may or may not have changed in length.

(v) Suggest an explanation for the results you have obtained.

.....

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.....

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..... [2]

You are provided with a piece of potato, **P2**, that has been soaked in a concentrated sucrose solution for 12 hours.

(b) (i) In Table 1.1, state **two** differences between the feel of one of the potato pieces that have been soaked in distilled water and **P2**.

Table 1.1

| potato chips soaked in distilled water | P2 |
|--|---------------------------|
| <p>.....</p> <p>.....</p> | <p>.....</p> <p>.....</p> |
| <p>.....</p> <p>.....</p> | <p>.....</p> <p>.....</p> |

[2]

(ii) Explain the differences you have recorded in Table 1.1.

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..... [3]

(c) Another experiment was carried out with cylinders of potato that were placed in different concentrations of glucose solution for 24 hours. The cylinders were each 80 mm long before they were put into the glucose solution. The measurements after soaking are shown in Table 1.2.

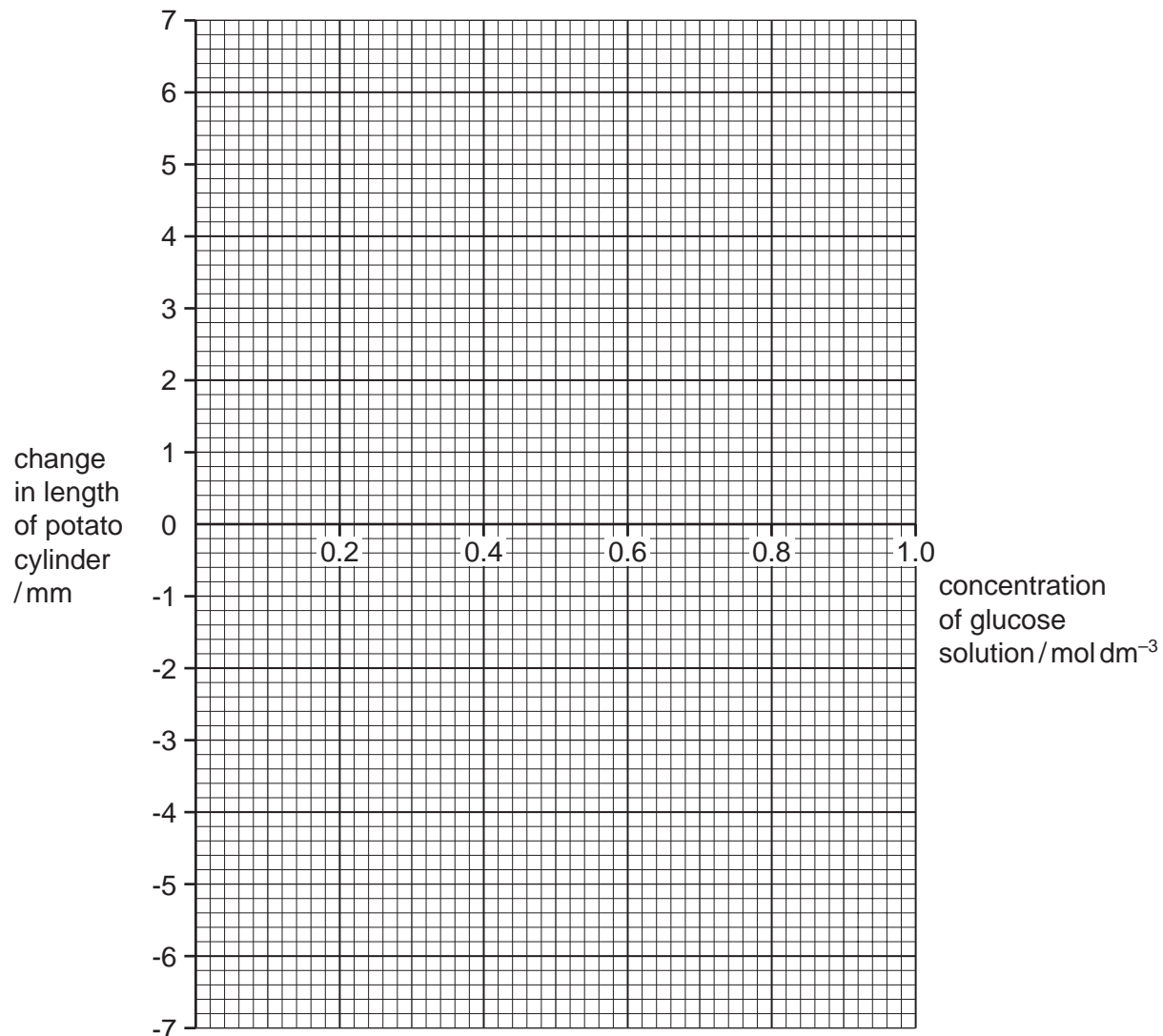
Table 1.2

| | | | | | |
|--|-----|-----|-----|-----|-----|
| concentration of glucose solution / mol dm ⁻³ | 0.2 | 0.4 | 0.6 | 0.8 | 1.0 |
| length of potato cylinder / mm | 81 | 78 | 76 | 75 | 75 |
| change in length of potato cylinder / mm | | | | | |

5

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- (i) Complete Table 1.2 by calculating the change in length of the potato cylinders after soaking. [2]
- (ii) Plot the change in length of the potato cylinders against the concentration of glucose solution on the grid below. [2]



- (iii) Using information from your graph, estimate the concentration of glucose solution which results in no change in length.

..... [1]

[Total : 18]

2 **W1** is a seed that has been soaked in water for 24 hours. It has been cut in half longitudinally.

(a) (i) Make a large, labelled drawing of the cut surface of the seed.

[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 seed.

length of seed

Calculate the magnification of your drawing.
Show your working.

Magnification = [3]

W2, W3 and W4 are samples of extracts taken from seeds of the same species.

(b) (i) Describe how you would test each sample for the presence of:

starch;

reducing sugar. [4]

(ii) State the result you would expect to see if:

starch is present; [1]

reducing sugar is present. [1]

(c) Test **each** of the samples **W2, W3 and W4** for starch **and** reducing sugar. Write your conclusions below.

W2

W3

W4 [3]

- (d) **W2** is an extract from a whole seed that is **not** germinating.
- W3** is an extract from the cotyledons of a germinating seed.
- W4** is an extract from the growing points of a germinating seed.

Use this information to explain your conclusions in (c).

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..... [4]

[Total : 22]

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