UNIVERSITY OF CAMBRIDGE INTERNATIONAL EXAMINATIONS
General Certificate of Education Ordinary Level

CANDIDATE NAME

CENTRE NUMBER

CANDIDATE NUMBER

2072776391

BIOLOGY **5090/31**

Paper 3 Practical Test **October/November 2011**

1 hour 15 minutes

Candidates answer on the Question Paper.

Additional Materials: As listed in the Confidential Instructions.

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, graphs or rough working.
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	
1	
2	
3	
Total	

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

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You are advised to read the whole of the question paper before starting the practical work.

For Examiner's Use

1 You are required to investigate factors affecting photosynthesis in leaf discs.

You are provided with three samples.

A fresh, green leaf, labelled **D1**.

Two decolourised leaf discs, labelled **D2** and **D3**.

(a)
- Using forceps, pick up **D1** and hold just below the surface of the hot water in the beaker for about 10 seconds.

Record and explain your observations.

observations .....

explanation .....

.....

..... [4]

(b)
- Using forceps, pick up and hold **D2** in the hot water for about 10 seconds, then place it on the white tile.
- Cover **D2** with iodine solution.
- Observe any changes in the disc over the next two minutes.

(i) Record your observations in Table 1.1 and state your conclusion.

- Repeat this procedure with **D3**.

(ii) Record your observations in Table 1.1 and state your conclusion.

Table 1.1

	D2	**D3**
observation		
conclusion		

[4]

For Examiner's Use

(iii) Suggest why **D2** and **D3** were dipped in hot water.

.....

..... [1]

(iv) The two leaves from which **D2** and **D3** were taken had been treated differently.

No chemicals were used.

Suggest how their treatment differed.

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..... [1]

(v) Explain the observations and conclusions you made in Table 1.1.

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..... [4]

(c) Outline the stages in the process by which the decolourised discs were prepared. Give practical details and explain the reason for each stage.

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..... [5]

[Total: 19]

2 You are required to carry out an investigation to compare the reducing sugar content of two solutions.

For Examiner's Use

- Cut a cube of juicy tissue from specimen **D4** approximately 3 cm × 3 cm × 3 cm.
- Place it in the beaker and squash it with the spatula to release as much juice as possible.
- Allow the crushed tissue to settle.
- Pour the juice only into a test-tube.
- Repeat, if necessary, until the test-tube contains 2 cm depth of juice.
- Label the test-tube **D4**.
- Place a similar amount of the glucose solution provided in a second test-tube. Label the test-tube **G**.

(a) (i) Describe how you would carry out a test to demonstrate the presence of reducing sugar in each of these two solutions.

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..... [4]

(ii) Explain how the results of these tests may be used to compare the relative concentrations of the reducing sugar in these two solutions.

.....

..... [1]

(iii) Carry out the test you have described in **(a)(i)** on each solution and complete Table 2.1.

Table 2.1

	glucose solution **G**	solution from **D4**
observation		
conclusion		

[2]

(iv) State which solution has the higher reducing sugar content.

..... [1]

For Examiner's Use

(b) Suggest how your investigation could be improved in order to get a more reliable result.

.....

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..... [2]

[Total: 10]

Turn over for Question 3

3 You are provided with specimen **D5**. Using the hand lens provided observe specimen **D5**.

For Examiner's Use

(a) (i) Make a large, detailed drawing to show the structure of specimen **D5**. Labels are **not** required.

[5]

(ii) Calculate the magnification of your drawing in **(a)(i)**.

Rule a line across your drawing to show where you measured.
Show your working clearly.

magnification ..... [3]

(iii) Suggest how the structure of **D5** enables the seed to be more efficiently dispersed.

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..... [3]

[Total: 11]

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