O

UNIVERSITY OF CAMBRIDGE INTERNATIONAL EXAMINATIONS
General Certificate of Education Ordinary Level

CANDIDATE NAME

CENTRE NUMBER

CANDIDATE NUMBER

BIOLOGY **5090/03**

Paper 3 Practical Test **October/November 2007**

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 **both** 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.
Do **not** write in the grey areas between the pages.

For Examiner's Use	
1	
2	
Total	

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

1 You are provided with three maize seedlings.

For Examiner's Use

- select one of the seedlings that shows clearly the remains of the grain and the parts growing from it.

(a) (i) Make a large, labelled drawing to show the structure of the seedling.

[5]

(ii) Measure a suitable part of both specimen and drawing, and calculate the magnification of your drawing. Indicate on your drawing where the measurement was taken.

size of part of drawing = ...

size of part of specimen = ...

show your working clearly.

magnification = ... [3]

(b) Read carefully all the instructions before starting this section.

For Examiner's Use

- cut off all parts that have grown from the three grains,
- chop the remains of the grains as finely as possibly on the tile,
- approximately half fill one of the large test-tubes with water,
- place starch solution in the Visking tubing up to a depth of approximately 4 cm using the pipette or syringe provided. You may find it helpful to stand the Visking tubing in the empty large test-tube to support it whilst filling it,
- add the chopped grains to the starch solution in the Visking tubing,
- using the funnel and thin rod, or folded card, to help you, rinse the white tile so that it is clean for later use,
- gently rinse the lower part of the Visking tubing under the tap to clean it,
- transfer the Visking tubing into the large test-tube containing water. Use the clip or peg to attach the Visking tubing to the top of the large test-tube so that the contents of the tubing are below the water level,
- place a drop of the water from the large test-tube on a clean white tile and test it for the presence of starch,
- test another sample of the water from the large test-tube for reducing sugar. Do not throw this away until after you have completed **(c)**.

(i) State the results of the test for

starch, ...

reducing sugar. .....[2]

(ii) Describe how you carried out the test for reducing sugar.

.....

.....

.....[3]

Leave the experiment for about 30 minutes before carrying out (c).

Begin question 2 while you wait.

(c) Repeat the same two tests on the water in the test-tube.

State the results of the test for

starch, ...

reducing sugar. .....[2]

(d) Explain what has happened in the apparatus during this experiment to produce these results.

For Examiner's Use

.....

.....

.....

.....

.....

.....[3]

(e) Describe a plan for a similar experiment to allow you to make a valid comparison between maize seedlings and rice seedlings. Give full practical details.

.....

.....

.....

.....

.....

.....[4]

[Total : 22]

2 • measure the length of the leaf, specimen **W1**. (Do **not** include the petiole),

• measure the width across the leaf at its widest part.

For Examiner's Use

length = ... width = ...

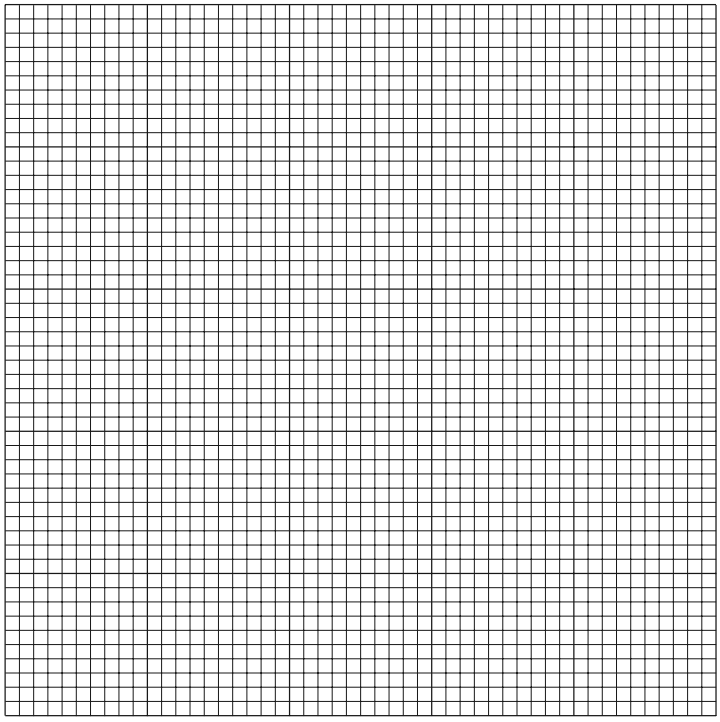
(a) (i) Estimate the surface area on one side of the leaf by multiplying its length by its width and dividing the product by two.

Showing your working and your answer clearly.

[3]

• Place the leaf on the grid below and, with a pencil, trace its outline.

(ii) Calculate the surface area of the leaf by counting the squares.



Show your working and your answer clearly.

surface area = ... [4]

(iii) Suggest one advantage and one disadvantage of the method of estimating in **(a) (i)**.

advantage .....

disadvantage .....[2]

(b) (i) State what further information is required in order to determine the volume of the leaf.

.....[1]

(ii) Suggest and explain some advantages of leaves having a large surface area to volume ratio.

.....

.....

.....[2]

(c) Compare specimen **W1** with specimen **W2**

(i) by listing three visible features that are the same in both specimens

1. .....

2. .....

3. .....[3]

(ii) by completing Table 2.1 with three pairs of contrasting features that are visible in the two specimens.

Table 2.1

	specimen **W1**	specimen **W2**

[3]

[Total : 18]

BLANK PAGE

BLANK PAGE