Centre Number	Candidate Number	Name

CAMBRIDGE INTERNATIONAL EXAMINATIONS
General Certificate of Education Ordinary Level

BIOLOGY **5090/03**

Paper 3 Practical Test

May/June 2003

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 on all the work you hand in.
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, **1** blank page and a Supervisor's Report.

UNIVERSITY of CAMBRIDGE
Local Examinations Syndicate
[Turn over

Answer both questions.

Write your answers in the spaces provided.

1 You are provided with three test-tubes, labelled **T1**, **T2** and **T3**, each containing hydrogencarbonate indicator.
The original colour of the indicator in each test-tube was orange/red.
Without removing the bungs, remove the foil from **T1** and look carefully at each test-tube.
State the colour of the indicator solution in each test-tube.

*colour of indicator solution in **T1*** .....

*colour of indicator solution in **T2*** .....

*colour of indicator solution in **T3*** .....

Remove the bung from **T3** and carefully pour half of the solution into the empty test-tube.
Using the straw provided, **carefully** blow through the straw into this solution.
Continue to blow bubbles until the solution changes colour.

(a) (i) State the colour change. .....[1]

(ii) The indicator changes colour because of the carbon dioxide in your breath.

What does this suggest about the atmosphere in **T1**?

.....[1]

(iii) Account for the colour change in **T1**.

.....

.....

.....

.....

.....[4]

(iv) Account for the colour change in **T2**.

.....

.....

.....

.....[3]

(b) You are also provided with two leaves, labelled **L1** and **L2**.
One of the leaves was kept in conditions similar to **T1** and the other in conditions similar to **T2**.
Both were then placed in boiling water and then in hot alcohol to remove the chlorophyll.

Test each leaf for the presence of starch.

(i) Complete Table 1.1.

Table 1.1

	observation	starch present / absent
L1		
L2		

[4]

(ii) Do your results for the starch tests support your answers to **(a)(iii)** and **(iv)**? Explain your reasoning.

.....

.....

.....[2]

(c) Explain the purpose of the original contents of **T3** in this experiment.

.....

.....

.....[2]

(d) Suggest how the experiment could be used to show how varying the light intensity affects the rate of photosynthesis.

.....

.....

.....

.....[3]

(e) A student decided to repeat the original experiment using **T1**, **T2** and **T3**, but replaced the leaves with a gauze bag containing beetles.

Suggest and explain any colour changes to the indicator solution after several hours.

T1 *colour* .....

explanation .....

.....

T2 *colour* .....

explanation .....

.....[4]

[Total : 24]

2 You are provided with a small fruit, labelled **S1**.

Examine the specimen using your hand lens.

(a) (i) Make a large, labelled drawing of the specimen in the space below.

[5]

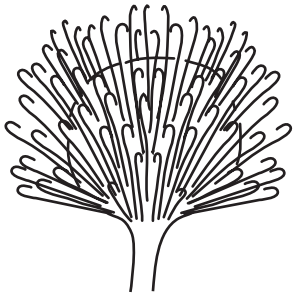
(ii) Calculate the magnification of your drawing.
Show your working.

width of specimen .....

width of drawing .....

magnification .....[3]

(b) Fig. 2.1 is a drawing of a different type of fruit called burdock.



x 3

Fig. 2.1

Describe the appearance of each of the fruits and relate the structure of each to its dispersal.

S1 .....

.....

burdock .....

.....[4]

(c) You are also provided with another fruit, labelled **S2**.
Squeeze some of the contents of the fruit into a test-tube.
Add water to a depth of 2 cm.

Test the fruit juice for the presence of reducing sugar.

(i) Complete Table 2.1.

	observation	reducing sugar present / absent
S2		

[2]

(ii) Examine the remains of the fruit.

Suggest a method of dispersal for the seeds of this fruit and state how your result from **(i)** and your observations of the fruit support your suggestion.

.....

.....

.....

.....[2]

[Total : 16]

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SUPERVISOR'S REPORT

**Information that applies to all candidates need only be given once.*

The Supervisor or Teacher responsible for the subject is asked to answer the following questions.

1 Was any difficulty experienced in providing the necessary materials? If so, give brief details.

2 Did the candidate experience any difficulty during the course of the examination? If so, give brief details. Reference should be made to

(a) difficulties arising from faulty specimens;

(b) accidents to apparatus or materials;

(c) any information that is likely to assist the Examiner, especially if this cannot be discovered from the scripts.

Declaration (to be signed by the Principal, and completed on the top script from the Centre)

The preparation of the practical examination has been carried out so as to fully maintain the security of the examination.

Signed .....

Name (in block capitals) .....

***Information that applies to all candidates need only be given once.**

N.B. If scripts are required by CIE to be despatched in more than one envelope, it is essential that a copy of the relevant Supervisor's Results (when requested), the Supervisor's Report and the appropriate seating plan are sent inside **each envelope**.