Centre Number	Candidate Number	Name

UNIVERSITY OF CAMBRIDGE INTERNATIONAL EXAMINATIONS
International General Certificate of Secondary Education

BIOLOGY **0610/05**

Paper 5 Practical Test

May/June 2004

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 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 **7** printed pages and a Supervisor's Report.

UNIVERSITY of CAMBRIDGE
International Examinations

[Turn over

1 Read the whole question before you begin.

Introduction

During digestion, the enzyme amylase breaks down starch into maltose. The intensity of the colour on testing with iodine solution at regular intervals is one means of following the process to show that the starch is being broken down.

(a) Use a glass rod to place a drop of water on a tile. Dry the glass rod.

Place a drop of starch solution on a **different** part of the tile.

Test both samples with a drop of iodine solution.

Record your observations of both samples in the space below.

[2]

Investigation

You will now investigate the effect of salt, sodium chloride, on the action of amylase on starch.

(b)
- Label two large test-tubes **A1** and **B1**.
- Place 5 cm^3 of starch solution in each tube.
- **Wash the measuring apparatus thoroughly after each use.**
- Place 16 drops of iodine solution in two groups of 8 on a cleaned, dry white tile. The drops should be spaced out so they do not mix into each other.

(i) Sketch the outline of the tile in the space below. Show the arrangement of your drops of iodine.

[2]

(ii) Prepare a table to record your observations of the starch tests on the contents of tubes **A1** and **B1** using the information from the instructions below.

[4]

- Tube **A2** contains 2 cm^3 of amylase solution and 1 cm^3 of sodium chloride solution.
- Tube **B2** contains 2 cm^3 of amylase solution and 1 cm^3 of water.
- Add the contents of **A2** to tube **A1** and immediately add the contents of **B2** to tube **B1**.
- Start timing **now**.
- After one minute test a drop from tube **A1** for starch using one of the drops on the tile.
- Immediately test a drop from tube **B1** using a different drop of iodine.
- Repeat your starch tests on drops from tubes **A1** and **B1** every minute for 8 minutes.

(iii) Record your observations in the table you have prepared.

[3]

(c) From your results, describe the effect of the salt solution on the action of amylase.

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..... [2]

(d) Explain why the 1 cm^3 of water was added to tube **B2**.

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..... [2]

(e) In the body, starch is broken down in the mouth by salivary amylase. The pH of saliva can vary between pH 5 and pH 7.

Outline an experiment to investigate the effect of pH on the activity of amylase.

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..... [5]

[Total: 20]

2 You are provided with specimen **S1**, a wind dispersed fruit, with a wing-like extension.

(a) (i) Make a large drawing of specimen **S1** in the space below. Label the position of the seed and the point of attachment of the fruit to its parent plant.

[6]

Do not draw in this space

[Turn over

(ii) Measure the length of the fruit and show this as a line on your drawing.

Calculate the magnification of your drawing.

length of line on drawing .....

actual length of the fruit .....

working

magnification .....

[6]

(b) **Fig. 2.1** shows an *Acer* fruit with a wing-like extension.

- Using scissors, cut carefully around the outline of the complete fruit including the wing-like extension.
- Lay this paper cut-out on the grid, **Fig. 2.2**.
- Draw around the edge of the cut-out.

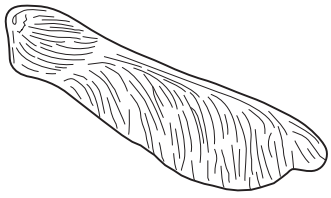

Fig. 2.1

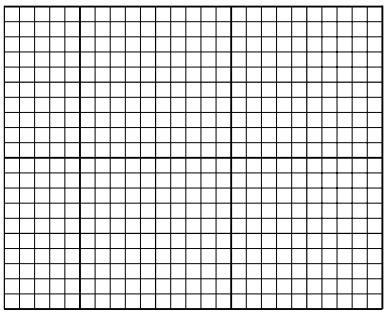

Fig. 2.2

(i) Determine the surface area of the fruit.

show your working

area of fruit .....

[3]

(ii) Describe the method you used to determine the surface area.

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..... [3]

(c) The size of the wing-like extension helps to disperse the fruit away from the parent plant. Describe environmental factors that would also affect the distance travelled by such a fruit.

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..... [2]

[Total: 20]

SUPERVISOR'S REPORT

**The Supervisor or teacher responsible for the examination is asked to answer the following questions.*

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

2 Did the candidate experience any difficulty during the course of the examination? If so, give brief particulars. 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.

3 Record the times taken for the amylase to breakdown the starch with and without sodium chloride present.

4 Please identify the name of specimen **S1** and draw an outline of the fruit provided to candidates. Give the measurement of the length of specimen **S1**.

Declaration to be signed by Principal and completed on top script from Centre.

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

Signed .....

Name (in block capitals) .....

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

N.B. If scripts are required by UCLES 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.