



UNIVERSITY OF CAMBRIDGE INTERNATIONAL EXAMINATIONS
International General Certificate of Secondary Education

CANDIDATE
NAME

CENTRE
NUMBER

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CANDIDATE
NUMBER

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BIOLOGY

0610/06

Paper 6 Alternative to Practical

May/June 2008

1 hour

Candidates answer on the Question Paper.

No Additional Materials are required.

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 or graphs.

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 **9** printed pages and **3** blank pages.



- 1 Humans and other mammals are able to maintain a relatively constant body temperature, despite widely ranging environmental temperatures. Mammals, unless adapted to living in water, seem to prefer not to get wet.

Three flasks were set up as shown in Fig. 1.1. Each flask represents a hot mammal cooling down.

Flask **A** had nothing around the flask. This represents a hairless mammal.

Flask **B** had a dry covering of cotton wool around the flask. This represents a mammal with dry fur.

Flask **C** had a wet covering of cotton wool soaked in water around the flask. This represents a mammal with wet fur.

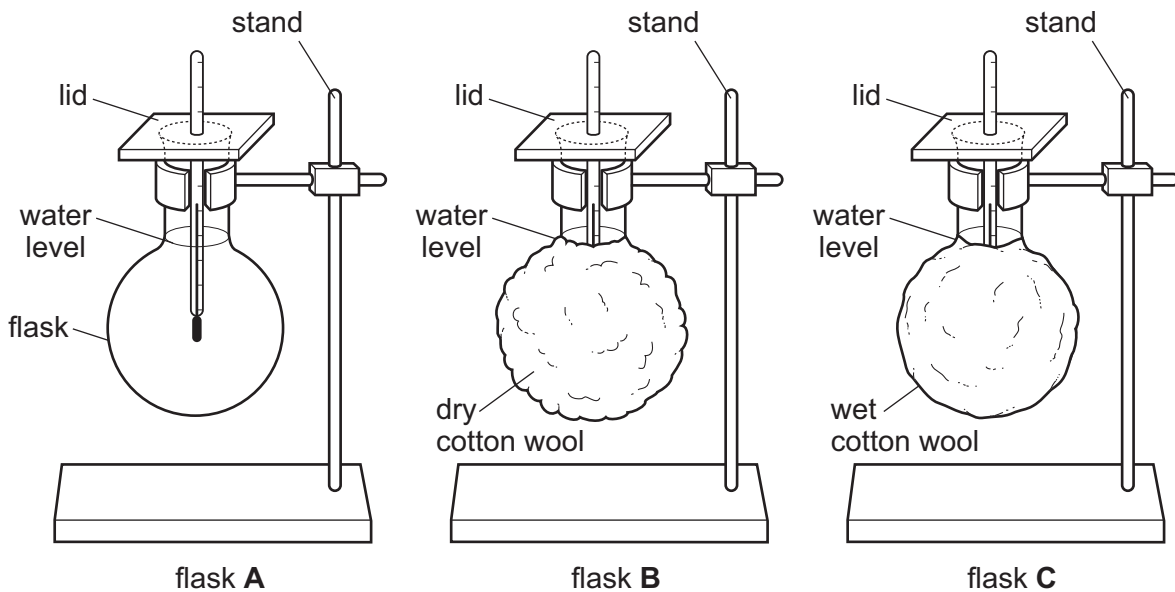


Fig. 1.1

Each flask was covered with a lid through which a thermometer was suspended. The bulb of the thermometer was immersed in the water, but did not touch the sides of the flask. Each flask was filled with an equal volume of hot water.

The temperature of the water in each flask was measured as it cooled.

Readings were taken every 2 minutes and recorded in Table 1.1.

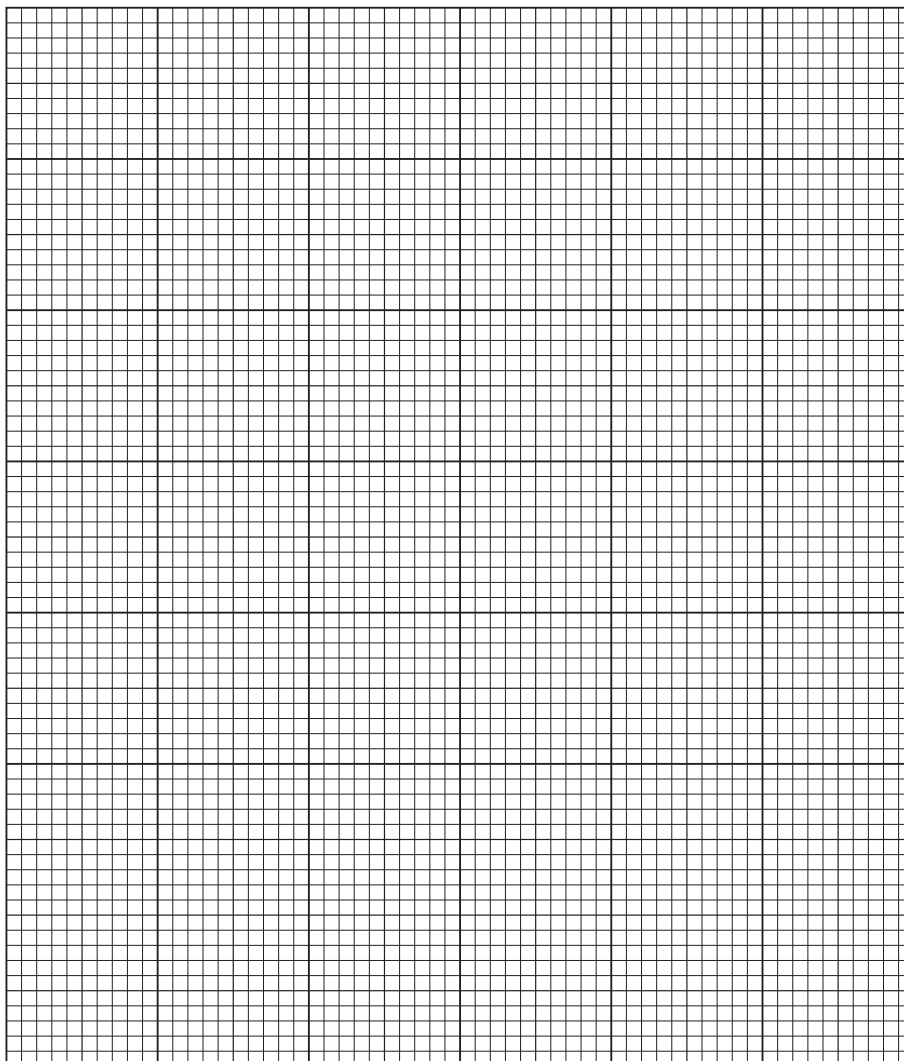
A laboratory clock was used to check the time.

Table 1.1

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temperature / °C			
time / min	flask A	flask B	flask C
0	70	70	70
2	66	68	64
4	61	67	58
6	58	65	52
8	50	61	42
10	45	60	40

(a) (i) On the same axes plot a graph of the three sets of results.



[5]

(ii) Compare cooling of the water in the three flasks.

flask **A** compared with flask **B**.

.....
.....

flask **B** compared with flask **C**.

.....
.....

flask **C** compared with flask **A**.

..... [3]
.....

(iii) Explain what has happened to produce these results.

..... [3]
.....
.....
.....

(b) (i) Describe **three** ways in which this investigation was a fair test.

..... [3]
.....
.....
.....
.....

(ii) Describe **two** improvements which would increase the accuracy and reliability of this investigation.

.....
.....
.....
..... [2]

[Total: 16]

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2 Fig. 2.1 shows a tomato and Fig. 2.2 shows an apple, both are cut in half longitudinally through the middle.

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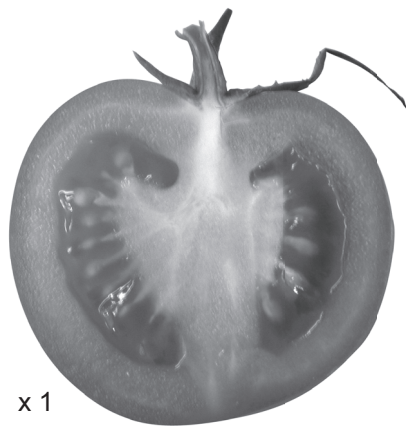


Fig. 2.1

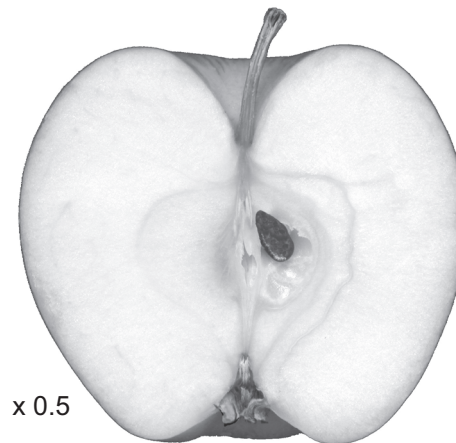


Fig. 2.2

(a) Make a large, labelled drawing of the cut surface of the tomato fruit shown in Fig. 2.1.

[5]

- (b) (i) Complete Table 2.1 to show four **differences** between the two fruits visible in Fig. 2.1 and Fig. 2.2.

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Table 2.1

	tomato	apple
1		
2		
3		
4		

[4]

- (ii) Describe two **similarities** between the two fruits visible in Fig. 2.1 and in Fig. 2.2.

1.

2. [2]

- (c) Describe an investigation you could carry out to compare the reducing sugar content of these two fruits.

Include any safety precautions you will need to consider.

.....
.....
.....
.....
.....
.....
.....
.....
.....
.....
.....

[6]

[Total: 17]

- 3 Pollen grains start to germinate when they land on a suitable stigma and produce a pollen tube. Fig. 3.1 shows a single carpel from a flower with a germinating pollen grain.

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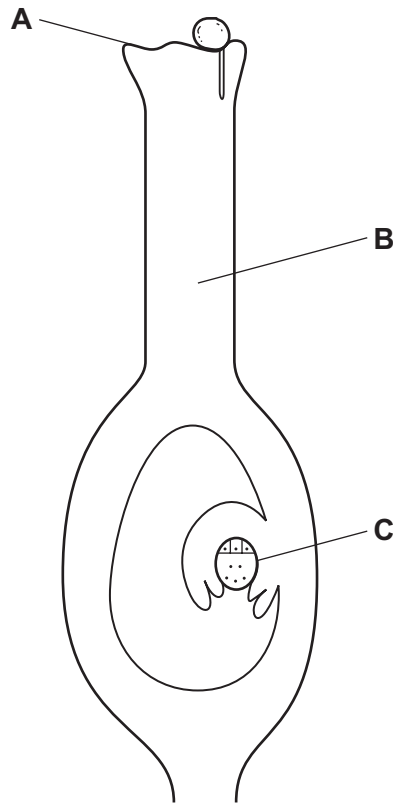


Fig. 3.1

- (a) (i) Identify the structures labelled **A**, **B** and **C**.

A

B

C [3]

- (ii) Draw a line on Fig. 3.1 to continue the path taken by the pollen tube until it enters structure **C**.

[1]

- (b) (i) Measure the diameter of the pollen grain shown in Fig. 3.1 and the approximate distance the pollen tube grows to reach and enter structure C.

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Diameter of pollen grain mm

Distance grown mm [1]

- (ii) How many times greater is the distance grown by the pollen tube than the diameter of the pollen grain?

..... times greater [2]

[Total: 7]

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