



UNIVERSITY OF CAMBRIDGE INTERNATIONAL EXAMINATIONS
International General Certificate of Secondary Education

CANDIDATE
NAME

CENTRE
NUMBER

--	--	--	--	--

CANDIDATE
NUMBER

--	--	--	--

BIOLOGY

0610/63

Paper 6 Alternative to Practical

May/June 2012

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.

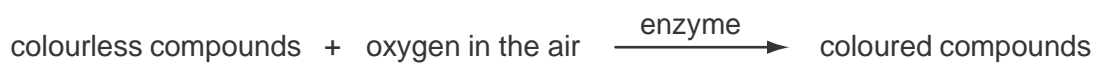
For Examiner's Use	
1	
2	
3	
Total	

This document consists of 9 printed pages and 3 blank pages.



BLANK PAGE

- 1 Apple tissue changes colour in the air. Apple cells are thought to contain an enzyme which is a catalyst for the reaction:



Some students investigated this reaction.

The students cut a slice of apple with a knife as shown in Fig. 1.1.

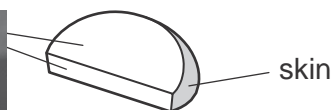
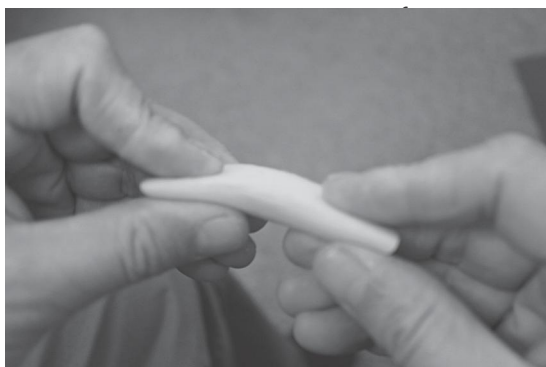


Fig. 1.1

shown in Fig. 1.2.



Fig. 1.2

Each piece was put into a different dish. The dishes were labelled 1 and 2.

A few drops of water were put on the cut surface and the broken surface of the piece of apple in dish 1.

A few drops of lemon juice were put on the cut surface and the broken surface of the piece of apple in dish 2.

Every five minutes for 20 minutes the students observed the pieces of apple and recorded their observations in Table 1.1.

For
Examiner's
Use

BLANK PAGE

For
Examiner's
Use

Table 1.1

time / minutes	dish 1, apple with water		dish 2, apple with lemon juice	
	broken surface	cut surface	broken surface	cut surface
5	no change	very light brown	no change	no change
10	no change	light brown	no change	no change
15	very light brown	light brown with dark brown patches	no change	no change
20	light brown	dark brown	no change	no change

The lemon juice was tested with litmus paper. It changed colour from blue to red.

(a) State the meaning of this colour change.

.....
 [1]

(b) Look at Table 1.1. Describe the differences between the appearance of the cut surfaces in dish 1 and dish 2 during the experiment.

.....
 [1]

(c) The colour changes are thought to involve enzyme activity.

(i) Explain how the observations in Table 1.1 and your description in (b) support this statement.

.....

 [3]

BLANK PAGE

For
Examiner's
Use

- (ii) Using your knowledge of enzyme activity, describe another experiment that would test the idea that enzymes are involved in this colour change.

.....

.....

.....

.....

.....

.....

..... [3]

- (d) (i) Look at Table 1.1. Describe the differences between the appearance of the broken surface and the cut surface in dish 1 during the experiment.

.....

.....

.....

..... [2]

- (ii) Cutting the apple with a knife damages cells, releasing the contents.

Suggest, from the observations in Table 1.1 and your description in (d)(i), how breaking instead of cutting the apple may affect the cells.

.....

..... [1]

[Total: 11]

BLANK PAGE

2 The animals labelled A and B in Fig. 2.1 are both arthropods.

For
Examiner's
Use

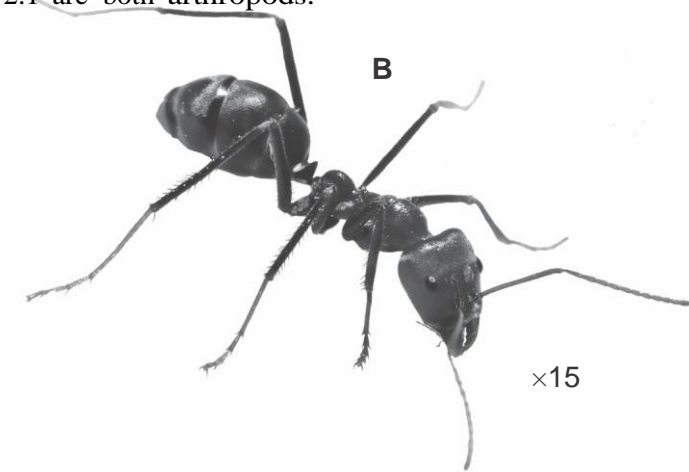
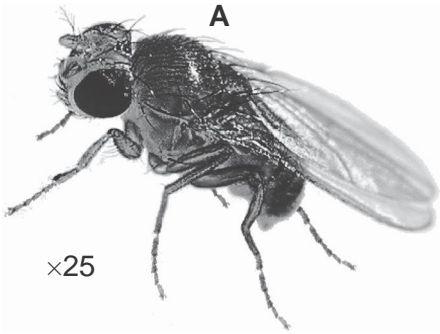


Fig. 2.1

(a) Make a large labelled drawing of the head of arthropod B

[5]

(b) A and B belong to the same group of arthropods.

(i) Name this group

..... [1]

(ii) State two visible features of A and B which show that they belong to this group

1



BLANK PAGE

(d) Fig. 2.3 shows a banana and a similar fruit called a plantain.

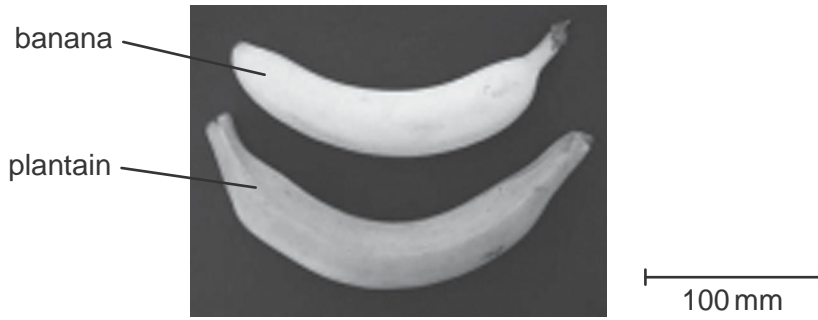


Fig. 2.3

Suggest an investigation to find out if fruit flies are more likely to feed on banana or plantain.

.....

.....

.....

.....

.....

.....

..... [3]

[Total: 19]

For
Examiner's
Use

3 Fig. 3.1 is a photograph of the flower of *Amaryllis*, *Hippeastrum aglaiae*.

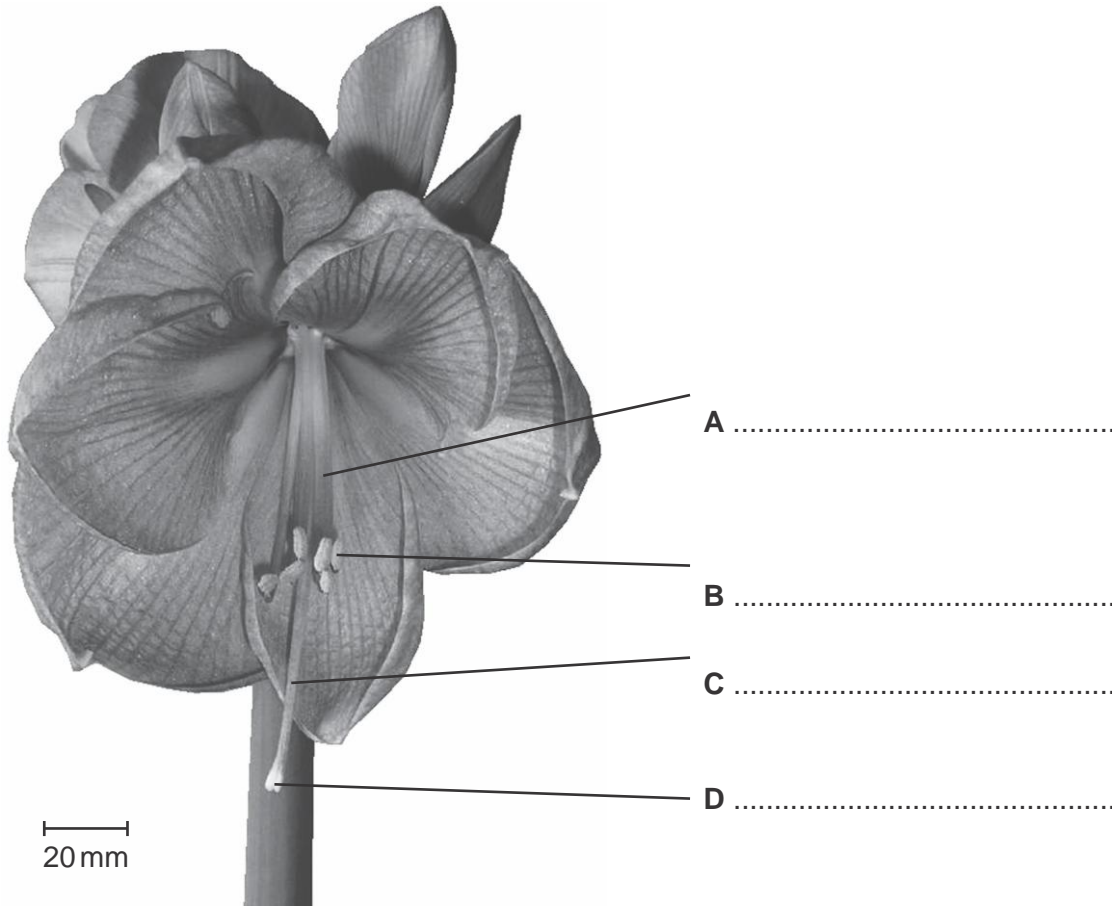


Fig. 3.1

(a) (i) On Fig.3.1, name the parts of the flower labelled A, B, C and D.

Write your answers on the lines in Fig.3.1 [4]

Plant breeders use small paint brushes to pollinate flowers of *Amaryllis* artificially.

(ii) State the letter of the part from which the pollen is taken.

..... [1]

(iii) State the letter of the part on which the pollen is put.

..... [1]

(iv) State one visible feature in Fig. 3.1 which shows that this flower is usually pollinated by insects.

.....
..... [1]

BLANK PAGE

Fig 3.2 shows four pollen grains from an Amaryllis flower.

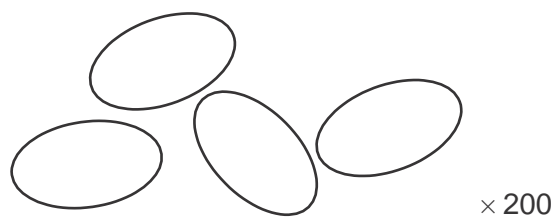


Fig. 3.2

(b) Measure the length of a pollen grain in mm.

Length of pollen grain mm

Calculate the actual length of the pollen grain that you measured in mm.

Show your working.

actual length of pollen grain mm [3]

[Total: 10]

For
Examiner's
Use

BLANK PAGE

BLANK PAGE

Copyright Acknowledgements:

Question 2 Figure 2.1A Photograph © Drosophila melanogaster; <http://www.thekitchen.com>.
Question 2 Figure 2.1B Photograph © Iridomyrmex purpureus; http://en.wikipedia.org/wiki/Meat_ant.
Question 2d Figure 2.3 Photograph © Banana and a plantain; <http://www.grabemsnacks.com/what-is-a-plantain.html>.
Question 3a Figure 3.1 Photograph © Olive Ford © UCLES.

Permission to reproduce items where third-party owned material protected by copyright is included has been sought and cleared where possible. Every reasonable effort has been made by the publisher (UCLES) to trace copyright holders, but if any items requiring clearance have unwittingly been included, the publisher will be pleased to make amends at the earliest possible opportunity.

BLANK PAGE

University of Cambridge International Examinations is part of the Cambridge Assessment Group. Cambridge Assessment is the brand name of University of Cambridge Local Examinations Syndicate (UCLES), which is itself a department of the University of Cambridge.