UNIVERSITY OF CAMBRIDGE INTERNATIONAL EXAMINATIONS
International General Certificate of Secondary Education

BIOLOGY

Paper 6 Alternative to practical

0610/06

October/November 2004

1 hour

Candidates answer on the Question Paper.
No Additional Materials are required.

Candidate Name

Centre Number

Candidate Number

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 pencil for any diagrams, graphs or rough working.
Do not use staples, paper clips, highlighters, glue or correction fluid.

Answer **all** questions.
The number of marks is given in brackets [ ] at the end of each question or part question.

DO NOT WRITE IN THE BARCODE.

DO NOT WRITE IN THE GREY AREAS BETWEEN THE PAGES.

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 on this page.

Stick your personal label here, if provided.

For Examiner's Use	
1	
2	
3	
4	
Total	

This document consists of **8** printed pages.

1 Fig. 1.1 and Fig. 1.2 show the external features of two 'worms', **A** and **B**. These worms belong to two different groups of invertebrates.

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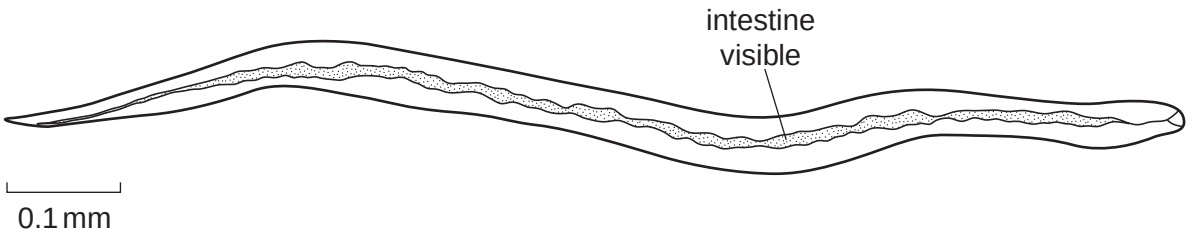
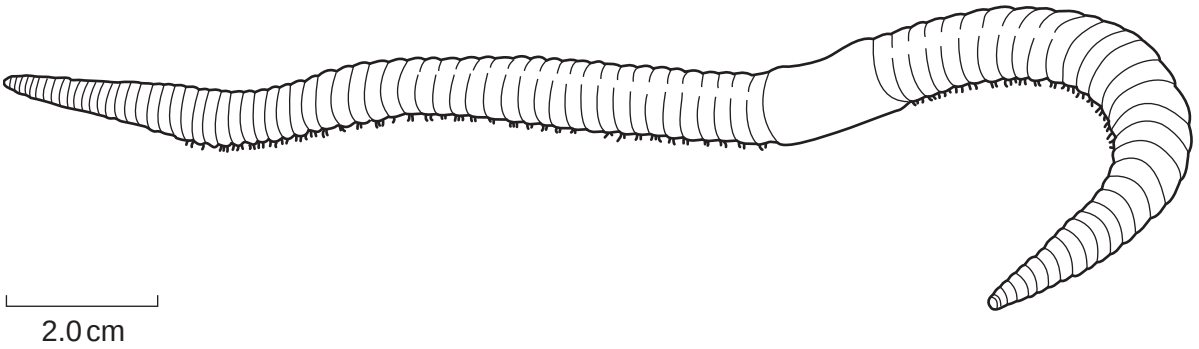


worm **A**

Fig. 1.1



worm **B**

Fig. 1.2

(a) (i) Calculate the actual length of worm **A**.

working

actual length of worm **A**. ..... [2]

(ii) Calculate how many times worm **B** is larger than worm **A**.

working

answer ..... [2]

(b) Compare the two worms by completing the table to show three differences and one similarity.
The first has been done for you.

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	worm **A**	worm **B**
difference 1	smaller	larger
difference 2		
difference 3		
similarity		

[3]

(c) Name the groups to which the two worms belong.

worm **A** .....

worm **B** .....
[1]

[Total : 8]

2 Blackspot is a disease of rose leaves caused by a fungus. The spots are composed of dead tissue. The disease appears in polluted and non-polluted areas.

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Fig. 2.1 shows the spots present on 25 leaflets from rose bushes sampled at random from a polluted area and a non-polluted area. The black spots are visible in the drawings.

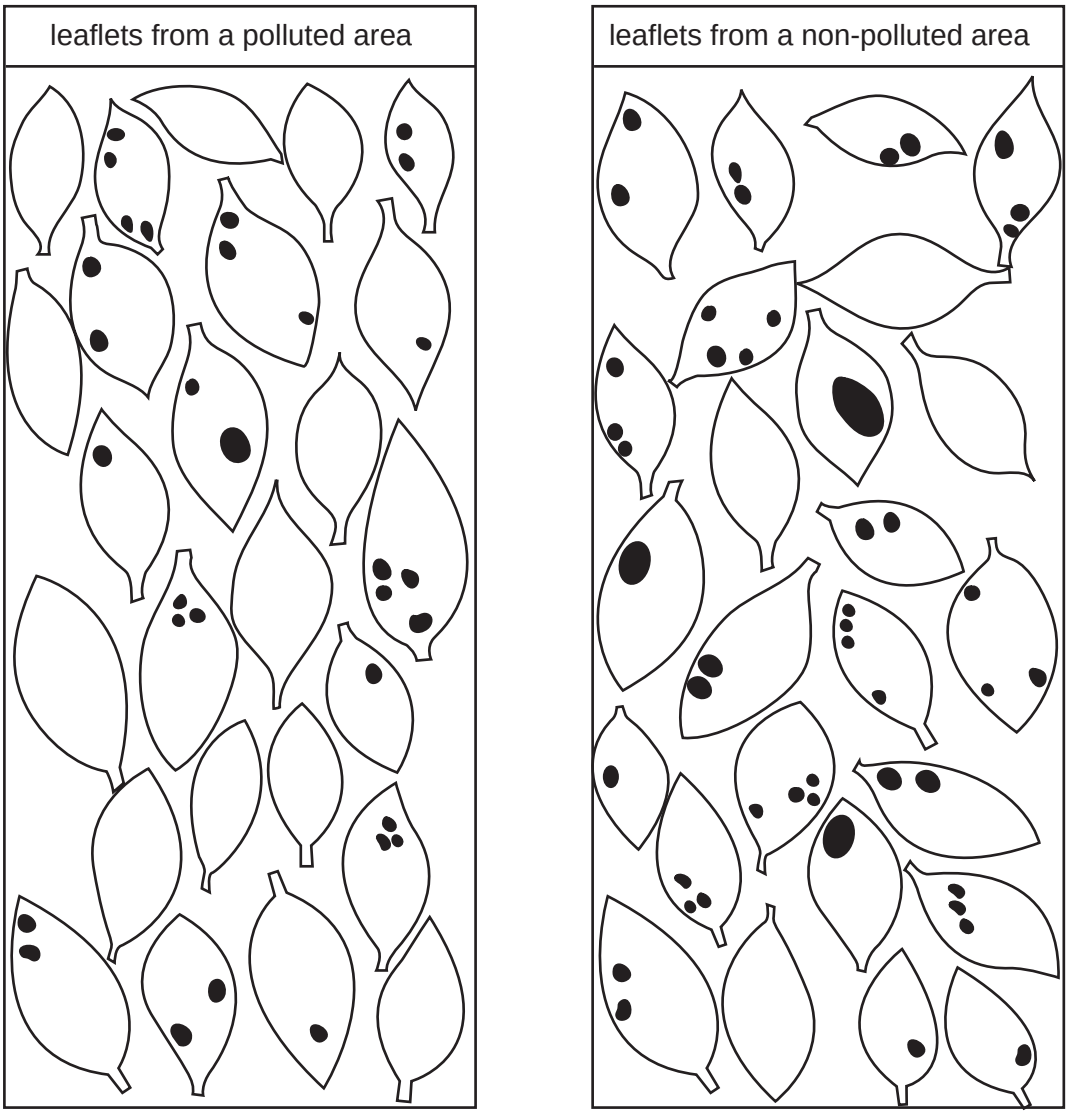

Fig. 2.1

(a) Count the number of spots on each leaflet and record the information in the tally chart.

number of spots	number of leaflets from polluted area	number of leaflets from non-polluted area
0		
1		
2		
3		
4		

[2]

(b) Draw a column graph to show the range of numbers of spots per leaflet from the two areas, with both sets of data on the same axes. Distinguish clearly between the two sets of data.

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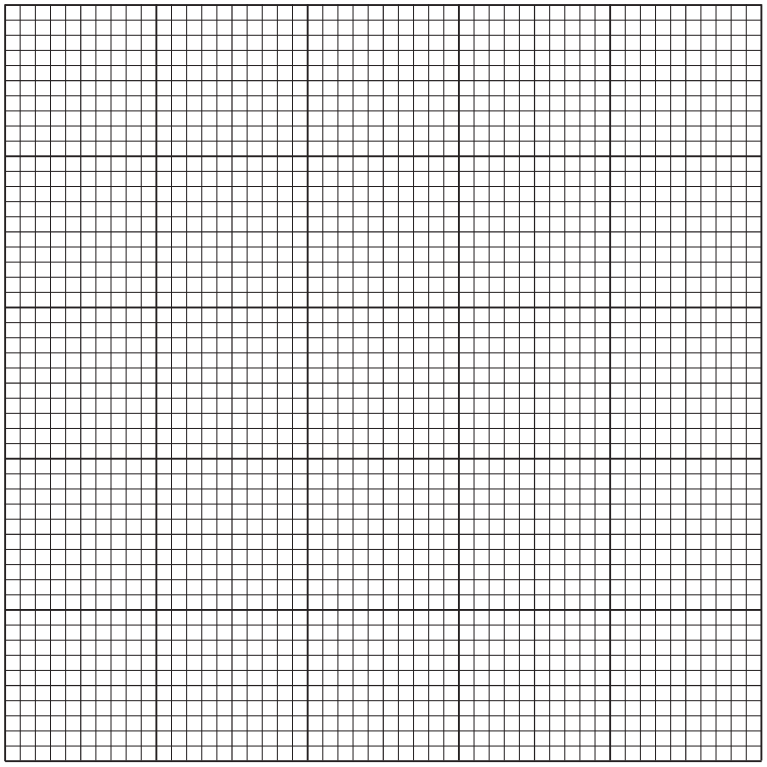

[5]

(c) Describe the effect of pollution on the black spot infections.

.....

.....

.....[2]

[Total : 9]

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3 Many fruits and vegetables change colour when cut open and exposed to the oxygen in the air.

- The cut surface of apples becomes brown after a few minutes.
- If the apple is dipped in an acidic fruit juice, such as lemon, and exposed to air, it does not change colour.
- If the apple is cooked and then cut open, it does not change colour.

(a) Suggest how the colour change observed at the cut surface of the apple occurs. Use evidence from the treatment of pieces of apple referred to above to support your answer.

explanation .....

.....

.....

evidence .....

.....

.....[6]

(b) Plan an investigation to show the effect of pH on the colour change in apple.

.....

.....

.....

.....

.....

.....[5]

[Total : 11]

4 Fig. 4.1 shows a leaf that is divided into leaflets.

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Fig. 4.1

(a) (i) Make a large labelled drawing of the leaf base and the bottom pair of leaflets.

[6]

(ii) State two features that are visible in Fig. 4.1 which identify this as a leaf from a dicotyledon.

feature 1 .....

feature 2 .....[2]

(b) The electronmicrograph, Fig. 4.2, shows a section through part of a leaf.

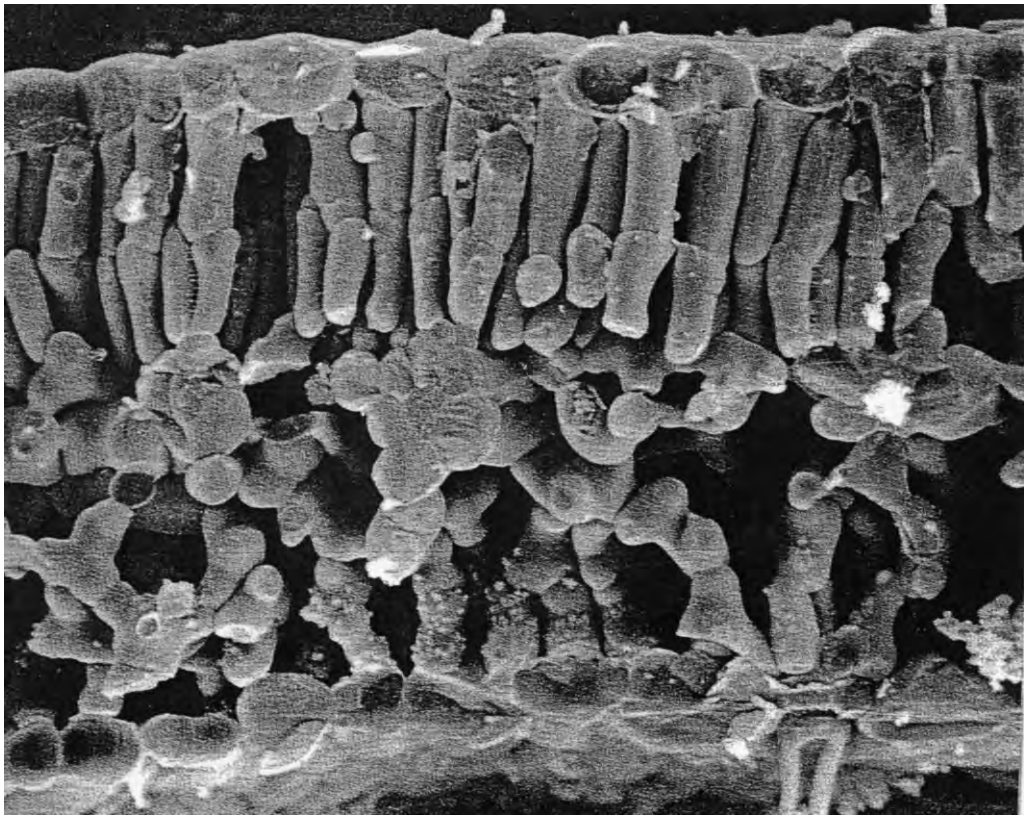

Fig. 4.2

(i) Name and label the different layers of cells on Fig. 4.2. [3]

(ii) Using letters **X** and **Y**, label on Fig. 4.2 **two** different types of cells that contain chloroplasts. [1]

[Total : 12]