

Centre Number	Candidate Number	Name
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UNIVERSITY OF CAMBRIDGE INTERNATIONAL EXAMINATIONS
General Certificate of Education Ordinary Level

BIOLOGY

5090/06

Paper 6 Alternative to Practical

October/November 2005

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 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 **all** questions.
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	

1 Two leaves, **A** and **B**, had been kept in different conditions in an experiment on photosynthesis.

- A disc was cut from each of the leaves and labelled **A** and **B**, as shown in Fig. 1.1.

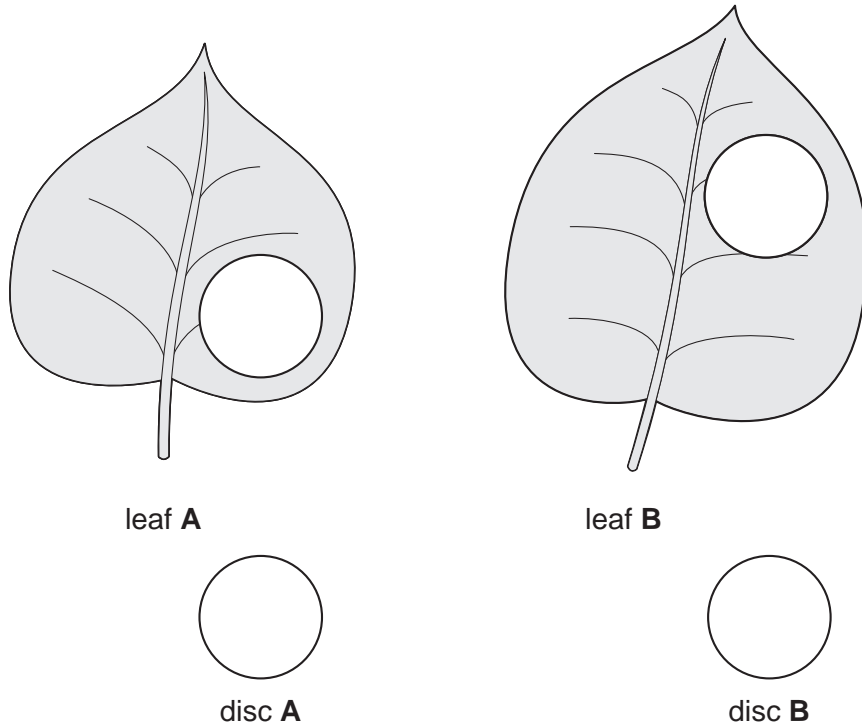


Fig. 1.1

- The discs were then placed in boiling water for a few seconds as the first stage in preparation for a starch test.

(a) (i) State the purpose of placing the discs in boiling water.

..... [1]

(ii) Describe how the next stage in the preparation of the discs for the starch test was safely carried out.

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

(iii) Describe how the discs changed during this process.

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

(iv) Describe the final stages in testing these discs for starch.

.....

.....

.....

..... [3]

(b) The result of the test was that disc **A** stained black and disc **B** stained brown.

Suggest the conditions in which leaves **A** and **B** had been kept to produce these results.

Conditions for **A**

.....

Conditions for **B**

..... [3]

(c) A week before the experiment began leaf **B** contained starch. Suggest what might have happened to this starch.

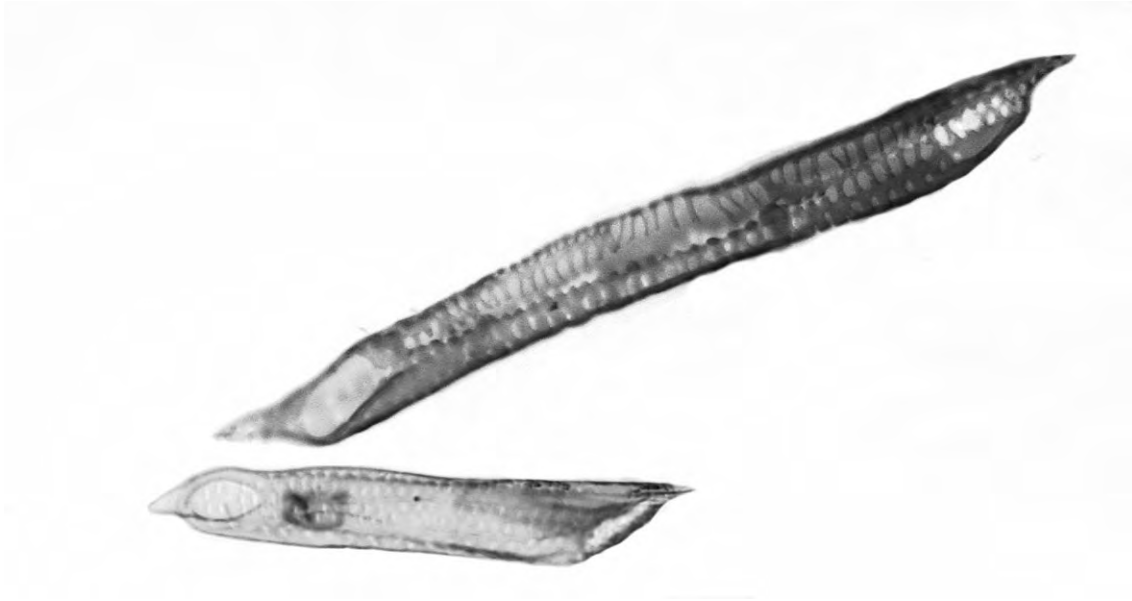
.....

.....

..... [2]

[Total: 13]

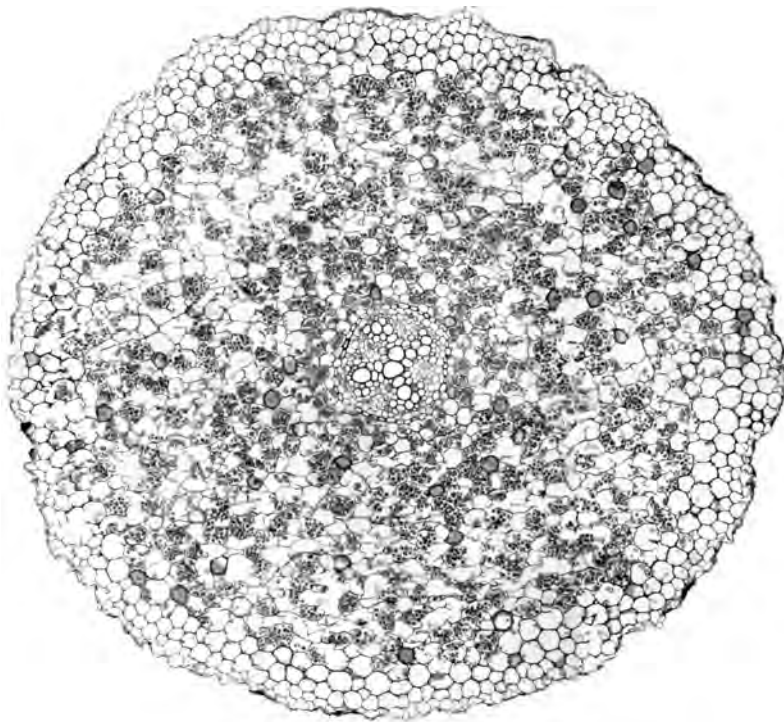
- 2 Fig. 2.1 is a photomicrograph of short lengths of two xylem vessels.



X250

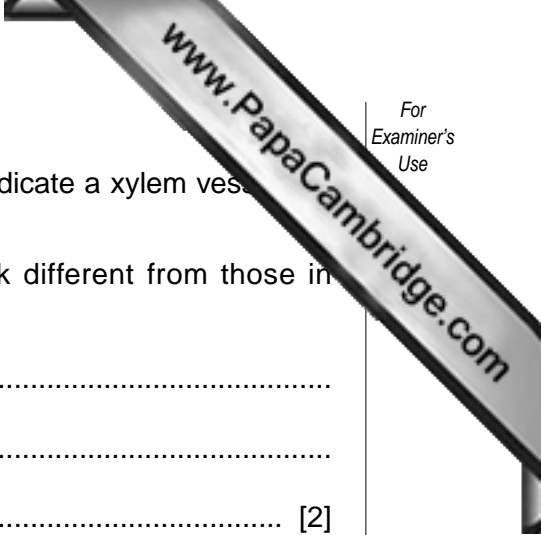
Fig. 2.1

- Fig. 2.2 is a photomicrograph of a section through a plant organ showing the various tissues.



X100

Fig. 2.2



(a) (i) By means of an accurately ruled label line on Fig. 2.2 indicate a xylem vessel like those shown in Fig. 2.1. Label it 'X'.

(ii) Explain why the xylem vessels shown in Fig. 2.1 look different from those in Fig. 2.2.

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

(iii) Make a large, labelled drawing to show the tissues in the centre of Fig. 2.2. **Do not** draw individual cells.

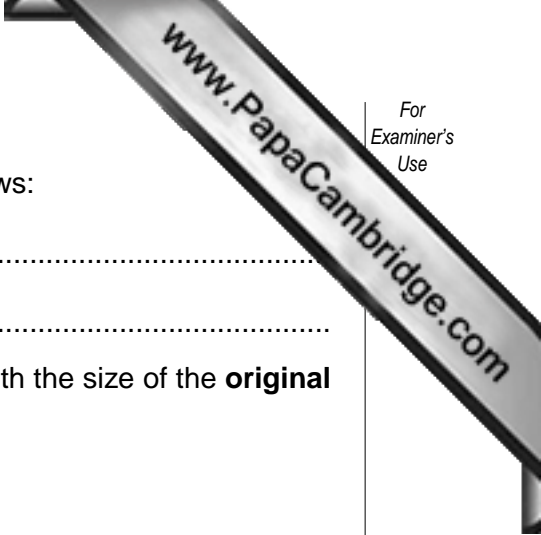
[5]

(iv) Identify the organ from which the photomicrograph, Fig. 2.2, was taken.

..... [1]

(b) State three ways in which the structure of the cells shown in Fig. 2.1 differs from typical plant cells.

- 1.
- 2.
- 3. [3]



(c) Calculate the magnification of your drawing in (a)(iii), as follows:

- (i) Record the diameter of your drawing.
- (ii) Record the diameter of the same part of **Fig. 2.2**.
- (iii) Calculate the magnification of your drawing compared with the size of the **original specimen**. Show your working clearly.

Magnification = [4]

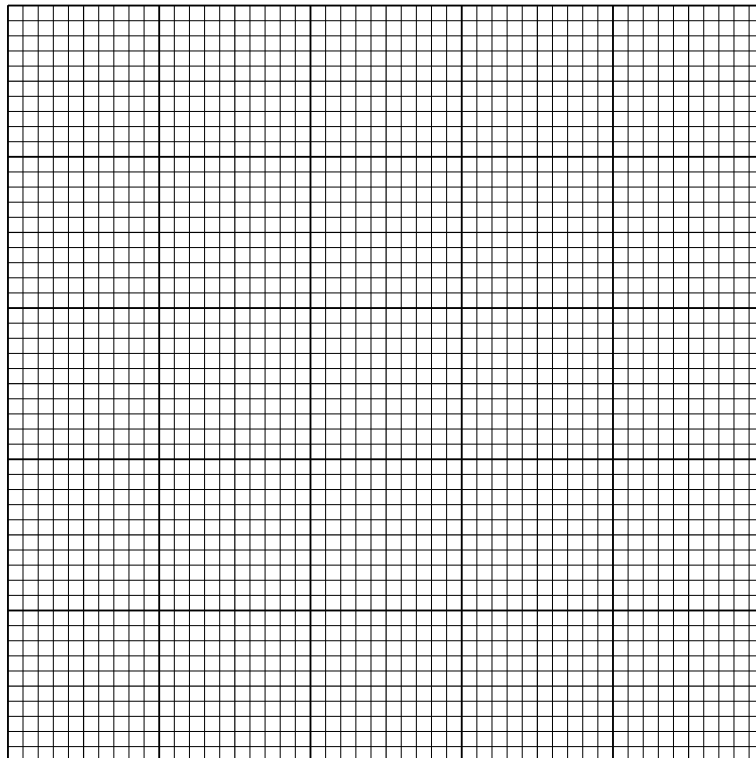
[Total: 16]

- 3 Table 3.1 shows the body temperatures of three animals in different environmental temperatures.

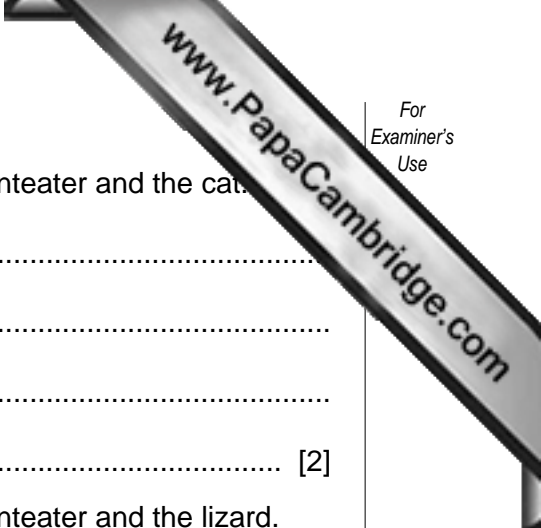
Table 3.1

environmental temperature / °C	body temperature / °C		
	cat	spiny anteater	lizard
5	38.5	27.0	5.0
10	39.0	no reading	no reading
15	no reading	28.0	15.0
20	39.0	no reading	19.0
25	no reading	no reading	no reading
30	39.5	31.0	28.0
38	no reading	37.0	35.0

- (a) (i) Construct, on the grid below, a graph of the data in Table 3.1. All three curves should be drawn on the same axes but should be clearly identified.



[5]



(ii) State two **differences** between the curves of the spiny anteater and the cat.

- 1.
.....
- 2.
..... [2]

(iii) State two **differences** between the curves of the spiny anteater and the lizard.

- 1.
.....
- 2.
..... [2]

(b) Explain how the cat is able to remain active at an environmental temperature of 5 °C but the lizard is inactive at that temperature.

.....

 [2]

[Total: 11]