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UNIVERSITY OF CAMBRIDGE INTERNATIONAL EXAMINATIONS
General Certificate of Education Ordinary Level

BIOLOGY

Paper 6 Alternative to Practical

5090/06
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 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.

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.

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1	
2	
3	
4	
Total	

This document consists of **7** printed pages and **1** blank page.

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1 Fig. 1.1 shows a young potato plant. (Irish potato).

- A shoot has grown from the food **storage organ** (tuber), forming leaves.
- Several developing storage organs are shown; two of them are labelled.
- Tests showed the presence of starch in the leaves of the plant and in the storage organs.

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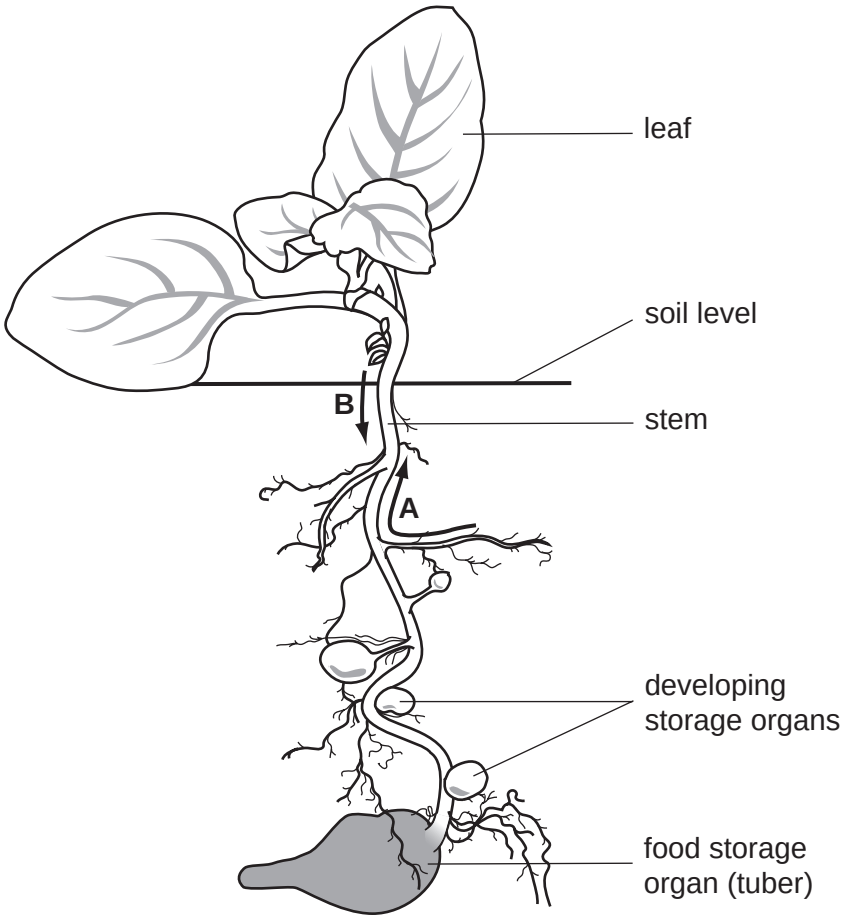


Fig. 1.1

(a) (i) Describe how you would test for the presence of starch in a storage organ.

.....

.....

.....[2]

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(ii) Describe the steps you would use to **prepare** a fresh, **green leaf** for testing for the presence of starch.

.....

.....

.....

.....

.....[4]

(b) (i) Arrow **A** shows the direction of movement from the roots to the leaves through the stem.

State what substances are being moved. .....

State which tissue is being used. .....

Suggest how the substances are being used. .....

.....[3]

(ii) Arrow **B** shows the direction of movement from the leaves to the storage organs.

State what substance is being moved. .....

State which tissue is being used. .....

Suggest how the substance is being used in the storage organ.

.....

.....[3]

(c) The plant in Fig. 1.1 grew from the storage organ and not from a seed.

(i) State which type of reproduction has been shown by the plant in Fig. 1.1.

.....[1]

(ii) State what can be said about the genotype of all the plants that would grow from the developing storage organs.

.....[1]

[Total: 14]

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[Turn over

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2 Fig. 2.1 is a photograph of a section through a mammalian eye.

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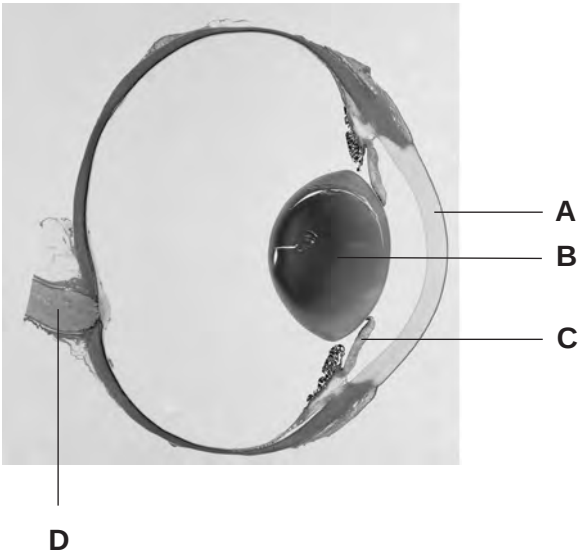


Fig. 2.1

(a) Name the structures labelled **A**, **B**, **C** and **D**.

A = ...

B = ...

C = ...

D = ... [3]

(b) Describe how two of the structures shown in Fig. 2.1 would change shape during the normal working of the eye.

1. .....

.....

.....

2. .....

.....

.....[4]

(c) Make on Fig. 2.1 two small, but clear crosses, to show where the **blind spot** and the **fovea** are situated.

The cross for the **blind spot** should be labelled **Y**.

The cross for the **fovea** should be labelled **Z**. [2]

[Total: 9]

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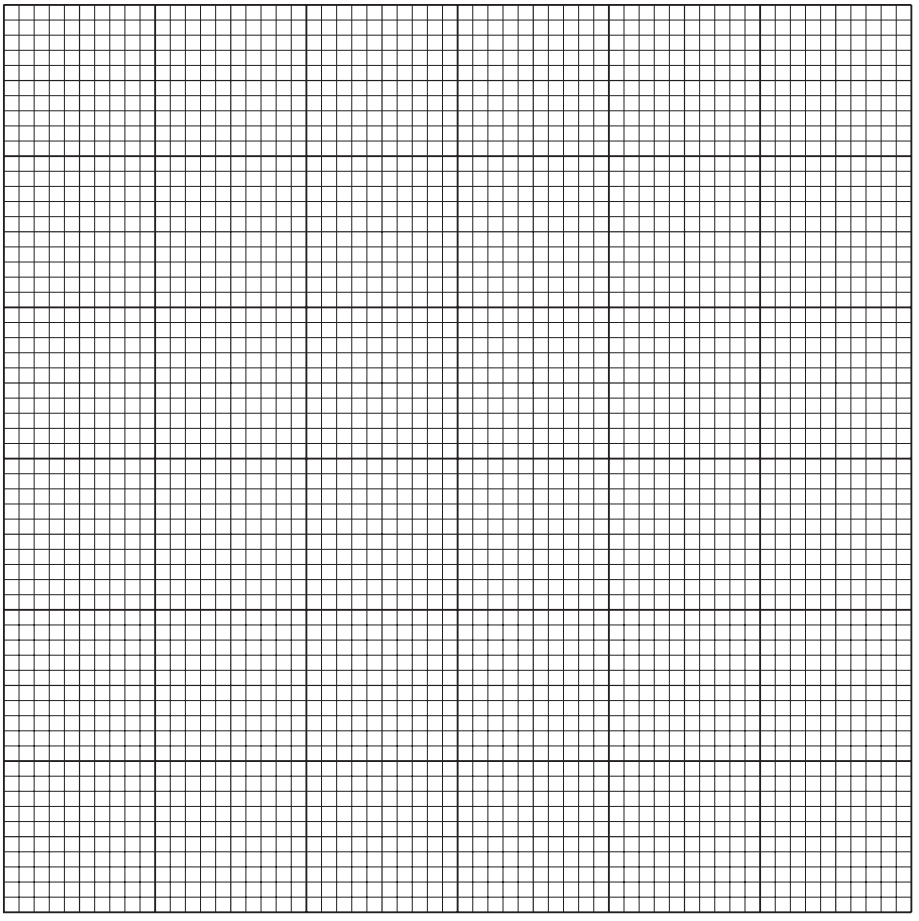
3 An investigation into the rate of activity of the enzyme peroxidase at different temperatures produced the figures that are recorded in Table 3.1.

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Table 3.1

temperature / °C	oxygen evolved / arbitrary units
10	5
20	14
30	32
40	44
50	28

(a) Construct a graph from this information on the grid below.



[4]

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(b) Suggest what the reading might have been if the investigation had been continued to include 60 °C. Explain your answer.

reading .....

explanation

.....

.....[2]

(c) In the data in Table 3.1 most oxygen was evolved at 40 °C. It is possible that 40 °C is not the optimum temperature for this enzyme.

Suggest what more could be done to find the optimum temperature.

.....

.....

.....

.....[2]

[Total: 8]

4 Fig. 4.1 shows an insect pollinated flower.



magnification of photograph = × 2

Fig. 4.1

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(a) Make a large, labelled drawing of part of Fig. 4.1 to show the stamens, style and stigma.

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[5]

(b) Measure the length of one of the anthers.

Length of anther on Fig. 4.1 = ...

Indicate clearly on Fig. 4.1 which anther you measured, then use this figure to calculate the magnification of your drawing as compared with the size of the actual flower.

Show your working clearly.

Magnification = ... [4]

[Total: 9]

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