



UNIVERSITY OF CAMBRIDGE INTERNATIONAL EXAMINATIONS
International General Certificate of Secondary Education

CANDIDATE
NAME

CENTRE
NUMBER

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BIOLOGY

0610/61

Paper 6 Alternative to Practical

May/June 2010

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 medium (HB) 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 | |
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| Total | |

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



1 Fig. 1.1 shows sections through blood vessels, X, Y and Z.

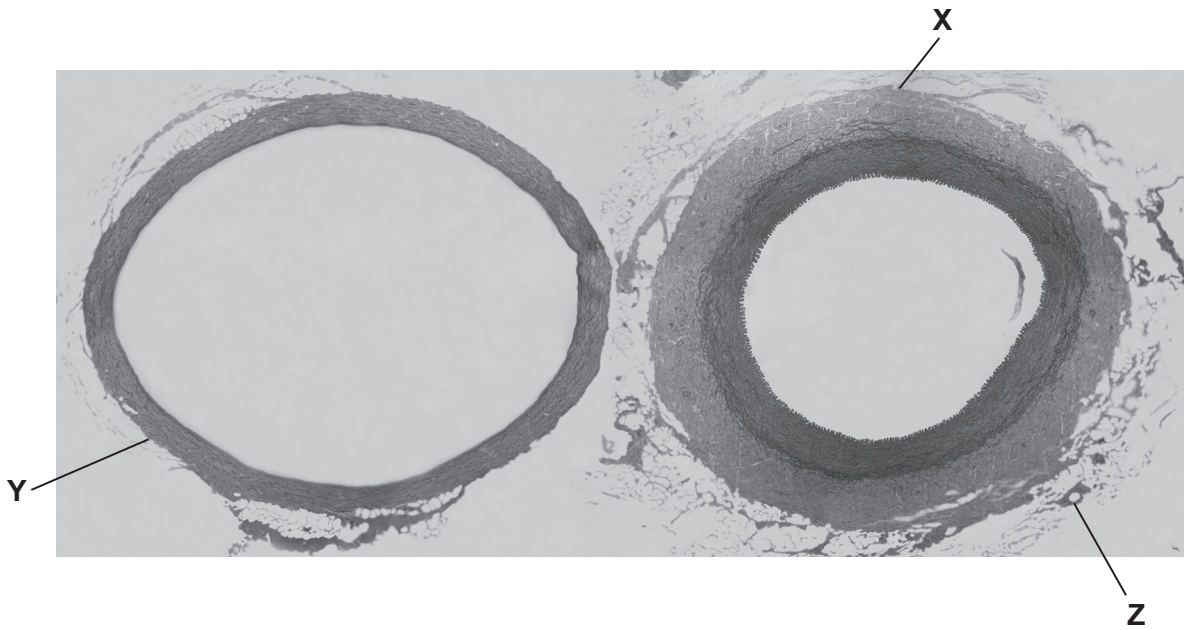


Fig. 1.1

(a) (i) Draw a labelled diagram to show the structures of X.

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[5]

(ii) Name the type of blood vessel labelled **X**.

..... [1]

(iii) Compare the blood vessels shown in Fig. 1.1 to explain how you reached your identification for **(a)(ii)**.

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

A 5 mm length of a blood vessel of the same type as **X** was used to investigate how far it could be stretched using a number of 10g weights.

The apparatus used is shown in Fig. 1.2.

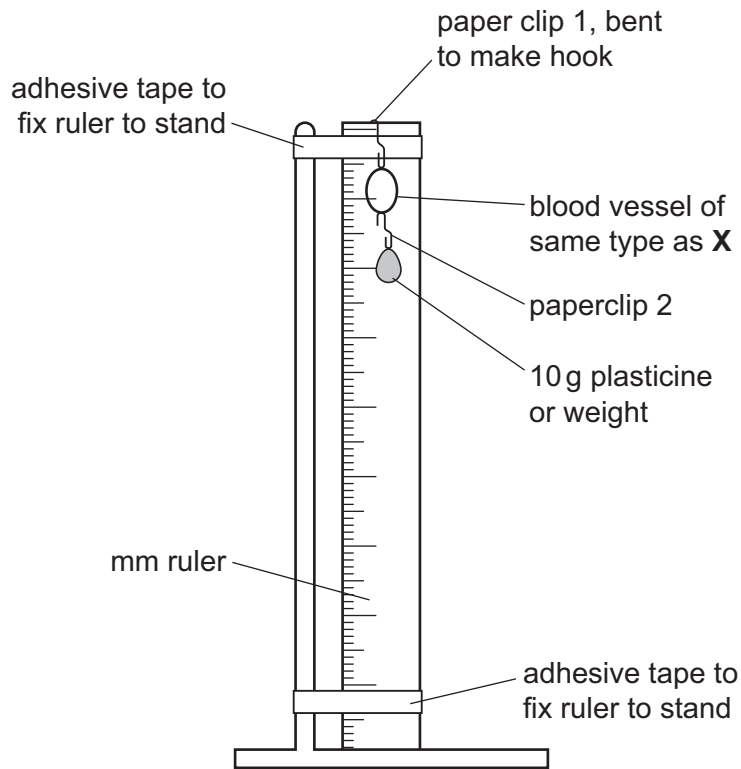


Fig. 1.2

As weights were added, the internal diameter of the blood vessel increased as shown in Table 1.1.

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Table 1.1

| mass of weights / g | internal diameter / mm | increase in diameter / mm |
|------------------------|---------------------------|------------------------------|
| 0 | 20 | 0 |
| 10 | 25 | 5 |
| 20 | 29 | 9 |
| 30 | 32 | 12 |
| 40 | 33 | 13 |
| 50 | 34 | |
| 60 | 35 | |
| 70 | 36 | |
| 80 | 37 | |
| 90 | 37 | |
| 100 | 38 | |

(b) (i) Complete Table 1.1 by calculating the increase in diameter of the blood vessel.

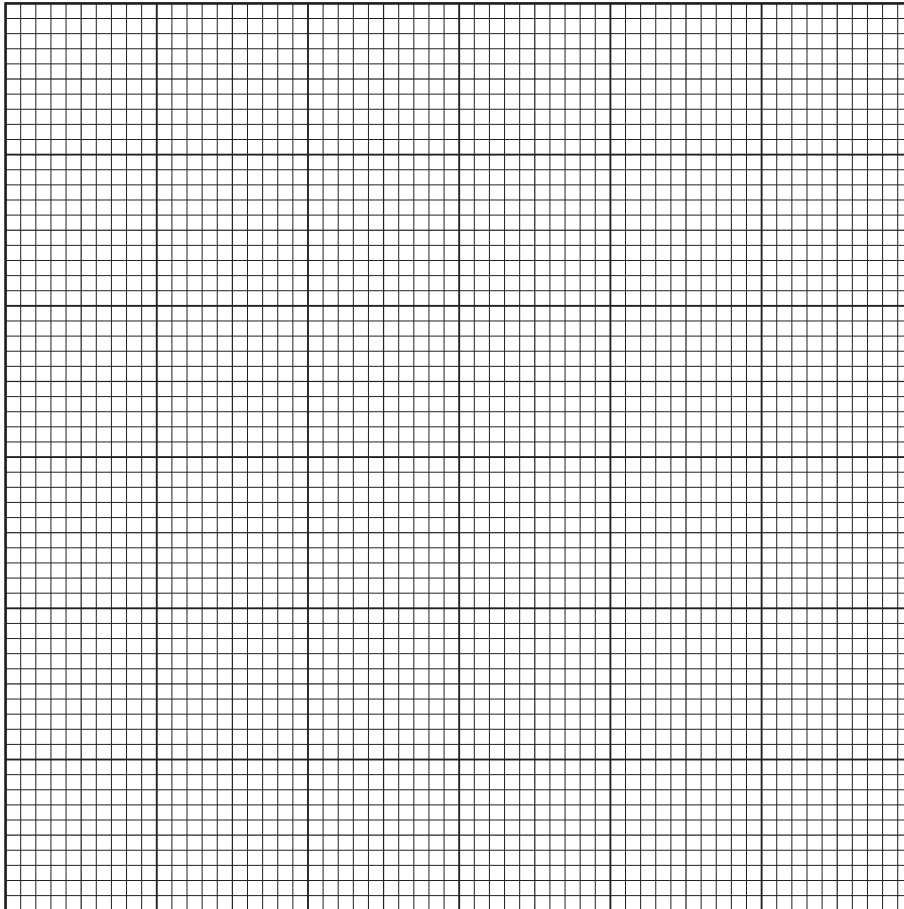
Write your answers in the spaces on Table 1.1.

Show your working in the space below.

[1]

- (ii) Plot a graph to show the relationship between the mass of weights attached and the increase in diameter of the blood vessel.

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[4]

- (iii) Predict and explain what will happen to the diameter of the blood vessel after the weights are removed.

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

[3]

[Total: 16]

- 2 The sweet potato, *Ipomoea batatas*, is a different species to the Irish potato, *Solanum tuberosum*.

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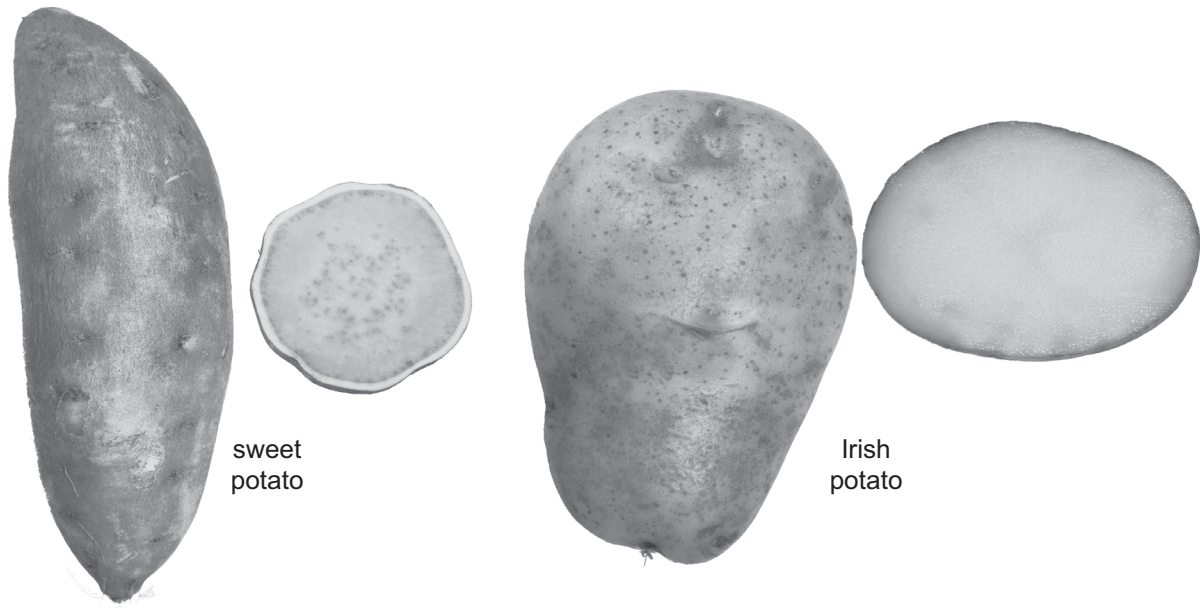


Fig. 2.1

- (a) (i) Describe **one** similarity, visible in Fig.2.1, between the two species of potato.

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

- (ii) Complete Table 2.1 to show two differences, visible in Fig 2.1, between the two species of potato.

Table 2.1

| | sweet potato | Irish potato |
|--------------|--------------|--------------|
| difference 1 | | |
| difference 2 | | |

[2]

- 3 Tomato seeds of the same type and maturity were left to germinate in different solutions at 20°C.

In dish **A**, 20 seeds were left in water.

In dish **B**, 20 seeds were left in juice from a ripe tomato. The pH of the juice measured pH 6.

In dish **C**, 10 seeds were left in a solution which was at pH 6. There was no tomato juice in this solution.

Fig. 3.1 shows the seeds after 5 days. Some of the seeds have germinated and short radicles have developed.

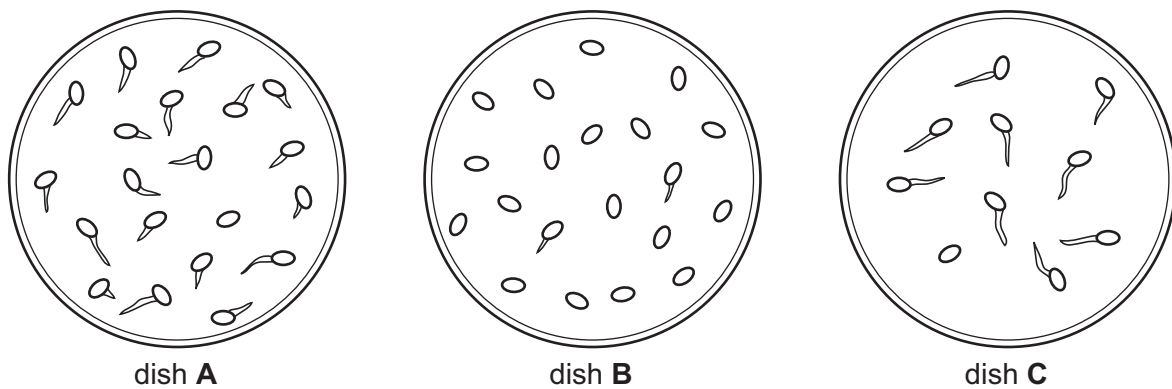


Fig. 3.1

- (a) (i) Record the number of seeds that have germinated in each dish in Table 3.1.

Table 3.1

| number of seeds germinating | | |
|-----------------------------|---------------|---------------|
| dish A | dish B | dish C |
| | | |

[2]

- (ii) Calculate the percentage increase in the number of seeds that have germinated in dish **C** compared with dish **B**, if the **same** number of seeds had been left to germinate in dish **C**.

Show your working.

..... %

[2]

(iii) Suggest a reason why a larger percentage of seeds have germinated in dish **C** compared with dish **B** even though both solutions were at pH 6.

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

(iv) Explain the purpose of dish **A** in this investigation.

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

(b) Design an experiment to find out the effect of pH on seed germination.

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..... [6]

[Total: 13]

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