



UNIVERSITY OF CAMBRIDGE INTERNATIONAL EXAMINATIONS  
International General Certificate of Secondary Education

CANDIDATE  
NAME

CENTRE  
NUMBER

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CANDIDATE  
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.

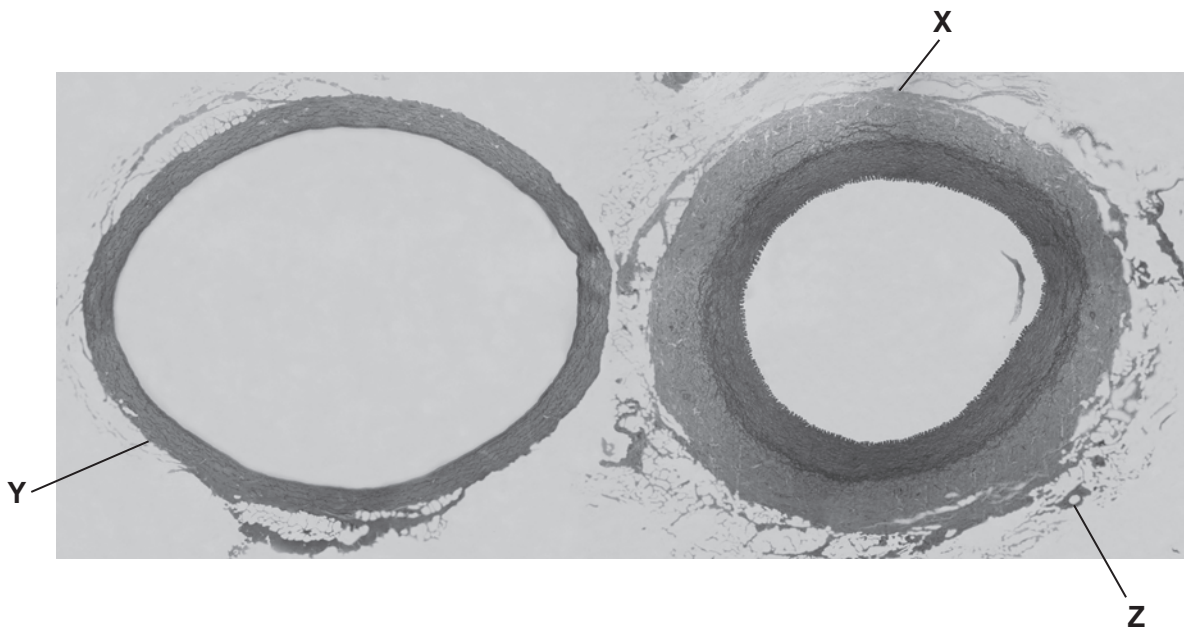
The number of marks is given in brackets [ ] at the end of each question or part question.

For Examiner's Use	
1	
2	
3	
<b>Total</b>	

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)**.

.....

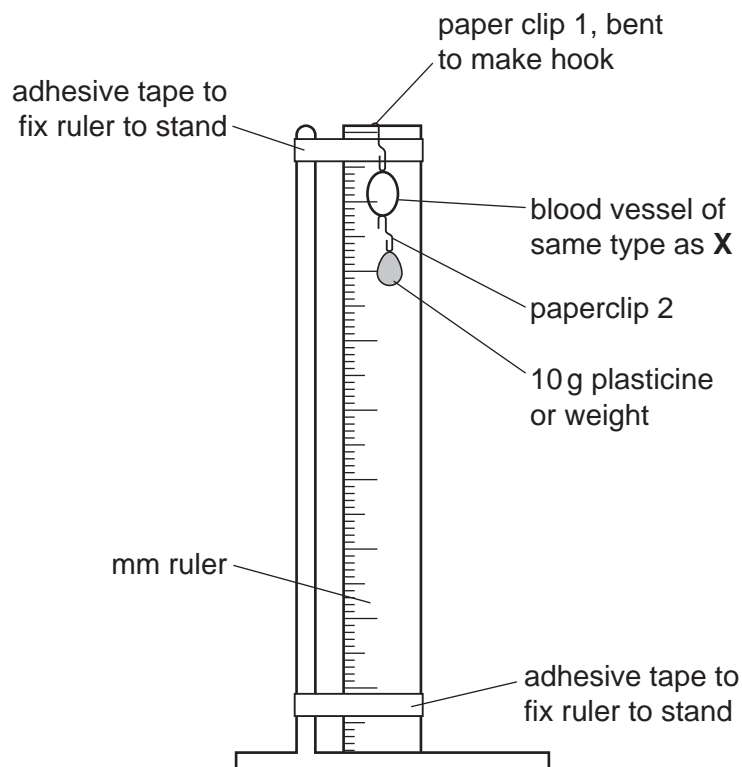
.....

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..... [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 10 g 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.

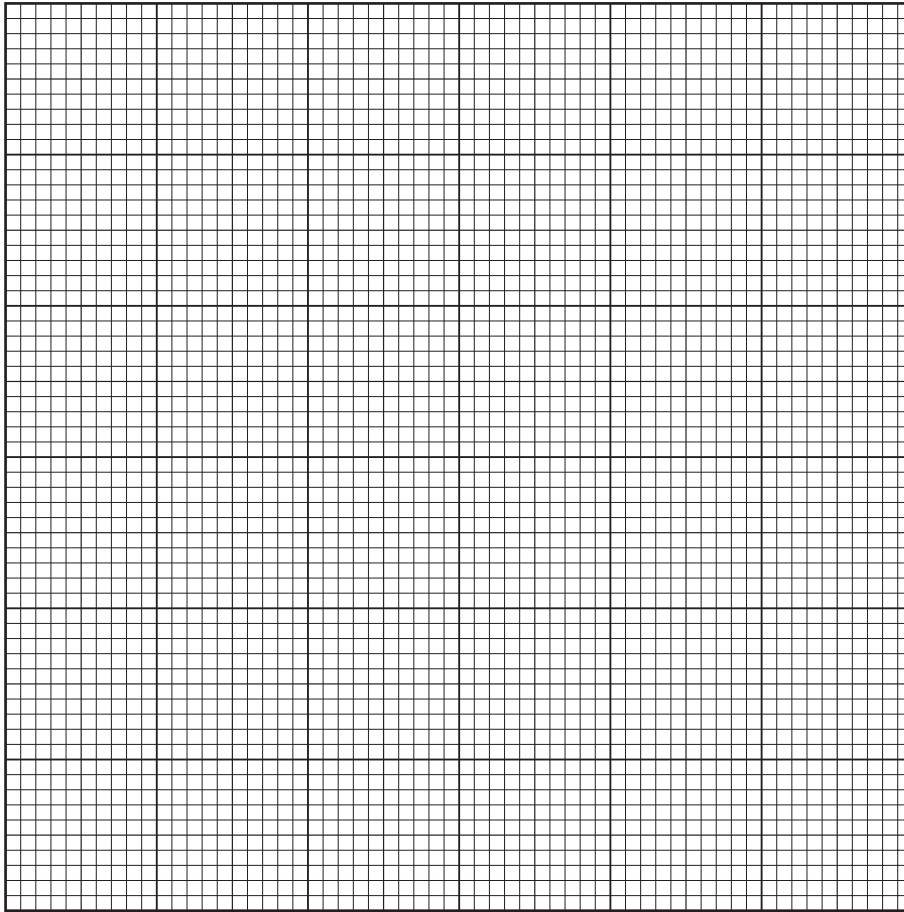
Write your answers in the spaces on Table 1.1.

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]

**(b)** Potato crops are grown for their carbohydrate content.

Describe how you could safely test the two species of potato to compare their carbohydrate content.

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*test for starch* .....

.....

.....

.....

.....

*test for reducing sugar* .....

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..... [8]

[Total: 11]

- 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.

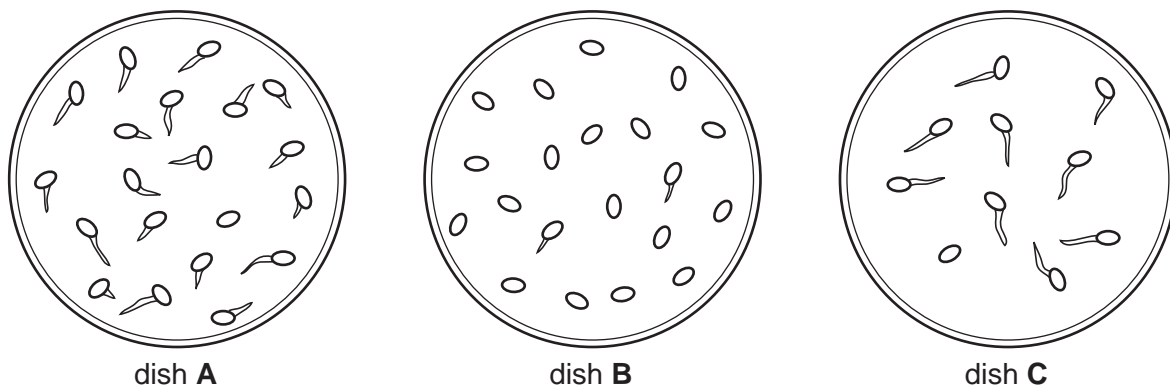


Fig. 3.1

- (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 <b>A</b>	dish <b>B</b>	dish <b>C</b>

[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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