UNIVERSITY OF CAMBRIDGE INTERNATIONAL EXAMINATIONS
International General Certificate of Secondary Education

CANDIDATE NAME									
CENTRE NUMBER						CANDIDATE NUMBER				

4937671294

Biology **0610/51**

Paper 5 Practical Test **May/June 2012**

1 hour 15 minutes

Candidates answer on the Question Paper

Additional Materials: As listed in the Confidential Instructions

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 pencil for any diagrams or graphs.
Do not use staples, paper clips, highlighters, glue or correction fluid.
DO **NOT** WRITE IN ANY BARCODES.

Answer **both** 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.

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1	
2	
Total	

This document consists of **11** printed pages and **1** blank page.

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Read through the whole question before starting work.

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1 You are going to investigate the effects of different concentrations of salt solution on leaf **R**.

R is part of a tubular leaf. It is hollow inside.

- Cut **R** into two identical tubular pieces as shown in Fig. 1.1.

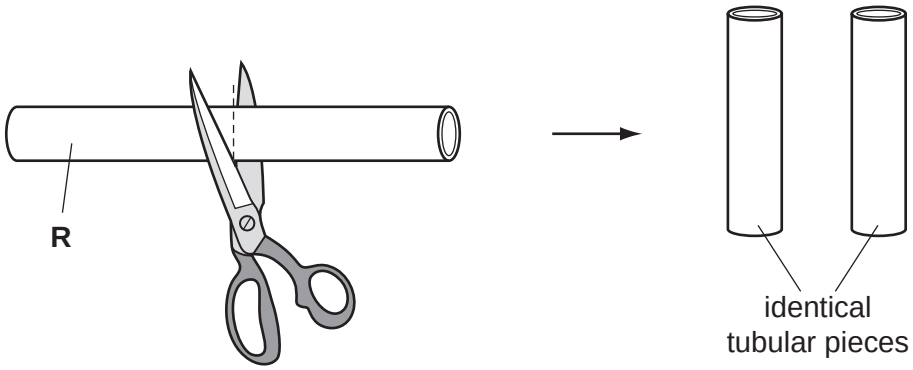


Fig. 1.1

- Gently flatten one tubular piece and cut along its length, through both sides, to give you two strips, as shown in Fig. 1.2.
  When flattening and cutting, take care not to crush or damage the tubular leaf.

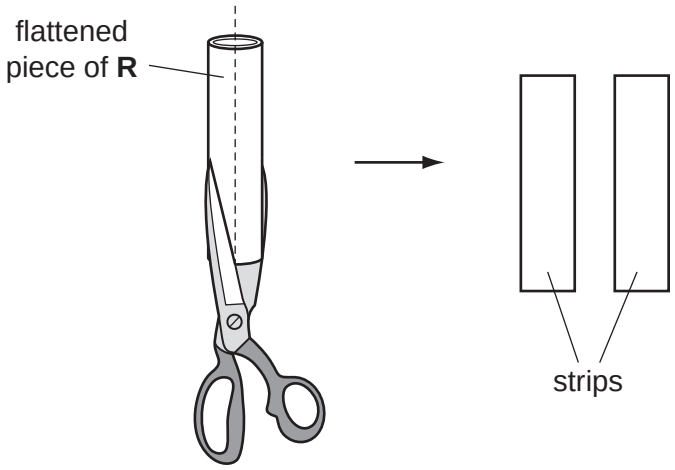


Fig. 1.2

- Repeat the process with the second piece of tubular leaf cut from **R**.
  You should be left with four strips of leaf.

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(a) (i)

- Examine the outer surface and the surface which was on the inside of the tubular leaf.

  Describe **one** way in which the outer surface is different from the surface which was on the inside of the tubular leaf.

  .....

  .....

  ..... [1]

You have been provided with a **10%** salt solution, labelled **salt solution**, and water, labelled **water**. You are going to use these to make a **5%** salt solution.

- Approximately one quarter fill the test-tube with water.
- Add an equal volume of **10%** salt solution and place the test-tube back in its container.
  You have made a **5%** salt solution.

- Put the first strip of leaf into the beaker of water.
- Put the second strip of leaf into the **5%** salt solution in the test-tube.
- Put the third strip of leaf into the beaker of **10%** salt solution.
- Put the fourth strip of leaf onto the piece of filter paper.
- Note the time. Keep the four strips in these conditions for approximately 15 minutes.

While you are waiting move on to Question **1(c)** and Question **2**.

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(ii) After 15 minutes look at the **ends** of each strip, without touching them.
Draw one end of each strip in Table 1.1.

Table 1.1

in water	in 5% salt solution	in 10% salt solution	in air (on the filter paper)

[4]

(iii)

- Remove the strip from the water and the strip from the **10%** salt solution.

Describe **and** explain one way in which the strip that had been placed in water feels different from the strip that had been placed in **10%** salt solution.

description .....

.....

explanation .....

.....

.....

.....

..... [4]

(iv) In this investigation, you made up a **5%** salt solution.
Describe how to make a **2.5%** salt solution, using the equipment provided.

.....

.....

.....

..... [2]

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(v) State **one** source of error in the **method** you used to make the **5%** salt solution. Suggest a suitable improvement to the method.

source of error .....

.....

improvement .....

..... [2]

(b) **S** is a small piece of the same type of tubular leaf as **R**.

- Cut **S** into two identical tubular pieces.
- Place one piece on the white tile.
- Add a few drops of iodine solution to this piece of leaf tissue.

(i) Describe what you observe **and** state your conclusion.

observation .....

conclusion .....

..... [2]

(ii)

- Remove the strip of leaf from the test-tube containing **5%** salt solution.
- Discard the solution from this test-tube.
- Put the remaining piece of **S** into this empty test-tube.
- Use the rod to push the piece to the bottom of the test-tube.
- Safely test the contents of the test-tube for the presence of protein.
- If you require hot water, raise your hand and it will be brought to you.

Describe exactly how you carried out the test.

.....

.....

..... [2]

(iii) Describe what you observed in **(b)(ii) and** state your conclusion.

observation .....

conclusion .....

..... [2]

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(c) Fig. 1.3 shows a photograph through a tubular leaf, similar to **R**. Its actual diameter was 5 mm.

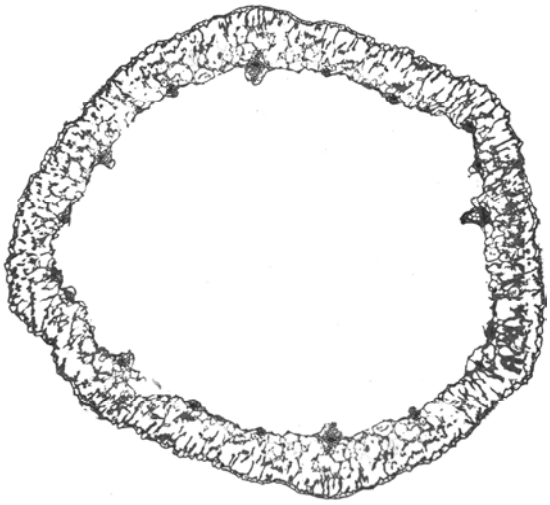


Fig. 1.3

Measure the diameter of the tubular leaf shown in Fig. 1.3.

Diameter .....

Calculate the magnification of the tubular leaf shown in Fig. 1.3.
Show your working.

Magnification ..... [3]

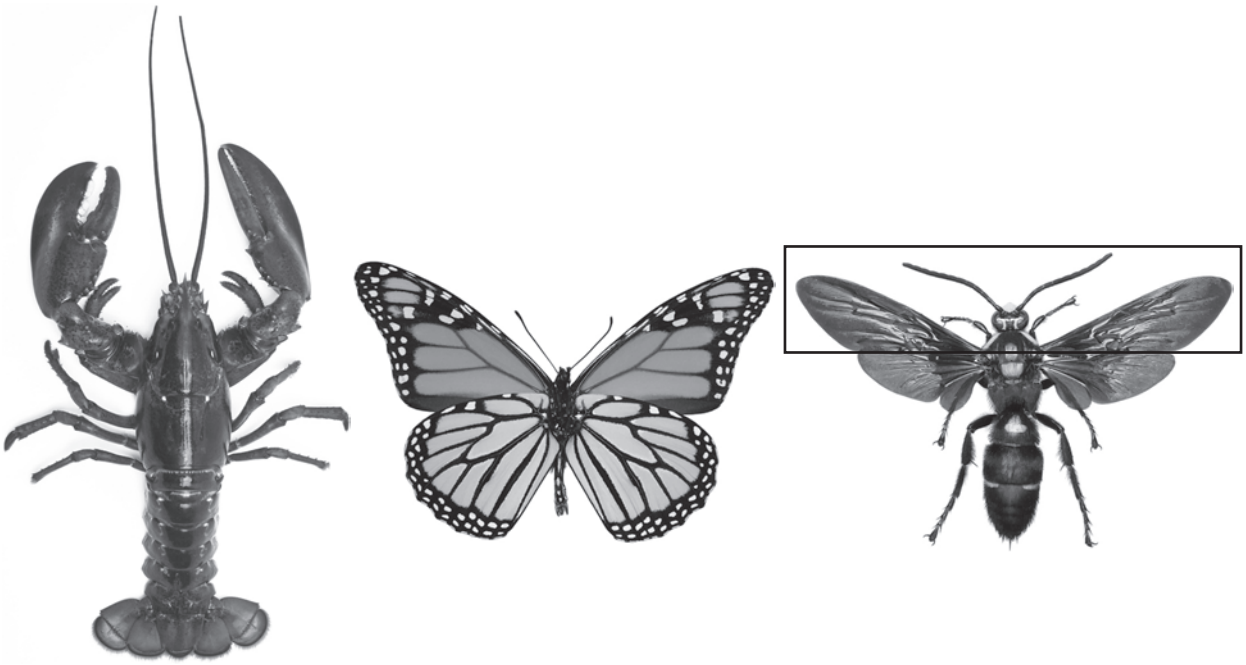
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2 Fig. 2.1 shows three arthropods, from two different groups. One is a crustacean.

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A **B** **C**

Not to scale.

Fig. 2.1

(a) (i) Write down the letter that identifies the crustacean. ..... [1]

(ii) Describe **two** ways, **visible in Fig. 2.1** in which the crustacean identified in **(a)(i)** is different from the other two arthropods.

1 .....

.....

2 .....

..... [2]

(iii) The other two arthropods are in a different group from the crustacean.

Name this group. ..... [1]

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(b) Part of the arthropod labelled **C** is shown in a rectangle.

Make a large, labelled drawing of this part of arthropod **C**.

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[4]

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(c) Some students studied a population of larvae (young) of arthropod **B**.
They measured the lengths of 35 of them. These measurements are shown in Table 2.1.

(i) Complete Table 2.1 by measuring the lengths of the five larvae shown in Fig. 2.2. Use the string and ruler to measure them.

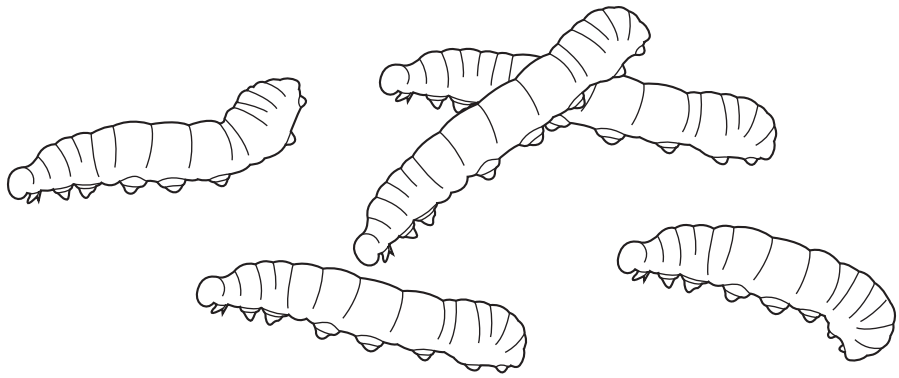


Fig. 2.2

Table 2.1

length / mm	36	48	49	33	57	43	50	44	54	51
length / mm	43	47	45	52	43	56	50	44	49	50
length / mm	42	46	48	54	53	58	47	52	45	55
length / mm	48	49	51	50	50	.....	.....	.....	.....	.....

Record the length of the larvae in Table 2.1. [2]

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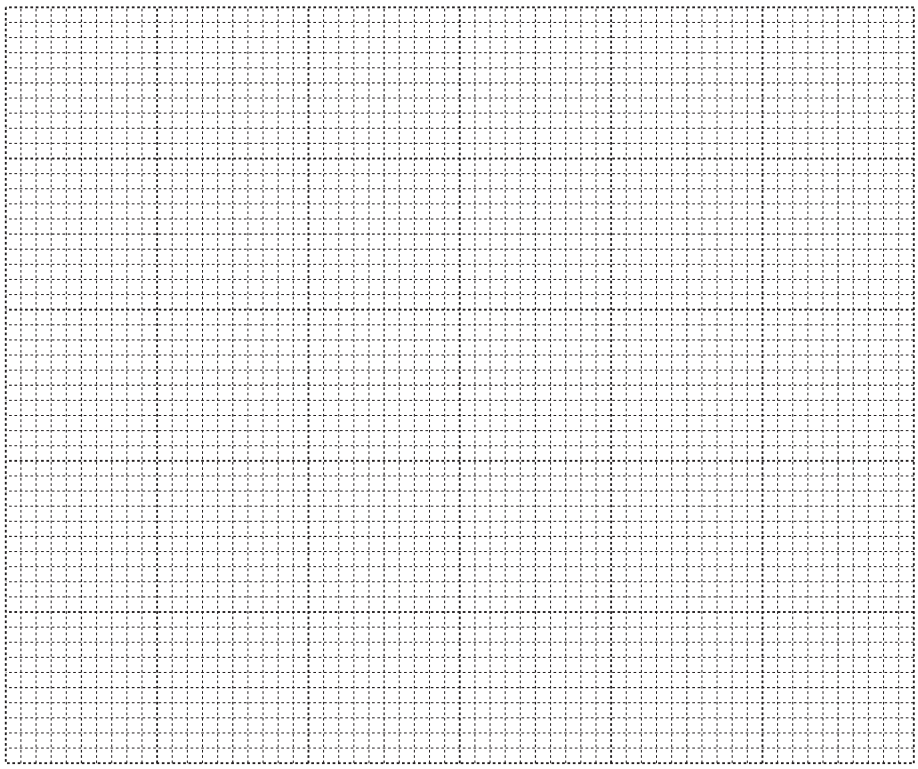
(ii) Complete the tally chart, Table 2.2, to show the number of larvae in each range of lengths.

Table 2.2

range of lengths / mm	tally	frequency
31 - 35	……	……
36 - 40	……	……
41 - 45	……	……
46 - 50	……	……
51 - 55	……	……
56 - 60	……	……

[3]

(iii) Use the data from Table 2.2 to plot a histogram showing the frequency of each range of lengths.



[4]

(iv) Suggest a reason for the shape of the histogram.

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.....

..... [1]

[Total: 18]

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