



UNIVERSITY OF CAMBRIDGE INTERNATIONAL EXAMINATIONS  
General Certificate of Education Ordinary Level

CANDIDATE  
NAME

CENTRE  
NUMBER

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CANDIDATE  
NUMBER

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**BIOLOGY**

**5090/31**

Paper 3 Practical Test

**October/November 2010**

**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, graphs or rough working.

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.

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

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



**Read the whole of the question paper before you begin.**

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Use

Set up the investigation in Question 1 then go on to Question 2 while you are waiting. Leave at least 15 minutes to complete Question 1 before the end of the examination.

- 1 You are required to investigate the effect of three different concentrations of a solution on strips of potato tissue.
- (a)
- Remove the potato tissue from the solution and blot it gently with the paper towel to remove excess liquid.
  - Cut six strips of potato exactly 70 mm long by approximately 10 mm wide.
  - Label three dishes **A**, **B** and **C**, then place two potato strips in each.
  - Add solutions **A**, **B** and **C** to the appropriate labelled dish, ensuring that the potato strips in each dish are covered by the solution.
  - Note, in Table 1.1, the time when the solutions were added.

**Leave at least 30 minutes before returning to complete this question.**

Carry on with Question 2 while you wait.

Then:

- (i)
- Remove the strips from solution **A**, blot them gently.
  - Note the time in Table 1.1.
  - Measure their lengths and record them in Table 1.1.
  - Repeat this procedure for the strips in **B** and **C**.

(ii) Suggest why two strips were used, rather than one, in each solution.

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

(iii) Explain how your observations do, or do not, support this suggestion.

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

(iv) Complete Table 1.1.

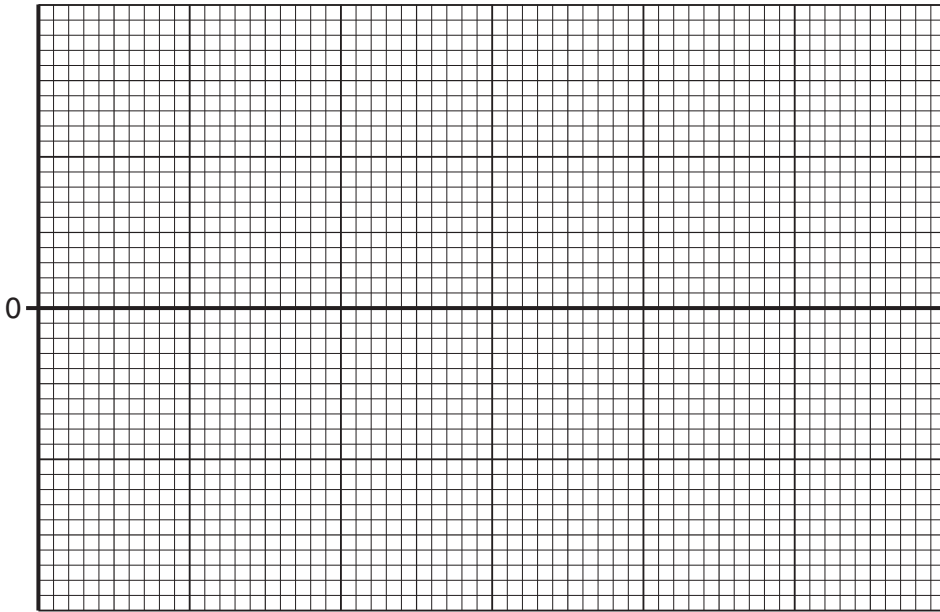
**Table 1.1**

solution	concentration /mol per dm <sup>3</sup>	time solution added	initial lengths /mm	mean length /mm	time removed from solution	final lengths /mm	mean length /mm	change in length /mm
<b>A</b>	0.8		70 and 70	70		and		
<b>B</b>	0.4		70 and 70	70		and		
<b>C</b>	0.1		70 and 70	70		and		

[4]

- (b) (i) Using the information in Table 1.1 draw a graph, on the axes provided, of mean change in length against concentration of solution.

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[5]

- (ii) From your graph, determine the concentration of the solution at which there would be no change in mean length of potato strip.

..... [2]

- (iii) Explain the significance of this concentration.

.....  
.....  
..... [3]

- (c) Suggest three ways in which this investigation could be improved.

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

[Total: 20]

- 2 • Using forceps, place specimen **X** on the microscope slide.
  - Add two drops of the liquid in which specimen **X** was provided, to the specimen on the slide.
  - Rest the cover glass on the specimen.
  - Observe specimen **X** carefully, using the hand lens.
- (a) (i) Make a large, labelled drawing of specimen **X**.

[6]

- (ii) Suggest two ways in which the addition of the liquid to the slide made it easier to see specimen **X**.

1. ....

2. .... [2]

- (iii) Calculate the magnification of your drawing. Show all working clearly.

*measurement across drawing* .....

*equivalent measurement of specimen X.* .....

magnification = ..... [4]

(b) Fig. 2.1 shows a different member of the same group of organisms as specimen X.

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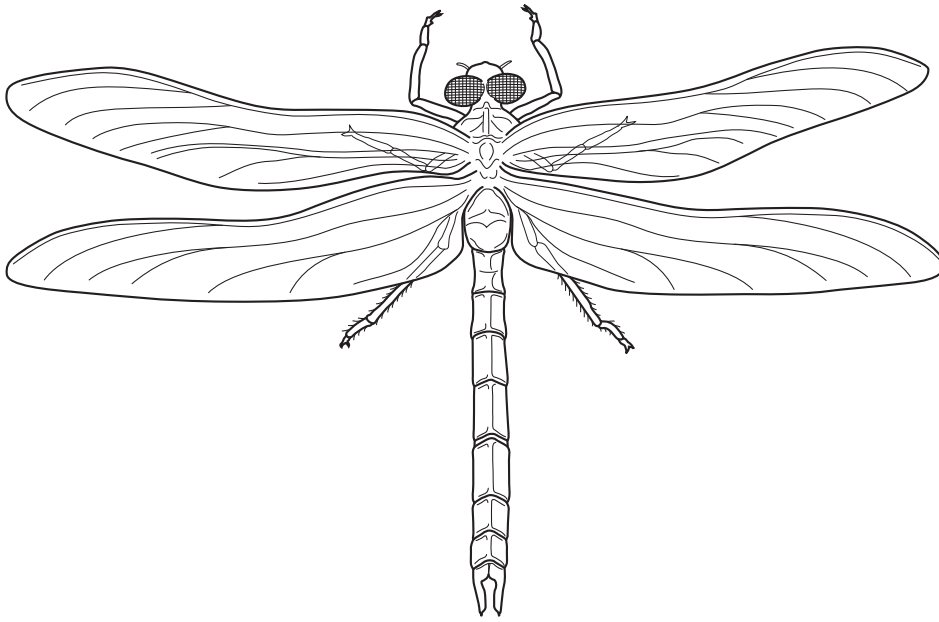


Fig. 2.1

(i) List four **visible** features that are the same in both specimen X and the specimen in Fig. 2.1.

1. ....

2. ....

3. ....

4. .... [4]

(ii) Complete Table 2.1 with four pairs of differences that are **visible** in the specimens.

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**Table 2.1**

	feature as seen in specimen X	same feature as seen in <b>Fig. 2.1</b>
1		
2		
3		
4		

[4]

[Total: 20]

**Remember to check that you have completed Question 1.**

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