UNIVERSITY OF CAMBRIDGE INTERNATIONAL EXAMINATIONS
General Certificate of Education Ordinary Level

CANDIDATE NAME

CENTRE NUMBER

CANDIDATE NUMBER

0852816904

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	
Total	

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

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[Turn over

Read the whole of the question paper before you begin.

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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**.

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(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.

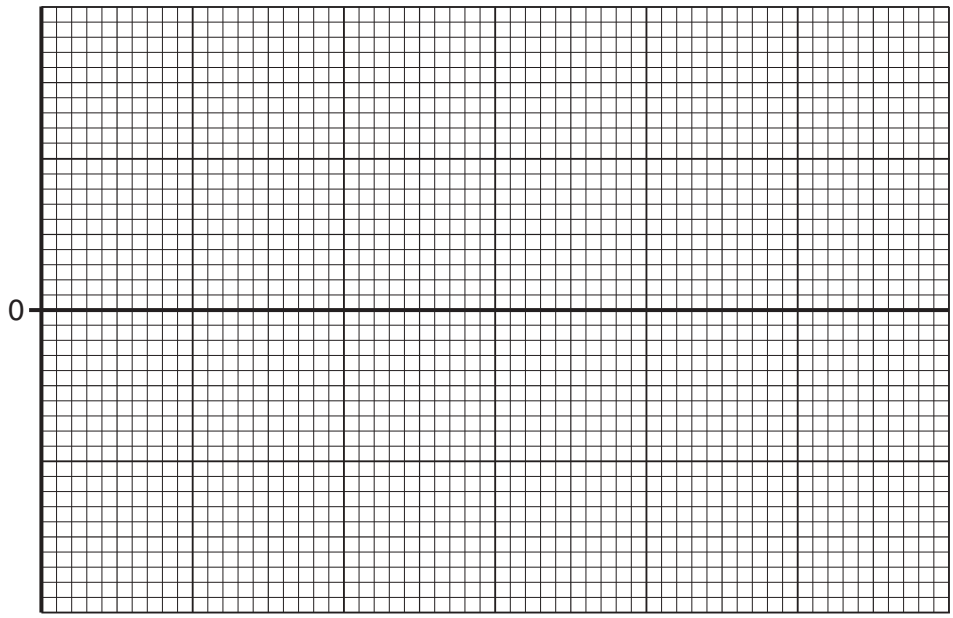
Table 1.1

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

[4]

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(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.



[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]

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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.

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(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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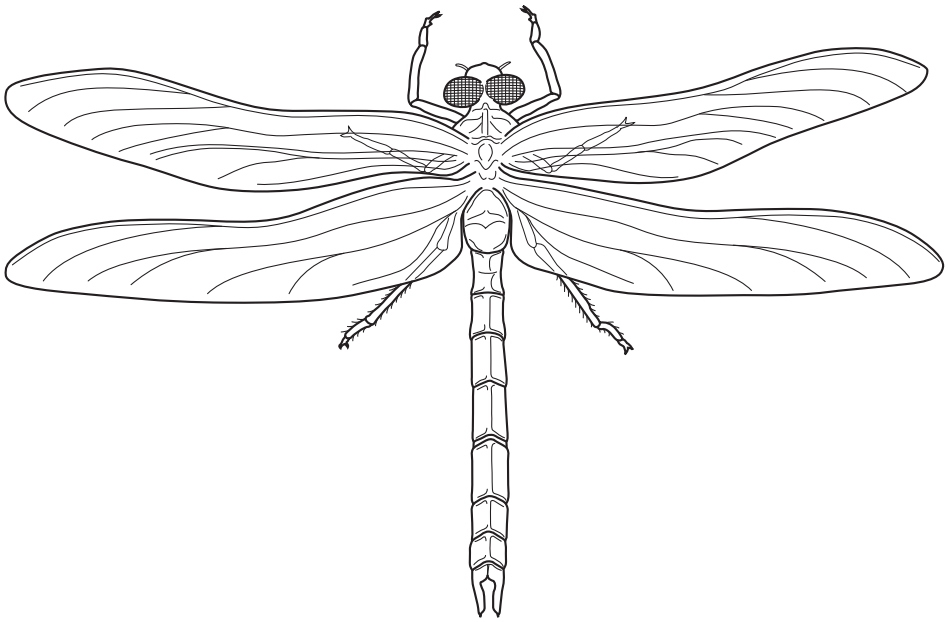


Fig. 2.1

(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 **Fig. 2.1**
1		
2		
3		
4		

[4]

[Total: 20]

Remember to check that you have completed Question 1.

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