Cambridge
O Level

Cambridge International Examinations
Cambridge Ordinary Level

CANDIDATE NAME									
CENTRE NUMBER						CANDIDATE NUMBER				

2083175930

BIOLOGY **5090/32**

Paper 3 Practical Test **October/November 2015**

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

Answer **all** questions.
Write your answers in the spaces provided.

Electronic calculators may be used.
You may lose marks if you do not show your working or if you do not use appropriate units.

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	
Total	

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

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CAMBRIDGE International Examinations

In order to plan the best use of your time, read through all the questions on this paper carefully before starting work.

1 You are going to investigate the effect of fruit juice on potato. Fruit juice contains a lot of sugar.

You are provided with four solutions of fruit juice, **A**, **B**, **D** and **E**. Each solution contains fruit juice in the quantities shown in Table 1.1.

Pieces of potato tissue were cut from fresh potatoes to measure 60 mm × 10 mm × 3 mm and placed in each of these solutions.

(a) Complete Table 1.1 to include the volumes of concentrated fruit juice and water that you will need to prepare 100 cm^3 of solution **C**.

Table 1.1

solution	volume of fruit juice / cm^3	volume of water / cm^3	percentage fruit juice in solution
A	0	100	0
B	25	75	25
C			50
D	75	25	75
E	100	0	100

[1]

- Prepare 100 cm^3 of solution **C** in container **C**.

You have been provided with a piece of fresh potato covered by plastic film.

- Remove the plastic film and place the piece of potato on the white tile.
- Use the sharp knife provided to cut a strip of potato tissue measuring 60 mm × 10 mm × 3 mm.
- Add this piece to solution **C** and leave for 20 minutes.

Record the time that the piece was added to the solution.

.....

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Question 1 continues on page 4

- Remove the piece of potato from solution **A** and dry carefully with a paper towel.

(b) (i) Measure the length of the piece of potato and record this in Table 1.2.

Put the piece of potato back into solution **A**.

- Repeat this procedure for the pieces of potato in solutions **B**, **D** and **E**.

Table 1.2

solution	percentage fruit juice in solution	final length of potato tissue/mm	change in length of potato tissue/mm
A	0		
B	25		
C	50		
D	75		
E	100		

[2]

When the 20 minutes have passed, repeat this procedure with the piece of potato in solution **C**. Record your result in Table 1.2.

(ii) Calculate the changes in length to complete Table 1.2. [3]

(iii) Construct a graph to show the effect of fruit juice concentration on change in length of the potato tissue.

Complete the labelling of the axes. [5]

(iv) Suggest what has happened to the potato tissue in the different solutions that has resulted in the changes in length.

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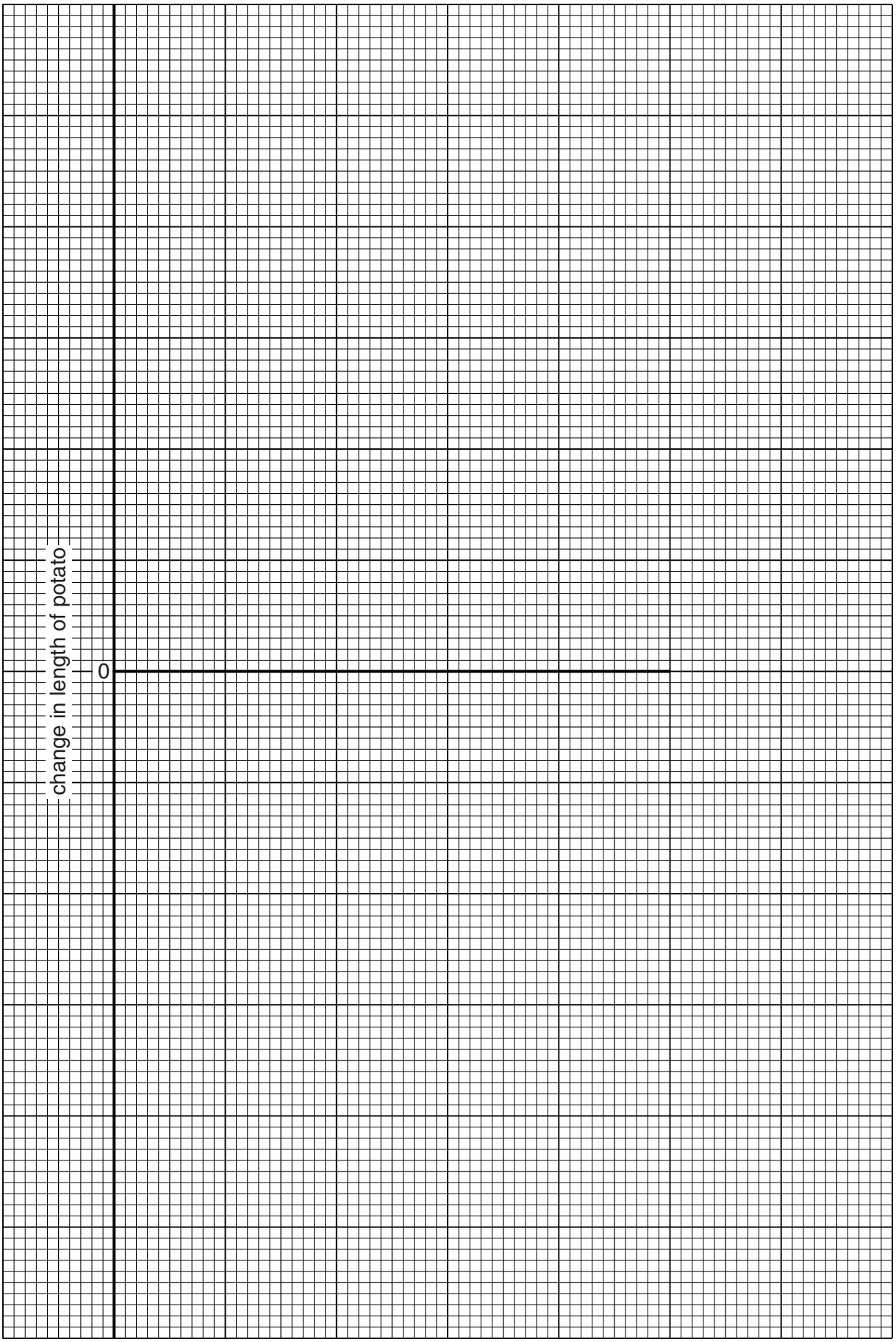
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.....[5]


change in length of potato
0

(c) Suggest **three** improvements you could make to the method used to improve the reliability of this investigation.

1.....

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2.....

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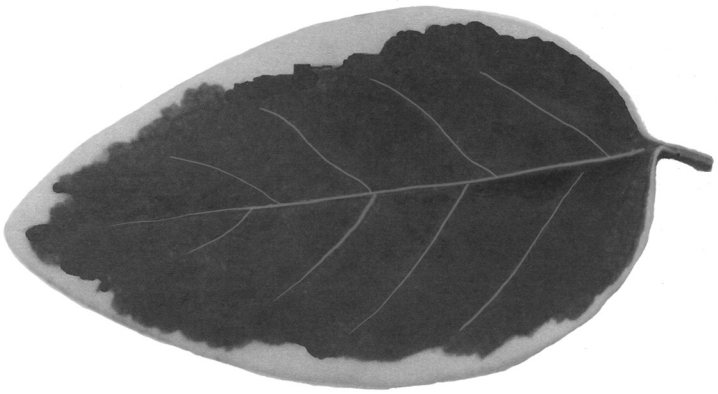
3.....

.....[3]

[Total: 19]

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2 Fig. 2.1 shows a variegated leaf. Variegated leaves have green (dark) and white (pale) areas.



magnification × 0.5

Fig. 2.1

(a) (i) Make a large labelled drawing of this leaf.

[4]

(ii) The leaf you have drawn had been exposed to light.

Describe how you could test the leaf safely to show that its green areas contained starch.

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.....[4]

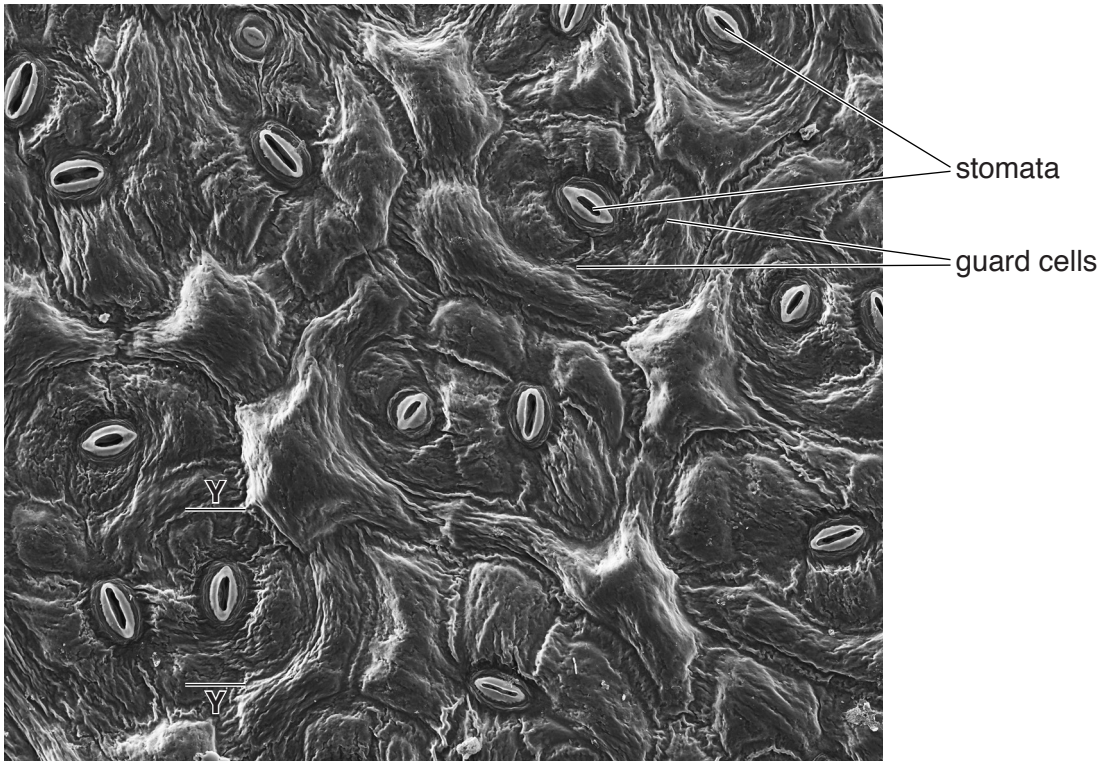
(iii) Describe what the green and white areas of the leaf would look like at the end of your test.

green areas .....

white areas .....[2]

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Fig. 2.2 shows the lower surface of a similar leaf as seen with a microscope.



magnification × 500

Fig. 2.2

(b) (i) Count the number of stomata present in Fig. 2.2.

..... [1]

(ii) Measure the distance between **Y – Y** as shown on Fig. 2.2.

Length of **Y – Y** – the length of one guard cell .....

Calculate the actual length of this guard cell.

actual length = ...[3]

[Total: 14]

3 Fig. 3.1 shows two sections of lung tissue as seen with a microscope.

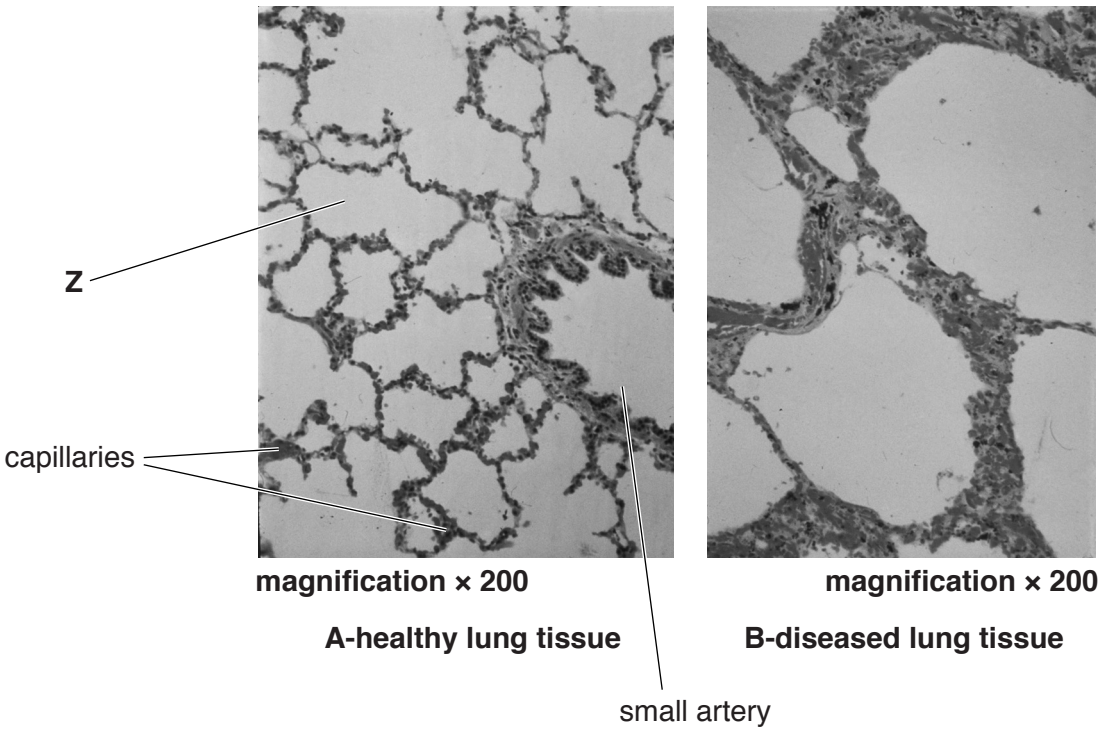


Fig. 3.1

(a) (i) In Fig. 3.1 **A** a small artery is labelled.

State the visible features of this blood vessel that show it is an artery.

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.....[2]

(ii) Name the structure labelled **Z** in Fig. 3.1 **A**.

..... [1]

(b) (i) Explain, using features visible in Fig. 3.1 **A**, how the healthy lung tissue is adapted for gas exchange.

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.....[3]

(ii) Describe **one** visible difference between the diseased and healthy lung tissue shown in Fig. 3.1.

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.....[1]

[Total: 7]

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