Cambridge International Examinations
Cambridge International General Certificate of Secondary Education

CANDIDATE NAME									
CENTRE NUMBER						CANDIDATE NUMBER				

3753265078

BIOLOGY **0610/53**

Paper 5 Practical Test **October/November 2014**

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.

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.

The syllabus is approved for use in England, Wales and Northern Ireland as a Cambridge International Level 1/Level 2 Certificate.

This document consists of **12** printed pages.

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Read through all the questions on this paper carefully before starting work.

1 You are going to investigate osmosis in pieces of potato placed in different liquids.

You are provided with three liquids **A**, **B** and **C**.

- Label three small beakers **A**, **B** and **C**.
- Pour liquid **A** into beaker **A** to a depth of 40 mm.
- Pour liquid **B** into beaker **B** to a depth of 40 mm.
- Pour liquid **C** into beaker **C** to a depth of 40 mm.

You are provided with half a potato, a white tile and a knife.

Take care when using the knife as the blade will be sharp.

- Remove the film that is covering the potato.
- Cut three thin slices of potato, as shown in Fig. 1.1. Each slice should be approximately 3 mm thick.

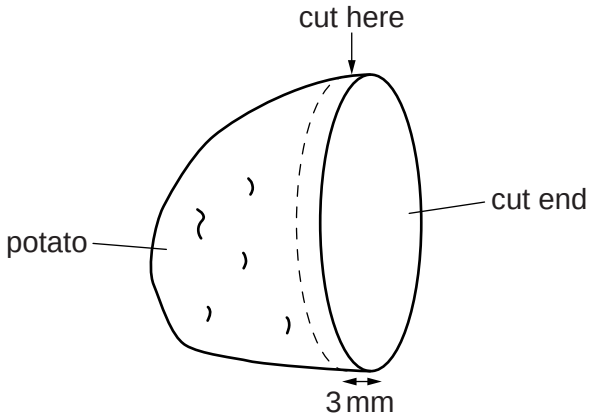


Fig. 1.1

- Lay one slice on the white tile. Remove the edges of the slice so that it is a square shape, at least 30 mm along each side, as shown by the bold line in Fig. 1.2.

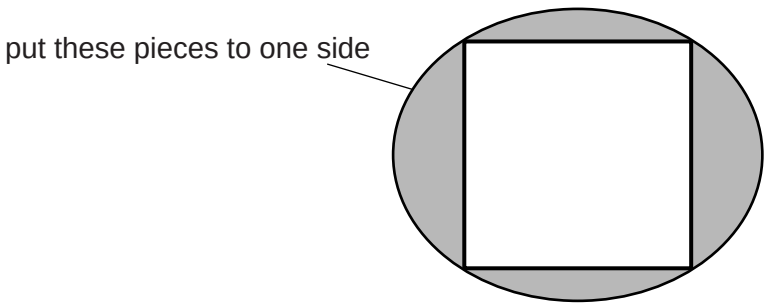


Fig. 1.2

- Put the pieces shaded in Fig. 1.2 to one side.

- Cut the square shape into **six** sticks, approximately 30 mm long × 5 mm wide, as shown by the dotted lines in Fig. 1.3.

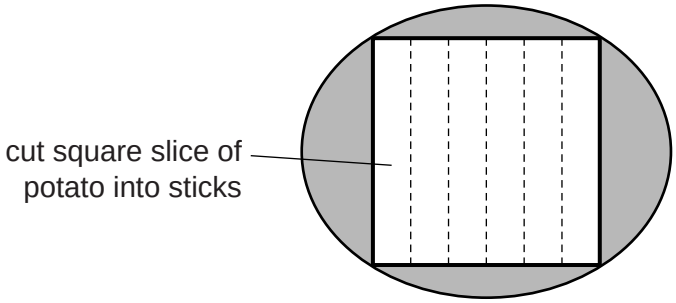


Fig. 1.3

- Cut the remaining two slices of potato into sticks using the same method. This will give you 18 sticks in total.
- Place six sticks into each of the three small beakers, **A**, **B** and **C**.
- Make a note of the time.

  .....

- Leave the sticks in the liquids for 15 minutes.

Continue with part (a) whilst you are waiting.

(a) You are going to observe and record the texture and firmness of the sticks **before and after** they have been in liquids **A**, **B** and **C**.

Prepare a table to record your results.

Use the space below.

- Cut another slice of potato and divide it into sticks as before.
- Use these pieces of potato to observe the texture and firmness of the sticks before they were placed into the liquids.
- Record your observations in your results table.
- After 15 minutes, remove from the liquids the sticks that had been placed in the liquids. Be careful not to get them mixed up.
- Observe the texture and firmness of the sticks.
- Record your observations in your results table.

[5]

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(b) One of the liquids is distilled water, one is a dilute sugar solution and one is a concentrated sugar solution.

(i) Use your results to identify the liquids. Record your answers in the Table 1.1.

Table 1.1

	A, **B** or **C**?
distilled water	
dilute sugar solution	
concentrated sugar solution	

[2]

(ii) Explain how your results helped you to identify the liquids.

.....

.....

.....

.....

.....

.....

.....[3]

(c) Suggest why you used six sticks in each liquid.

.....

.....[1]

(d) Suggest **two** changes that could be made to improve the results of this investigation.

For each change, explain how it would improve the results.

change .....

.....

.....

explanation .....

.....

.....

change .....

.....

.....

explanation .....

.....

.....[4]

[Total: 15]

2 Fig. 2.1 shows a cross-section of a human coronary artery as seen with a microscope.

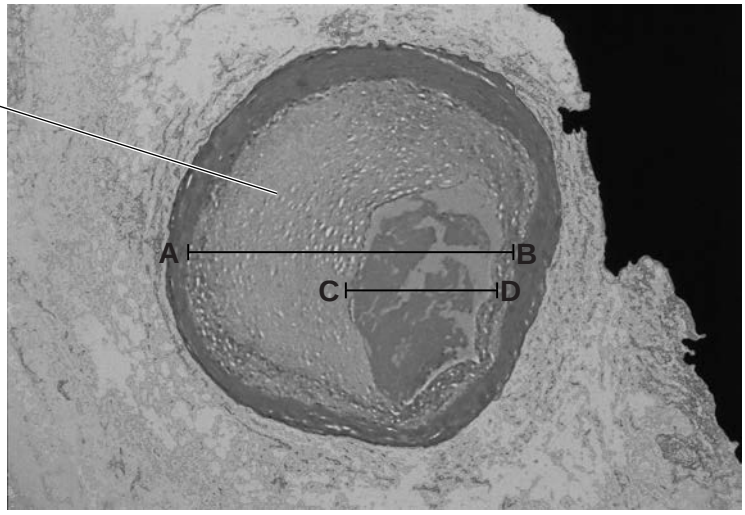


Fig. 2.1

The actual internal diameter of this coronary artery at **AB** is 4.3 mm.

(a) Measure the length of **AB** in Fig. 2.1.

length of **AB** in Fig. 2.1 …… mm

Calculate the magnification of Fig. 2.1.

Show your working.

magnification × ..... [3]

(b) The coronary artery in Fig. 2.1 has been affected by coronary heart disease.

A blockage has reduced the internal diameter of the coronary artery.

This reduced diameter is shown by the line **CD**.

The actual diameter **AB** is 4.3 mm.

The reduced actual diameter **CD** is 2.0 mm.

Calculate the percentage decrease in the diameter of the artery from **AB** to **CD**.

Show your working.

Give your answer to the nearest whole number.

.....% [3]

[Total: 6]

3 Fruits contain the seeds of a plant. They are dispersed from the parent plant in a variety of ways.

A student investigated the dispersal of two different fruits, **E** and **F**, by measuring the distance travelled by fruits from their parent plants.

Fig. 3.1 shows fruits **E** and **F**.



E



F

not to scale

Fig. 3.1

(a) Use Fig. 3.1 to describe two **visible** differences, other than size, between fruits **E** and **F**.

Write your answers in Table 3.1.

Table 3.1

difference	**E**	**F**
1		
2		

[2]

(b) The student measured the distance travelled by 10 fruits of each type from their parent plants at different wind speeds. They calculated the average distance travelled at each wind speed.

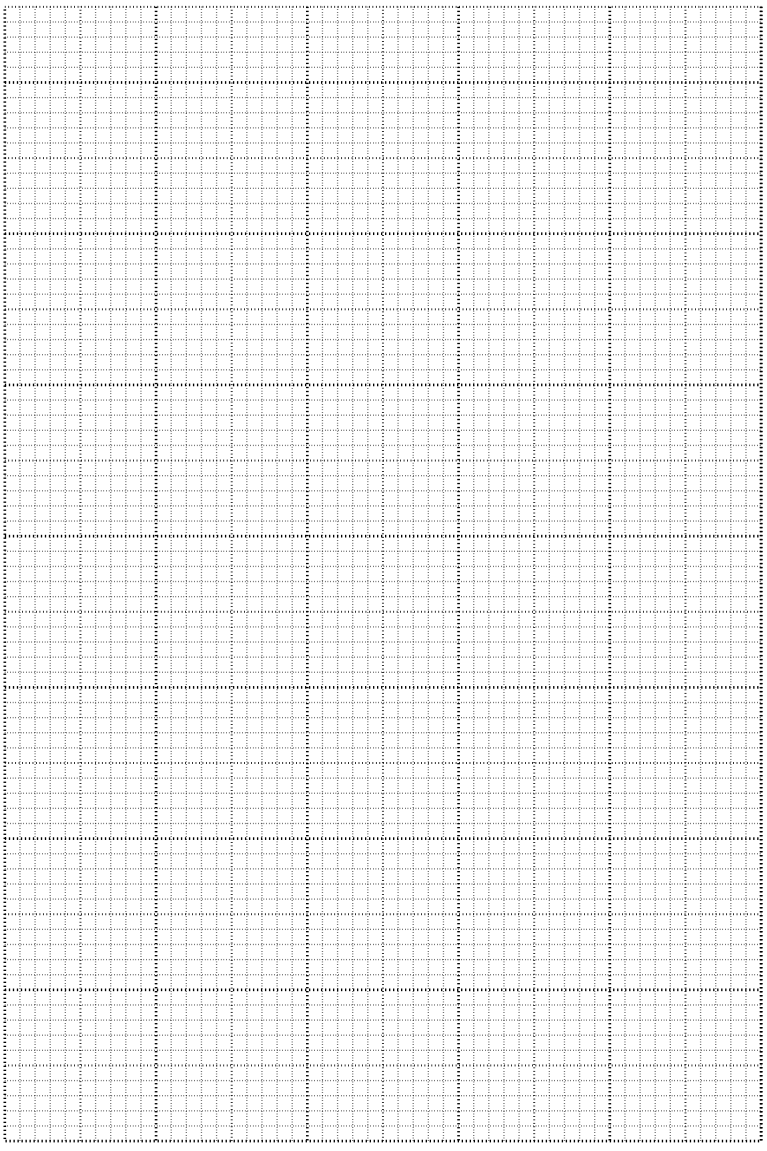
The results are shown in Table 3.2.

Table 3.2

wind speed / ms^{-1}	average distance travelled by fruit / m	
	E	**F**
2	2.6	0.2
4	4.5	3.6
6	7.9	2.3
8	9.9	4.2
10	14.2	6.7

(i) Draw a graph to show the data in Table 3.2 on the grid below.

Use the same set of axes to show the data for both fruits.



[5]

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(ii) **E** is dispersed by the wind.

Describe the evidence **from the data** that supports this statement.

.....

.....[1]

(c) Once a fruit has been dispersed, the seeds can germinate.

Fig. 3.2 shows a seed germinating.



Fig. 3.2

Draw a large, labelled diagram of this germinating seed.

[4]

(d) A student wanted to find out how temperature might affect the germination of seeds.

State:

(i) the variable that should be changed

.....[1]

(ii) the variable that should be measured and recorded

.....[1]

(iii) **two** variables that should be kept constant.

1 .....

2 .....[2]

(e) Seeds store protein.

Before the seed germinates, enzymes in the seed begin to break down the protein.

(i) Describe a method you would use to test a seed for the presence of protein.

.....

.....

.....

.....

.....[2]

(ii) State the results you would expect to see if protein is present.

.....

.....[1]

[Total: 19]

Copyright Acknowledgements:

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Question 3 © Ref: ANRH54; Simon Colmer / Alamy; *Sycamore tree fruit*; www.alamy.com.
© Ref: ADHMEF; Natural Visions / Alamy; *Devils claw fruit from Namibia*; www.alamy.com.
Question 3c © Ref: APG6X3; Nigel Cattlin / Alamy*; Germinating pea seed root*; www.alamy.com.

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