Cambridge International Examinations
Cambridge International General Certificate of Secondary Education

CANDIDATE NAME

CENTRE NUMBER

CANDIDATE NUMBER

2878449514

BIOLOGY **0610/63**

Paper 6 Alternative to Practical **October/November 2014**

1 hour

Candidates answer on the Question Paper.

No Additional Materials are required.

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 **10** printed pages and **2** blank pages.

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1 A group of students investigated how their pulse rate changed during exercise.

They measured their resting pulse rate before they started exercising.

(a) (i) Describe how to measure pulse rate.

.....

.....

.....[2]

(ii) Explain why it is important to measure the **resting** pulse rate.

.....

.....[1]

(b) The students exercised for 1 minute and then measured their pulse rate.

They immediately exercised for another minute and measured their pulse rate again.

They continued exercising and measured their pulse rate every minute up to a total of 5 minutes.

Fig. 1.1 shows the results for one of the students.

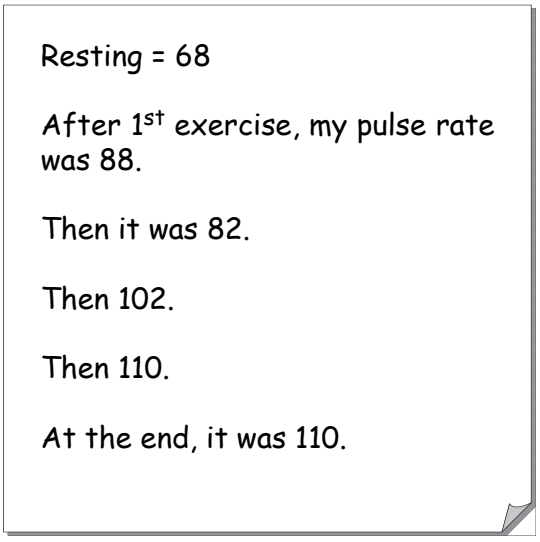


Fig. 1.1

(i) Draw a results table for the results shown in Fig. 1.1.

Write the results in your table.

[4]

(ii) Describe the results and suggest an explanation for them.

description.....

.....

.....

.....

.....

.....

explanation.....

.....

.....

.....[4]

(c) 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]

(d) Fig. 1.2 shows a cross-section of a human coronary artery as seen with a microscope.

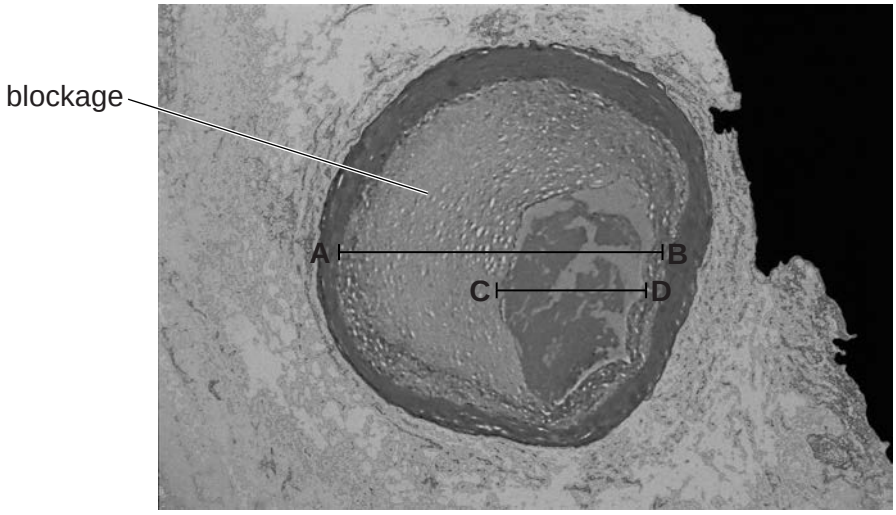


Fig. 1.2

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

(i) Measure the length of **AB** in Fig. 1.2.

length of **AB** in Fig. 1.2 ..... mm

Calculate the magnification of Fig. 1.2.

Show your working.

magnification × ..... [3]

(ii) The coronary artery in Fig. 1.2 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.

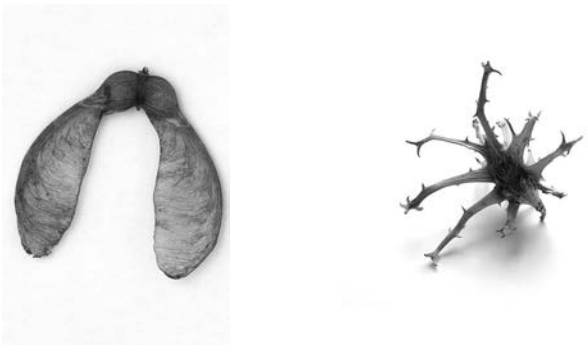
.....% [3]

[Total: 21]

2 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 the fruits from their parent plants.

Fig. 2.1 shows fruits **E** and **F**.



E **F** **not to scale**

Fig. 2.1

(a) Use Fig. 2.1 to describe two **visible** differences, other than size, between fruits **E** and **F**.

Write your answers in Table 2.1.

Table 2.1

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.

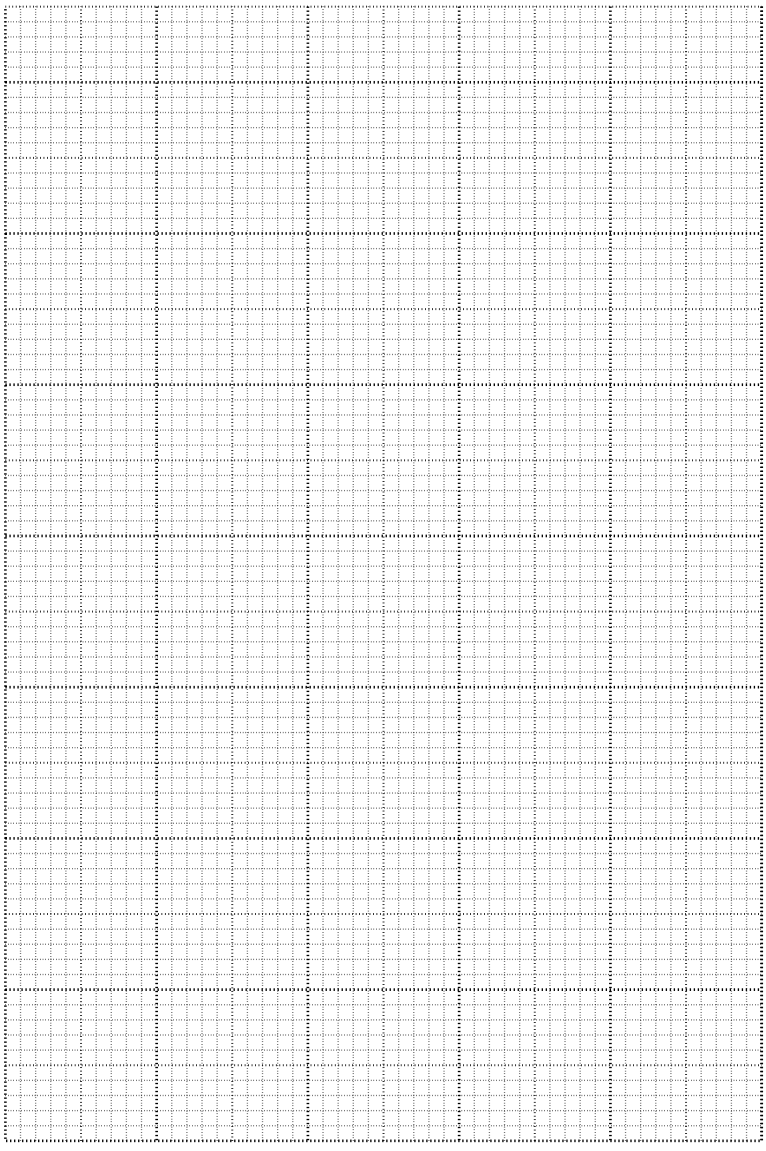
The results are shown in Table 2.2.

Table 2.2

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 2.2 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. 2.2 shows a seed germinating.



Fig. 2.2

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]

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Question 2	© 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 2c	© Ref: APG6X3; Nigel Cattlin / Alamy; *Germinating pea seed root*; www.alamy.com

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