Cambridge International Examinations
Cambridge International General Certificate of Secondary Education

CANDIDATE NAME									
CENTRE NUMBER						CANDIDATE NUMBER				

0583560603

BIOLOGY **0610/52**

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 **11** printed pages and **1** blank page.

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

1 Living cells produce catalase to break down toxins, such as hydrogen peroxide, that are formed in cells.

Catalase breaks down hydrogen peroxide to form oxygen and water.

$$\text{hydrogen peroxide} \xrightarrow[\text{catalase}]{} \text{oxygen + water}$$

You are going to investigate if ripe fruits produce more catalase than unripe fruits.

The unripe pepper fruits of *Capsicum annuum* are green in colour when they start developing. As the fruit ripens it turns red and tastes sweeter.

Extracts have been prepared from both green and red pepper fruits. Small pieces of filter paper have been soaked in the extracts and dried before this investigation.

(a) (i) • Put on the eye protection provided.

You are provided with four test-tubes, each containing 25 cm^3 of dilute hydrogen peroxide solution. Label two of the test-tubes **green** and the other two **red**.

- Use the forceps to pick up one piece of filter paper from the dish labelled **green**. Place the piece of filter paper in one of the test-tubes labelled **green** and measure the time, in seconds, that it takes to rise to the surface of the hydrogen peroxide solution. Record this time in Table 1.1.

- Use the second test-tube labelled **green** to repeat this procedure with a second piece of filter paper from the dish labelled **green**. Record this time in Table 1.1.

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Now, repeat the procedure using filter paper soaked in extract from red peppers.

- Use the forceps to pick up one piece of filter paper from the dish labelled **red**. Place the piece of filter paper in one of the test-tubes labelled **red** and measure the time it takes, in seconds, to rise to the surface of the hydrogen peroxide solution. Record this time in Table 1.1.

- Use the second test-tube labelled **red** to repeat this procedure with a second piece of filter paper from the dish labelled **red**. Record this time in Table 1.1.

[4]

Table 1.1

pepper extract	time / s	
	filter paper 1	filter paper 2
green		
red		

(ii) Describe your observations as the pieces of filter paper rise to the surface of the hydrogen peroxide solution.

.....

.....[1]

(iii) Describe your results **and** state the conclusion that can be made regarding the amount of catalase in ripe and unripe fruits.

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.....[3]

(b) The red pepper fruit is said to be sweeter than the green pepper fruit.

Describe how you could safely test if the sweetness is due to the presence of reducing sugar.

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.....[5]

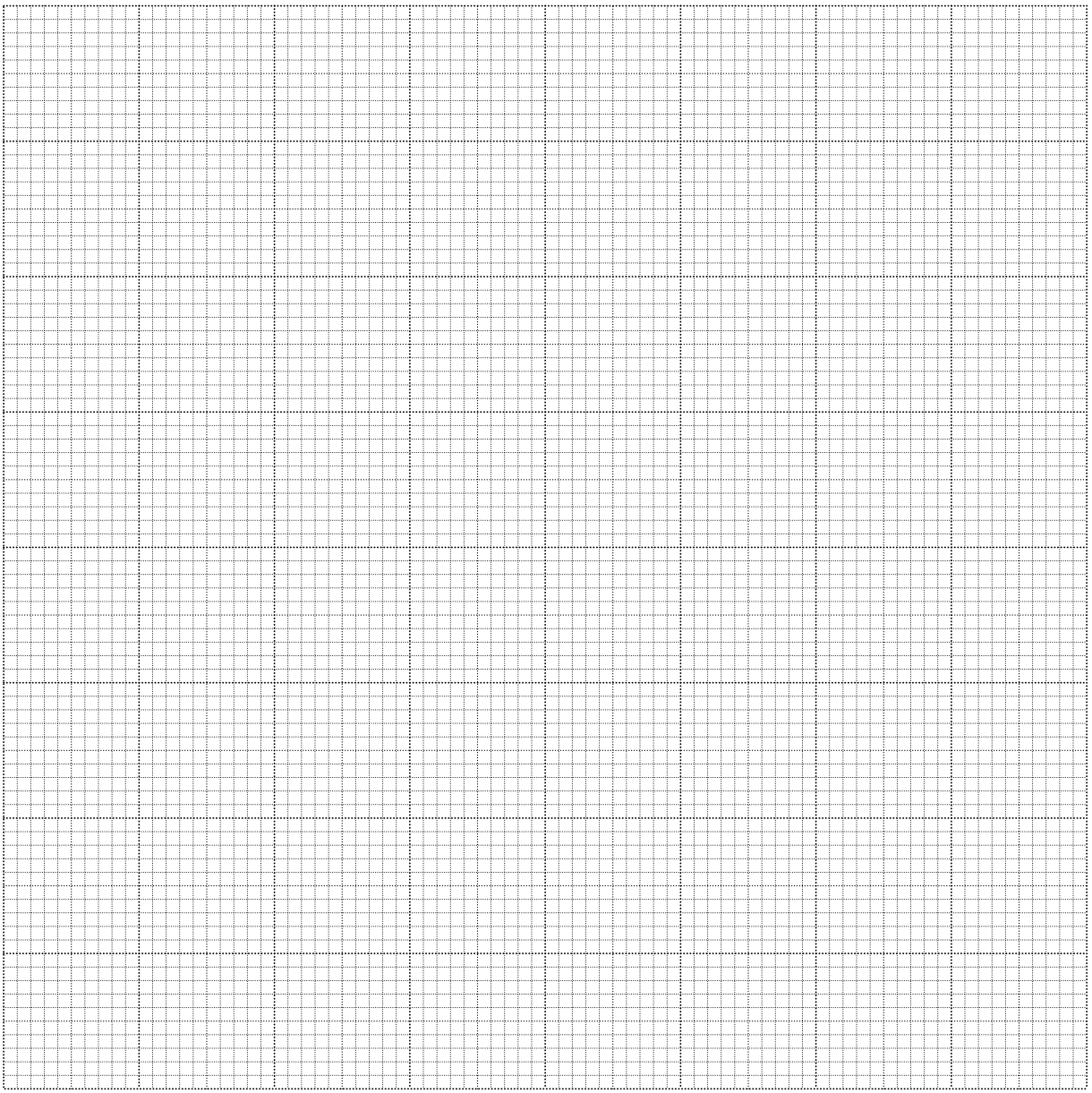
(c) The sugar content of the green pepper and four other types of fresh fruit is shown in Table 1.2.

Table 1.2

type of fresh fruit	sugar content / g per 100 g
banana	15.0
green pepper	2.7
lemon	3.5
orange	9.0
tomato	2.0

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(i) Plot a graph of the data in Table 1.2 to compare the sugar content of the five fruits.



[4]

(ii) Calculate how many times more sugar can be found in 100 g of banana compared to 100 g of green pepper.

Show your working.
Give your answer to the nearest whole number.

[2]

[Total: 19]

2 You are provided with part of a carrot, *Daucus carota*.

- Remove the plastic film from the piece of carrot.
- Use the hand lens to observe the cut surface.

(a) Make a large drawing of the cut surface of the carrot to show:

- the number of layers
- the thickness of the layers.

Label where the leaves are attached.

[4]

(b) The carrot is an example of a storage organ.

- Use a dropping pipette to carefully add 5 drops of iodine solution to the cut surface of the carrot.

  Make sure that the iodine solution spreads evenly and observe its colour after approximately 1 minute.

(i) Describe your observations.

.....

.....[1]

(ii) Use your observations to describe the distribution of starch in the storage organ.

.....

.....

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.....[2]

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[Turn over

(c) Carrot plants produce storage organs in their first year. These are used in their second year to produce flowers and seeds.

Fig. 2.1 shows three carrot seeds as seen under a light microscope.

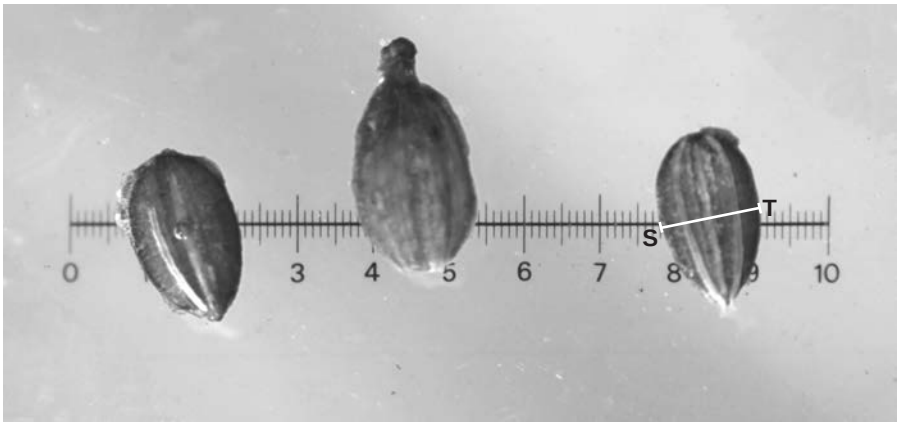


Fig. 2.1

You are going to calculate the magnification of Fig. 2.1.

Measure the length of line **ST** drawn on one of the seeds in Fig. 2.1.

length of **ST** ..... mm

The scale rule shows 10 mm, divided into 100 divisions, each of 0.1 mm. Use this scale rule to measure the actual width of the seed marked by line **ST**.

actual width of seed, marked by **ST** (using scale rule) ..... mm

Calculate the magnification of Fig. 2.1.

Show your working.

Give your answer to the nearest whole number.

magnification × .....[4]

[Total: 11]

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Question 3 begins on page 10.

3 Fig. 3.1 shows a male and a female fly of the same species.

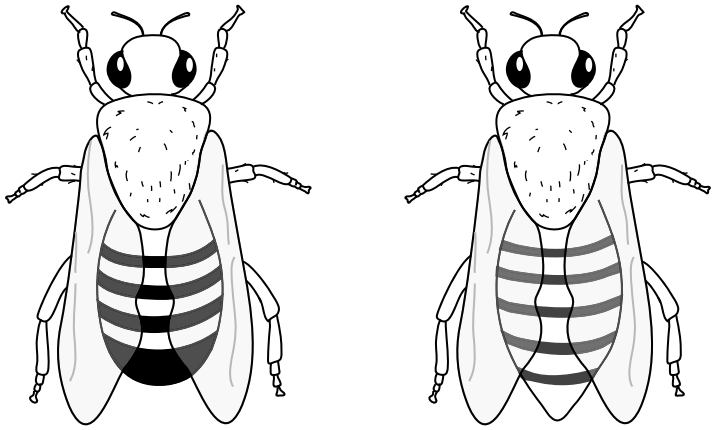


Fig. 3.1

(a) Describe **two** differences, **visible** in Fig. 3.1, between the male and female fly.

Complete Table 3.1 to record these differences.

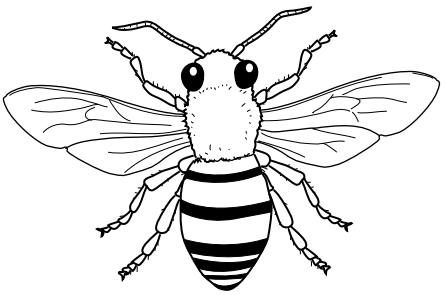
Table 3.1

feature	male	female

[3]

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(b) Fig. 3.2 shows a different type of insect, a bee.



not drawn to scale

Fig. 3.2

Insects can be recognised by having three parts to the body and three pairs of legs, amongst other features.

Describe **two other** features, visible in Fig. 3.1 **and** Fig. 3.2, that show that the fly and the bee are both identified as insects.

1 .....

2 .....[2]

(c) Both flies and bees are attracted to coloured flowers.

Suggest how you could find out which colours attract more bees than flies.

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.....[5]

[Total: 10]

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