Cambridge International Examinations
Cambridge International General Certificate of Secondary Education

CANDIDATE NAME									
CENTRE NUMBER						CANDIDATE NUMBER			

5363957393

BIOLOGY **0610/52**

Paper 5 Practical Test **October/November 2018**

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.

For Examiner's Use	
1	
2	
Total	

This 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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[Turn over

1 Fruit juice can be produced by crushing and squeezing fresh fruit. The juice produced in this way is often cloudy.

The enzyme pectinase is used to produce clear fruit juice. This process is called clarification.

Fig. 1.1 shows fruit juice before and after clarification.

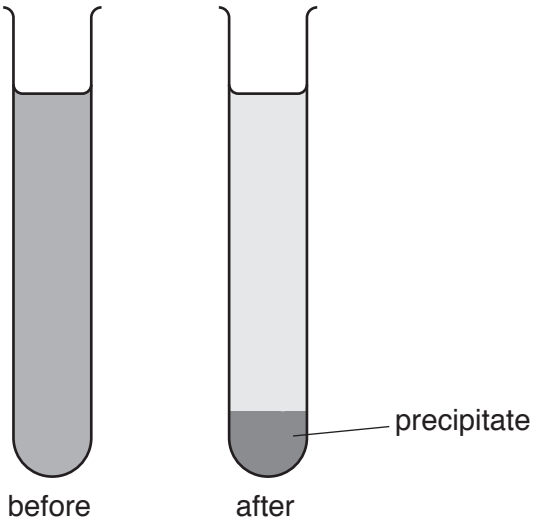

Fig. 1.1

You are going to investigate the effect of pectinase concentration on the clarification of apple juice.

You are provided with freshly prepared apple juice in a beaker labelled **A**, water in a beaker labelled **W**, and a 5% pectinase solution in a beaker labelled **E**.

Read all the instructions but DO NOT CARRY THEM OUT until you have drawn a table for your results in the space provided in 1(b).

You should use the gloves and eye protection provided while you are carrying out the practical work.

Step 1 Label four test-tubes **P1**, **P2**, **P3** and **P4**.

Step 2 Make up the different concentrations of pectinase by using the syringes provided to add water and pectinase solution to the test-tubes as shown in Table 1.1.

Table 1.1

test-tube	volume of water **W** /cm^3	volume of 5% pectinase solution **E** /cm^3	final percentage concentration of pectinase solution
P1	0.00	1.00	5.0
P2	0.50	0.50	2.5
P3	0.75	0.25	
P4	1.00	0.00	0.0

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(a) Calculate the final concentration of the pectinase solution in test-tube **P3**.

Show your working and write your answer, to one decimal place, in Table 1.1.

[2]

Step 3 Raise your hand when you are ready for hot water to be added to the **water-bath**.

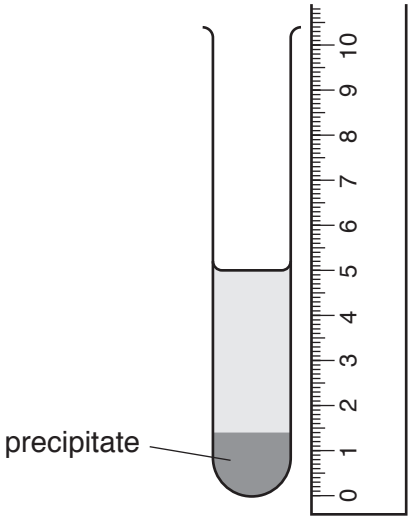
Step 4 Add 5 cm^3 of apple juice **A** to each of test-tubes **P1**, **P2**, **P3** and **P4**.

Carefully mix the contents of each test-tube by shaking them gently and place all four test-tubes into the **water-bath**.

Step 5 Immediately start the timer and leave for five minutes. Do **not** shake the test-tubes again.

Step 6 After five minutes, use a ruler to measure the height of the precipitate formed in each of the four test-tubes, as shown in Fig. 1.2. If no precipitate has formed record this as '0' in your table. Return the test-tubes to the water-bath.

Record the measurements in your table in **1(b)**.



not to scale

Fig. 1.2

Step 7 Leave the four test-tubes in the **water-bath** for a **further** five minutes.

Step 8 After five minutes repeat the measurement of the height of any precipitate in each of test-tubes **P1**, **P2**, **P3** and **P4**. Record the measurements in your table in **1(b)**.

Step 9 Return the test-tubes to the water-bath and repeat step 7 and step 8 to take a final set of measurements.

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(b) Prepare a table to record your results.

[4]

(c) State a conclusion for your results.

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.....

.....[2]

(d) **(i)** State the variable that was changed (independent variable) in this investigation.

.....[1]

(ii) State **two** variables that were kept constant in this investigation.

1 .....

2 .....
[2]

(iii) Identify **one** possible error in step 6 and suggest an improvement.

error .....

.....

Improvement .....

.....

.....
[2]

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(e) Explain the purpose of test-tube **P4**.

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..... [2]

(f) A student stated the hypothesis:

"Treating fruit juice with pectinase reduces the vitamin C content of the fruit juice".

Plan an investigation to test this hypothesis.

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.....[6]

(g) A student wanted to find out if fruit juice contained starch.

State the result you would expect for a positive test for starch.

..... [1]

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(h) Fig. 1.3 shows a cross-section of a tomato fruit.

Fig. 1.3

Make a large drawing of the cross-section of tomato fruit.

[4]

[Total: 26]

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2 A student investigated the number of petals on the flowers of two species of daisy, species **A** and species **B**.

(a) Fig. 2.1 shows one daisy flower of species **A**.

Fig. 2.1

The actual length of petal **XY** of the daisy in Fig. 2.1 was measured by the student as 5 mm.

Measure the length of petal **XY** on Fig. 2.1. Include the units.

length of **XY** on Fig. 2.1 .....

Use the formula to calculate the magnification of the photograph.

$$\text{magnification} = \frac{\text{length of } \mathbf{XY} \text{ on Fig. 2.1}}{\text{actual length of petal } \mathbf{XY}}$$

Show your working.

.....

[2]

The student collected 10 flowers from species **A** and 10 flowers from species **B**. They counted the number of petals on each flower.

Fig. 2.2 shows some of the daisy flowers of species **A**.

Fig. 2.2

(b) (i) Count the number of petals on flowers **9** and **10** in Fig. 2.2 and record the number of petals in Table 2.1.

Table 2.1

	number of petals	
flower number	species **A**	species **B**
1	16	7
2	15	5
3	13	5
4	20	6
5	20	6
6	15	7
7	17	5
8	15	6
9		6
10		5
average number of petals	17	

[1]

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(ii) Calculate the average number of petals for species **B**.

Write your answer in Table 2.1. Give your answer to the nearest whole number.

Space for working.

[1]

(iii) Suggest one method that could be used to ensure that the counting of the number of petals is accurate.

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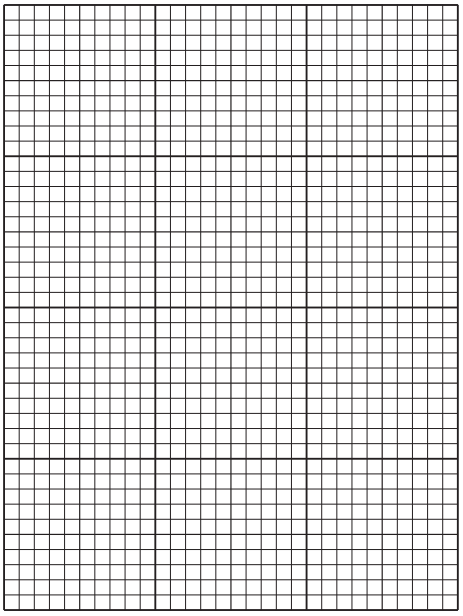
.....[1]

(c) Plot a bar chart on the grid of the average number of petals for species **A** and species **B** from Table 2.1.



[3]

(d) State **two** reasons why the student should have repeated the investigation.

1 .....

.....

2 .....

.....

[2]

(e) The student noticed that insects fed on the nectar produced by the flowers.

(i) Describe the test that the student would use to find out if the nectar contains reducing sugars.

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.....[3]

(ii) State **one** safety precaution that should be taken when carrying out the test for reducing sugars.

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.....[1]

[Total: 14]

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