Cambridge Assessment International Education
Cambridge International General Certificate of Secondary Education

CANDIDATE NAME									
CENTRE NUMBER						CANDIDATE NUMBER				

0642577413

BIOLOGY **0610/52**

Paper 5 Practical Test **February/March 2019**

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 regulated 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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1 You are going to investigate the effect of two different types of washing powder on stained cloth. One of these is biological and contains enzymes and detergent. The other is non-biological and contains only detergent.

You are provided with:

- four pieces of dry cloth that have been stained with the same food
- a solution of biological washing powder in a beaker labelled **bio**
- a solution of non-biological washing powder in a beaker labelled **non-bio**
- distilled water in a beaker labelled **water**.

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(a)(i).

You should use the safety equipment provided while you are carrying out the practical work.

Step 1 Use a marker pen to divide a white tile into four sections. Label the four sections **bio**, **non-bio**, **water** and **not washed** as shown in Fig. 1.1.

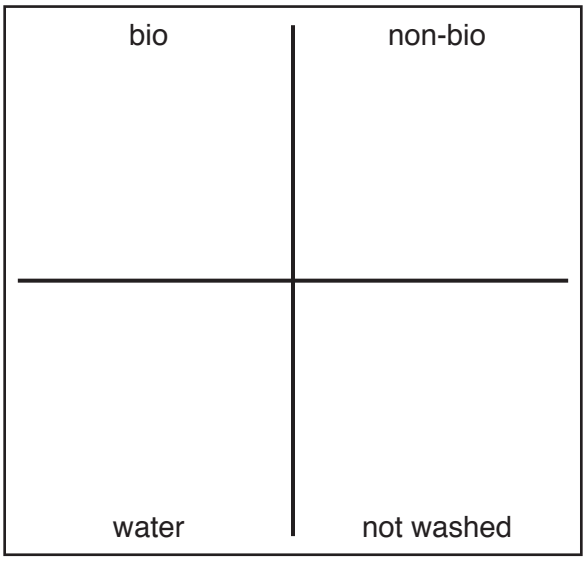

Fig. 1.1

Step 2 Place one piece of stained cloth on the **not washed** section of the white tile.

Step 3 Put one piece of stained cloth into each of the beakers labelled **bio**, **non-bio** and **water**.

Step 4 Use a glass rod to push the pieces of cloth into the liquid in each beaker. Stir the liquid in each beaker for 10 seconds.

Step 5 Start a stop-clock.

Step 6 After 5 minutes, stir the liquid in each beaker for 10 seconds.

Step 7 Let the pieces of cloth soak in the liquid for a further 5 minutes and then repeat step 6.

Step 8 Remove the pieces of cloth from the beakers and place them on the labelled sections of the white tile.

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[Turn over

Step 9 Observe the stain on each piece of cloth and use the intensity score in Table 1.1 to match the intensity of the stain on each piece of cloth. Record the intensity score in your table in **1(a)(i)**.

Table 1.1

intensity score	
lowest intensity	+
↓	++
	+++
highest intensity	++++

(a) (i) Prepare a table to record your results in the space provided.

[4]

(ii) State **one** variable that was kept the same in this investigation.

..... [1]

(iii) Identify **one** source of error in step 4 and explain how it might affect the results.

error .....

explanation .....

.....

.....

[2]

(iv) Identify a control in this experiment and explain why this control was used.

.....

.....

.....

..... [2]

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(v) State why the method used in step 9 may not give accurate results.

.....

.....

..... [1]

(b) Some students wanted to find the optimum (best) temperature for using biological washing powder.

A Petri dish was filled with agar jelly containing starch. A circular hole was cut into the centre of the agar. A solution of the biological washing powder was put into the hole. The Petri dish was incubated at 10 °C for 10 hours.

After 10 hours iodine solution was poured onto the agar in the Petri dish.

This procedure was repeated at different temperatures.

A typical result is shown in Fig. 1.2.

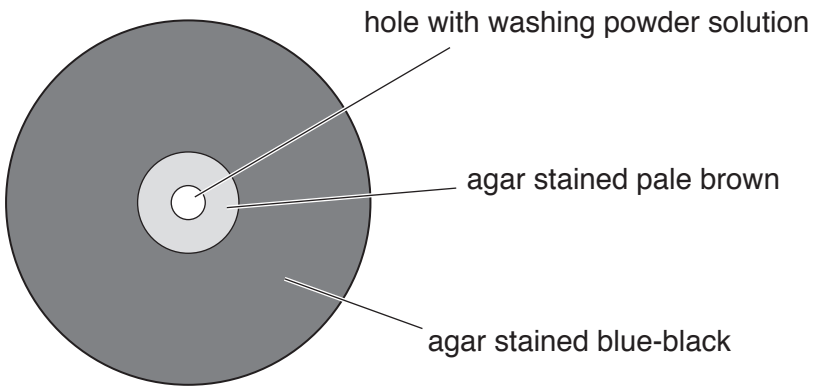

Fig. 1.2

(i) State the variable that was changed (independent variable) in the investigation described in **1(b)**.

..... [1]

(ii) Some of the agar is stained blue-black and some is stained pale brown.

State a conclusion for this result.

.....

.....

..... [1]

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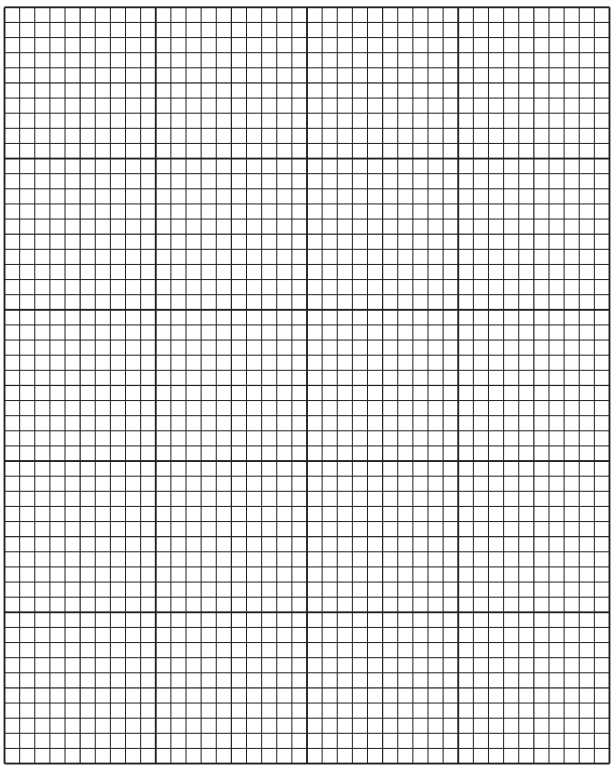
(iii) The diameter of the pale brown stained area was measured during the investigation.

The results are shown in Table 1.2.

Table 1.2

temperature / °C	diameter of pale brown stained area / mm
10	11
20	14
30	18
40	22
50	22
60	7
70	5

Plot a line graph on the grid of the data in Table 1.2.



[4]

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(iv) Describe the trend shown by the data in Table 1.2 and your graph.

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..... [2]

(v) The students were unable to determine the optimum temperature from their results.

Describe what additional measurements would be needed to find the optimum temperature.

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.....

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..... [2]

[Total: 20]

2 Fig. 2.1 shows photomicrographs of lung tissue at the same magnification. One shows healthy lung tissue and the other shows lung tissue from a person with COPD.

Line **AB** shows the diameter of one healthy alveolus. Line **CD** shows the diameter of an area of lung where the alveoli have been destroyed.

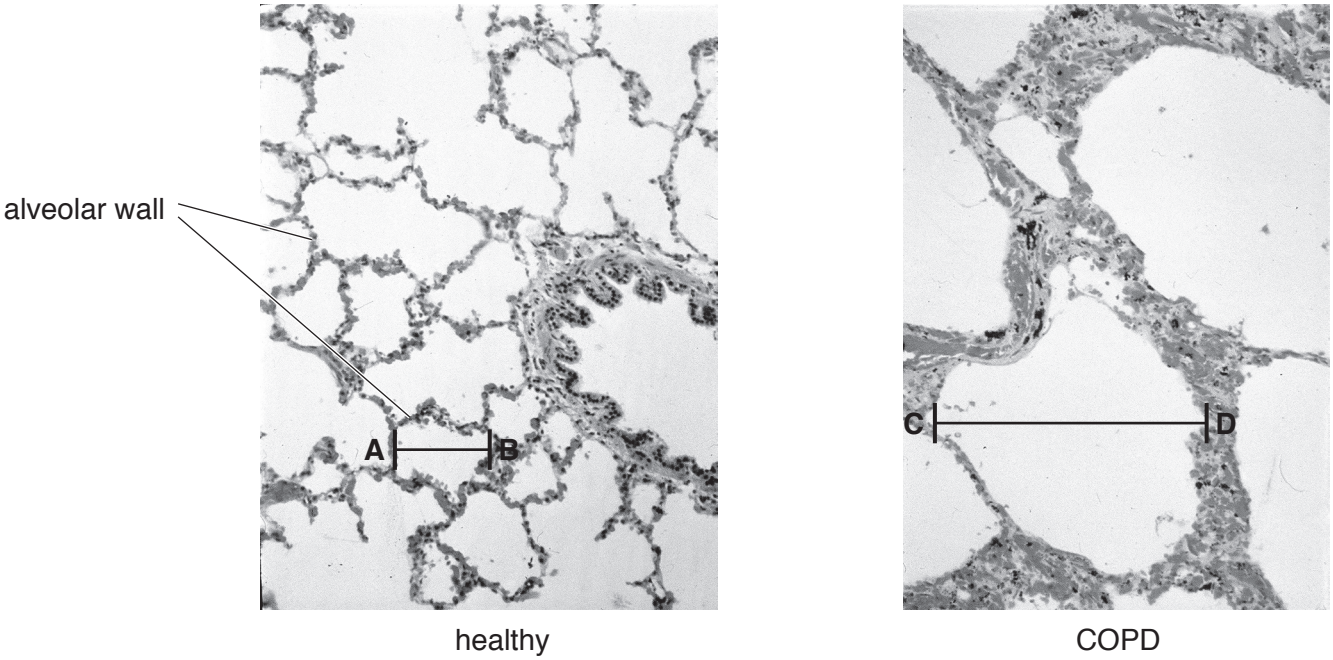

Fig. 2.1

(a) (i) Make a large drawing of the lung tissue of the person with COPD shown in Fig. 2.1. Do not draw individual cells.

[4]

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(ii) Measure the length of **CD** as shown on Fig. 2.1. Include the unit.

length of **CD** .....

Mark on your drawing the position of the line **CD** and measure the length of the line you have drawn. Include the unit.

length of line on your drawing .....

Calculate the magnification of your drawing. Give your answer to the nearest whole number.

$$\text{magnification} = \frac{\text{length of line on your drawing}}{\text{length of } \mathbf{CD} \text{ on Fig. 2.1}}$$

Space for working.

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[3]

(iii) Describe **three** visible ways that the lungs of the healthy person differ from the person with COPD in Fig. 2.1.

1 .....

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2 .....

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3 .....

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[3]

(b) Some students decided to investigate the concentration of carbon dioxide in expired air compared to that in inspired air.

They used the apparatus shown in Fig. 2.2 by breathing into the tube labelled **T**.

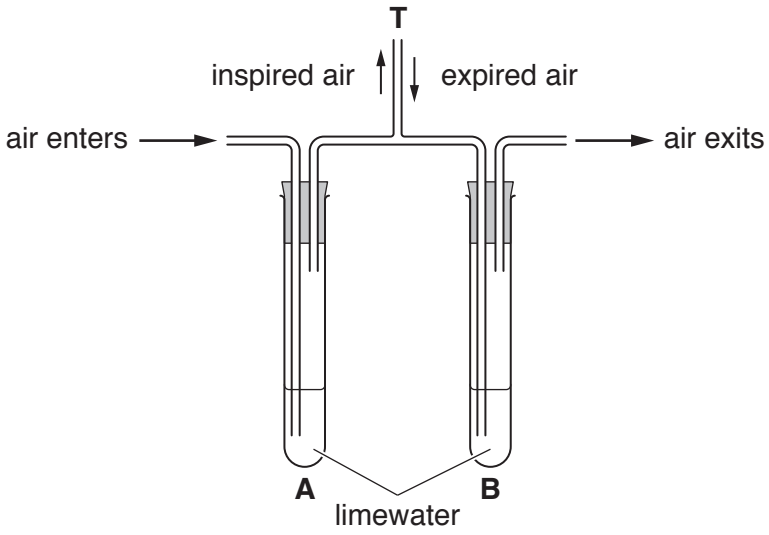

Fig. 2.2

(i) Suggest **one** possible hazard in this investigation.

..... [1]

(ii) State **one** other substance which could be used instead of limewater to determine the concentration of carbon dioxide.

.....

..... [1]

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(iii) When the students used the apparatus shown in Fig. 2.2, inspired air passed through the limewater in test-tube **A** and expired air passed through the limewater in test-tube **B**.

The students timed how long it took for the limewater in test-tubes **A** and **B** to go cloudy.

Their results are shown in Table 2.1.

Table 2.1

time taken for limewater to go cloudy / s	
test-tube **A**	test-tube **B**
600	6

The concentration of carbon dioxide in inspired air is 0.04%.

Calculate, using the results in Table 2.1, the concentration of carbon dioxide in expired air.

Show your working.

..... %
[2]

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[Turn over

(c) A student wanted to investigate the hypothesis:

'Expired air contains more carbon dioxide immediately after exercise than before exercise.'

Plan an investigation using the apparatus shown in Fig. 2.2 to test this hypothesis.

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[6]

[Total: 20]

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