Cambridge International Examinations
Cambridge International General Certificate of Secondary Education

CANDIDATE NAME

CENTRE NUMBER | | | | | |

CANDIDATE NUMBER | | | | |

9290035140

BIOLOGY **0610/51**

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 **9** printed pages and **3** blank pages.

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

1 Yeast, *Saccharomyces cerevisiae*, is used in bread-making. When the yeast cells respire, the carbon dioxide produced is used to make the bread dough rise.

You are provided with an active yeast suspension and a mixture of 25 g flour and 1 g sugar.
You are going to investigate the rate at which bread dough rises.

- You have three 20 cm^3 syringes that have been sealed as shown in Fig. 1.1.
- Label the syringes **1**, **2** and **3**.
- Add the yeast suspension to the mixture of flour and sugar.
- Stir the mixture until it forms an even mixture. This is the bread dough.
- Support each syringe vertically.
- Carefully pour 5 cm^3 of the bread dough into the open end of each of the syringes. This is the starting volume of bread dough at 0 minutes.

  note the time .....

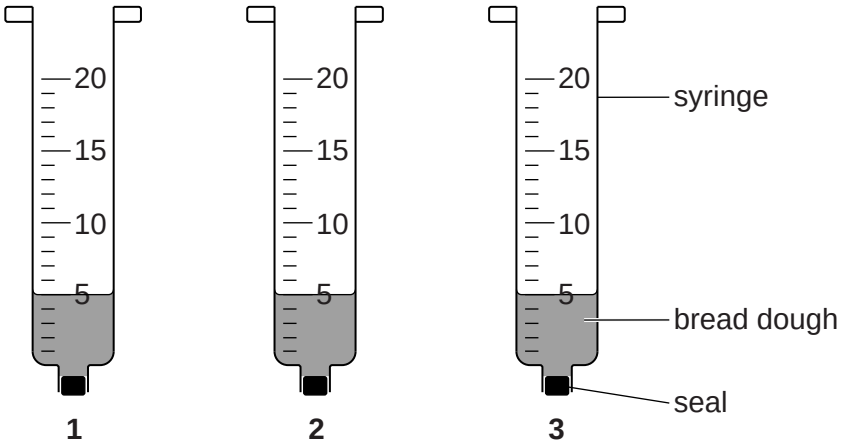

Fig. 1.1

(a) Leave the syringes for 5 minutes.

You are going to measure and record the volume of bread dough in each syringe after 5 minutes, 10 minutes, 15 minutes and 20 minutes. You already know the volume at 0 minutes. This will give you five readings, taken at 5 minute intervals.

Prepare a table to record your results whilst you are waiting during the first 5 minute period.

- Measure the volume of bread dough in each syringe every 5 minutes for a total of 20 minutes.

  Record your results in your table. [6]

  Continue with question 1(c) and 1(d) between measurements.

(b) (i) Give a reason why **three** syringes were used.

.....

..... [1]

(ii) Calculate the average volume of the bread dough in the three syringes after 20 minutes.

Show your working.

Give your answer to the nearest whole number.

..... cm^3 [1]

(c) Describe how you would use this method to investigate the effect of mass of sugar on the volume of bread dough. Do **not** carry out this investigation.

.....

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.....

..... [4]

(d) Some students used the same method described in part **(a)** to investigate the effect of temperature on the volume of bread dough.

They used three 50 cm^3 syringes at each of seven temperatures.

The starting volume in each syringe was 5 cm^3.

Their results are recorded in Table 1.1.

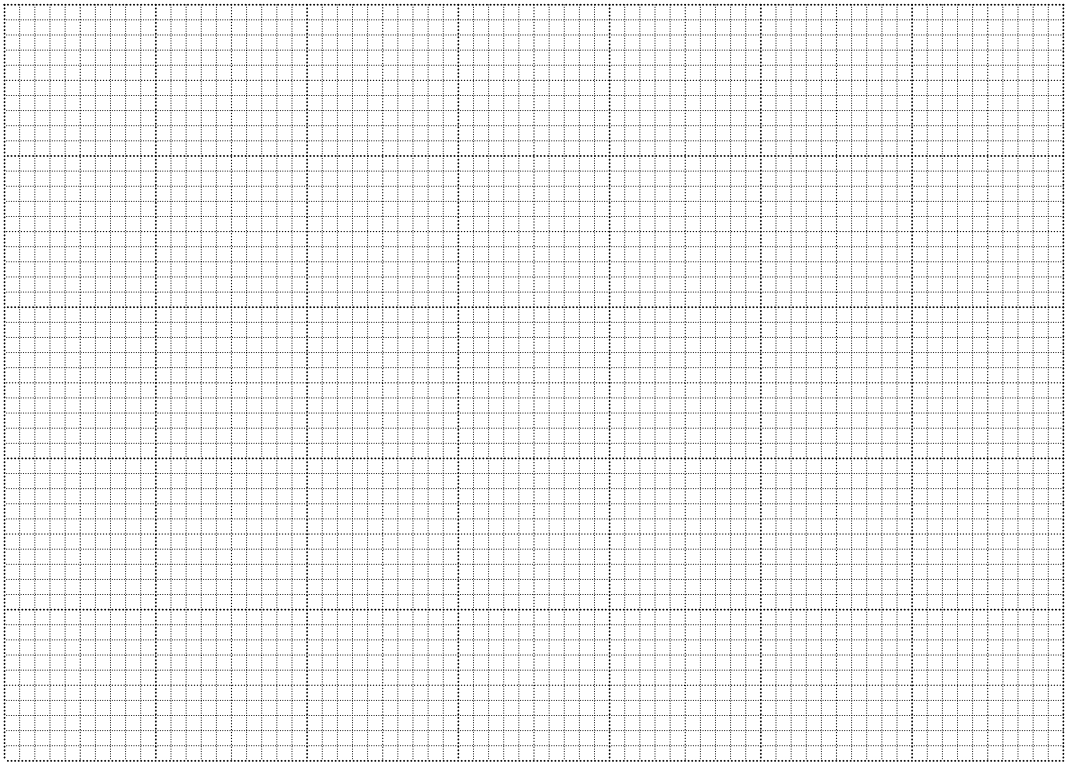
Table 1.1

temperature / °C	average volume of bread dough after 20 minutes / cm^3	average increase in volume / cm^3
10	6	1
20	10	5
30	20	15
40	35	.....
50	47	42
60	30	25
70	7	2

(i) Calculate the average increase in volume at 40 °C.

Write your answer in the space in Table 1.1. [1]

(ii) Use the data in Table 1.1 to plot a graph of the average increase in volume of bread dough against temperature.



[4]

(iii) Describe the results shown by the graph.

.....

.....

.....

..... [2]

(iv) Suggest what the students could conclude from this investigation about the effect of temperature on the activity of yeast.

.....

..... [1]

[Total: 20]

2 You are provided with two leaves from different plants, labelled **R** and **S**.

(a) (i) Make a large drawing of **R** to show:

- the shape of the leaf
- the arrangement of the veins in the leaf.

Label the main vein (midrib).

[4]

(ii) Measure, in millimetres, the distance across the widest part of **R** and record your result. Include your units.

distance across the widest part of **R** .....

Draw a line across the widest part of your drawing, measure the distance (in millimetres) and record your result. Include your units.

distance across widest part of drawing of **R**..... [3]

(iii) Calculate the magnification of your drawing.

Show your working.

Give your answer to the nearest whole number.

magnification × ..... [2]

(b) (i) Complete Table 2.1 by recording two **visible** differences, other than colour, between leaves **R** and **S**.

Table 2.1

R	**S**
1.....	.....
.....	.....
2.....	.....
.....	.....

[2]

(ii) State, with a reason, which of the leaves, **R** or **S**, is from a monocotyledon.

.....

..... [1]

(c) Some students were provided with two leaves, **V** and **W**, from different plants. In an investigation into water loss, the students recorded the mass of each of these leaves every 5 minutes for 60 minutes.

(i) The humidity did not change during the investigation.

State **one** other variable that should be kept constant during the investigation.

..... [1]

The results are shown in Table 2.2.

Table 2. 2

time / min	mass of **V** / g	mass of **W** / g
0	5.2	7.5
5	4.8	7.2
10	4.0	6.5
15	5.5	6.0
20	3.2	5.5
25	2.9	5.1
30	2.8	4.3
35	2.7	4.0
40	2.4	3.6
45	2.2	3.2
50	1.8	3.0
55	1.8	2.9
60	1.8	2.7

(ii) The students assumed that the change in mass was due to water loss.

Describe how the students could show that **water** is lost from the leaves.

.....

.....

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.....

.....

..... [3]

(iii) Describe **two** similarities and **two** differences in the pattern of water loss of leaf **V** and leaf **W**.

similarities

1 .....

.....

2 .....

.....

differences

1 .....

.....

2 .....

..... [4]

[Total: 20]

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