Cambridge Assessment International Education

Cambridge IGCSE™ (9–1)

CANDIDATE NAME

CENTRE NUMBER

CANDIDATE NUMBER

6636706139

BIOLOGY **0970/52**

Paper 5 Practical Test **October/November 2020**

1 hour 15 minutes

You must answer on the question paper.

You will need: The materials and apparatus listed in the confidential instructions

INSTRUCTIONS

- Answer **all** questions.
- Use a black or dark blue pen. You may use an HB pencil for any diagrams or graphs.
- Write your name, centre number and candidate number in the boxes at the top of the page.
- Write your answer to each question in the space provided.
- Do **not** use an erasable pen or correction fluid.
- Do **not** write on any bar codes.
- You may use a calculator.
- You should show all your working and use appropriate units.

INFORMATION

- The total mark for this paper is 40.
- The number of marks for each question or part question is shown in brackets [ ].

For Examiner's Use	
1	
2	
Total	

This document has **12** pages. Blank pages are indicated.

1 You are going to investigate the effect of temperature on the rate of rising of bread dough.

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).

Step 1 Label one plastic cup **C** and a second plastic cup **W**.

Step 2 Put 30 cm^3 of water into the measuring cylinder.

Step 3 Pour approximately 10 cm^3 of water from the measuring cylinder into the beaker labelled **dough** and stir the contents for 20 seconds using the metal spatula. Repeat this step until all the water has been added.

Step 4 Stir the mixture for one minute to form a dough.

Step 5 Use the spatula to scrape the dough from the beaker onto the white tile.

Step 6 Use the spatula to divide the dough into two equal parts. Put on the gloves provided and roll each piece of dough in your hands to form a ball.

Step 7 Place one ball of dough into each of the plastic cups, **C** and **W**. Gently push each ball of dough to form a flattened layer at the bottom of the cup.

Step 8 Mark the maximum height of the dough on the outside of each cup with the marker pen. Measure the height of this line from the base of each cup using a ruler, as shown in Fig. 1.1. Record these measurements in your table in **1(a)(i)**.

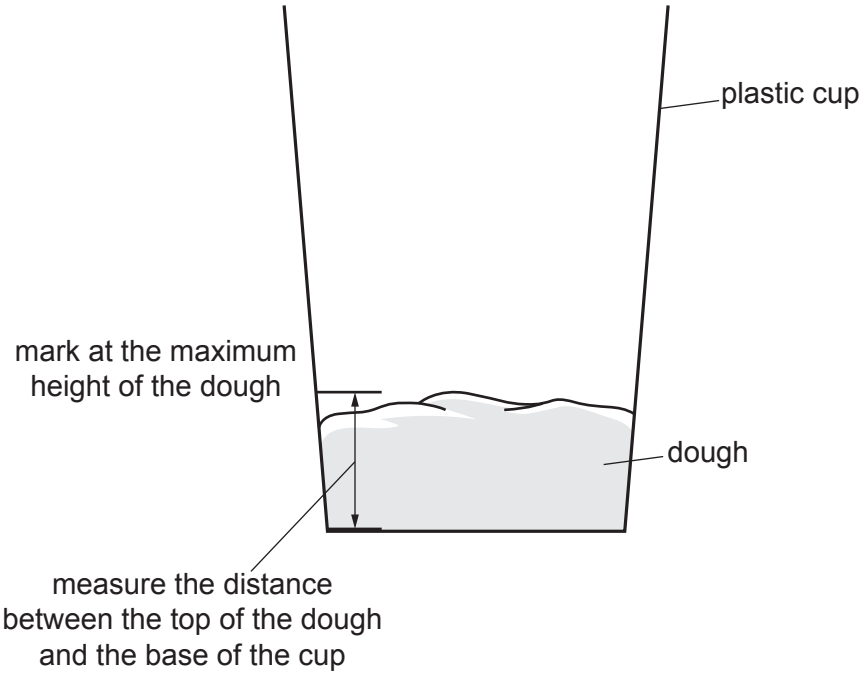

Fig. 1.1

Step 9 Put 100 cm^3 of water into the empty beaker labelled **cool water-bath**.

Step 10 Raise your hand when you are ready for warm water to be added to the beaker labelled **warm water-bath**.

Step 11 Place cup **C** into the **cool water-bath** and cup **W** into the **warm water-bath**.

Step 12 Start the stop-clock and leave the cups in the water-baths for 15 minutes.

Continue with the other questions during this time.

Step 13 After 15 minutes remove the cups from the water-baths.

Step 14 Mark the maximum height of the dough on each cup with the marker pen. Measure the distance of this line from the base of each cup. Record these measurements in your table in **1(a)(i)**.

(a) (i) Prepare a table to record your results.

[4]

(ii) Calculate the change in the height of the dough in cup **C** and in cup **W** between step 8 and step 14.

C .....

W ..... [1]

(iii) State a conclusion for these results.

.....

.....

..... [1]

(iv) Identify the independent variable (the variable that was changed) in this investigation.

..... [1]

(v) Identify the dependent variable (the variable that was measured) in this investigation.

..... [1]

(b) (i) Identify **one** possible source of error in step 6 and describe how the method could be improved to avoid this error.

error .....

.....

improvement .....

.....

.....

.....
[2]

(ii) Explain why a more valid conclusion can be made by comparing the change in heights rather than the final heights of the dough.

.....

.....

..... [1]

(c) State the test that could be used to show that starch was present in a sample of bread dough.

Give a positive test result.

test .....

positive result .....
[2]

(d) The dough mixture in step 3 contained 50 g of flour, 3 g of sugar and 2 g of yeast. Carbon dioxide gas is produced when yeast respires. The gas causes the dough to rise.

(i) State the name of an indicator which could be used to show that the gas is carbon dioxide and give the positive test result for this indicator.

indicator .....

positive test result .....
[2]

(ii) Plan an investigation to determine the effect of the mass of sugar on the volume of carbon dioxide produced by a yeast suspension.

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..... [6]

[Total: 21]

2 **(a)** Fig. 2.1 is a photomicrograph showing several cells from an *Elodea sp.* aquatic plant.

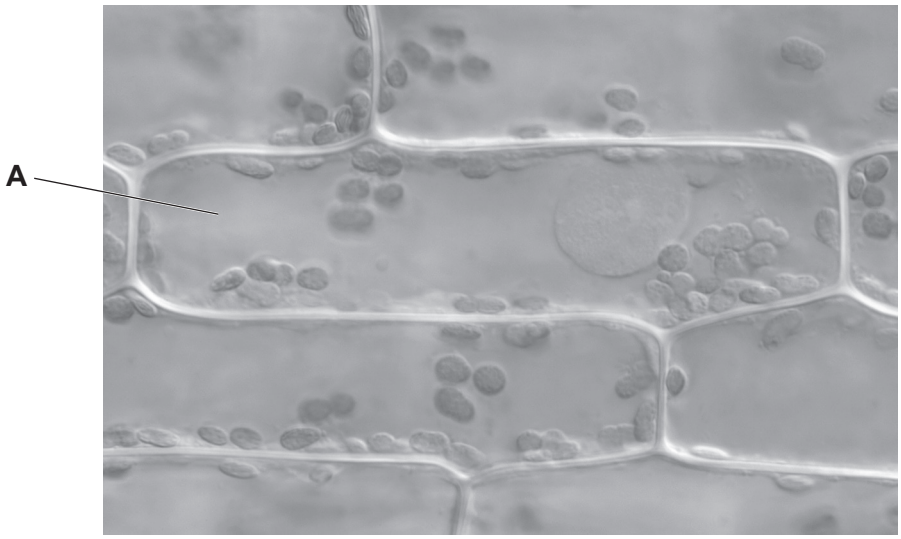
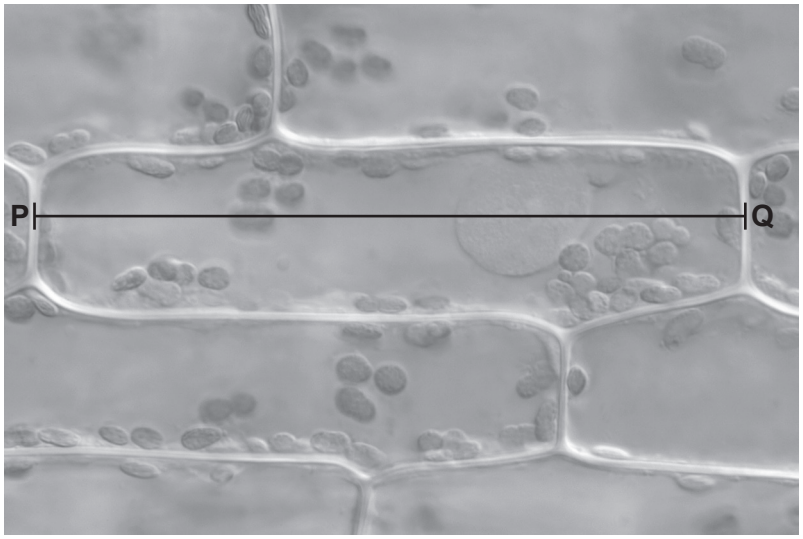


Fig. 2.1

(i) Draw a large diagram of the cell labelled **A** in Fig. 2.1.

[4]

(ii)



magnification ×1200

Fig. 2.2

Measure the length of the line **PQ** on Fig. 2.2.

length of **PQ** ..... mm

Calculate the actual length of the cell using the formula and your measurement.

$$\text{magnification} = \frac{\text{length of line } \mathbf{PQ}}{\text{actual length of cell}}$$

Include the unit.

Space for working.

.....

[3]

(b) A student investigated the effect of light intensity on the rate of photosynthesis in *Elodea sp*. They changed the light intensity by placing a light source at different distances from the plant. The student counted the number of bubbles of oxygen produced in three minutes.

The results of the investigation are shown in Table 2.1.

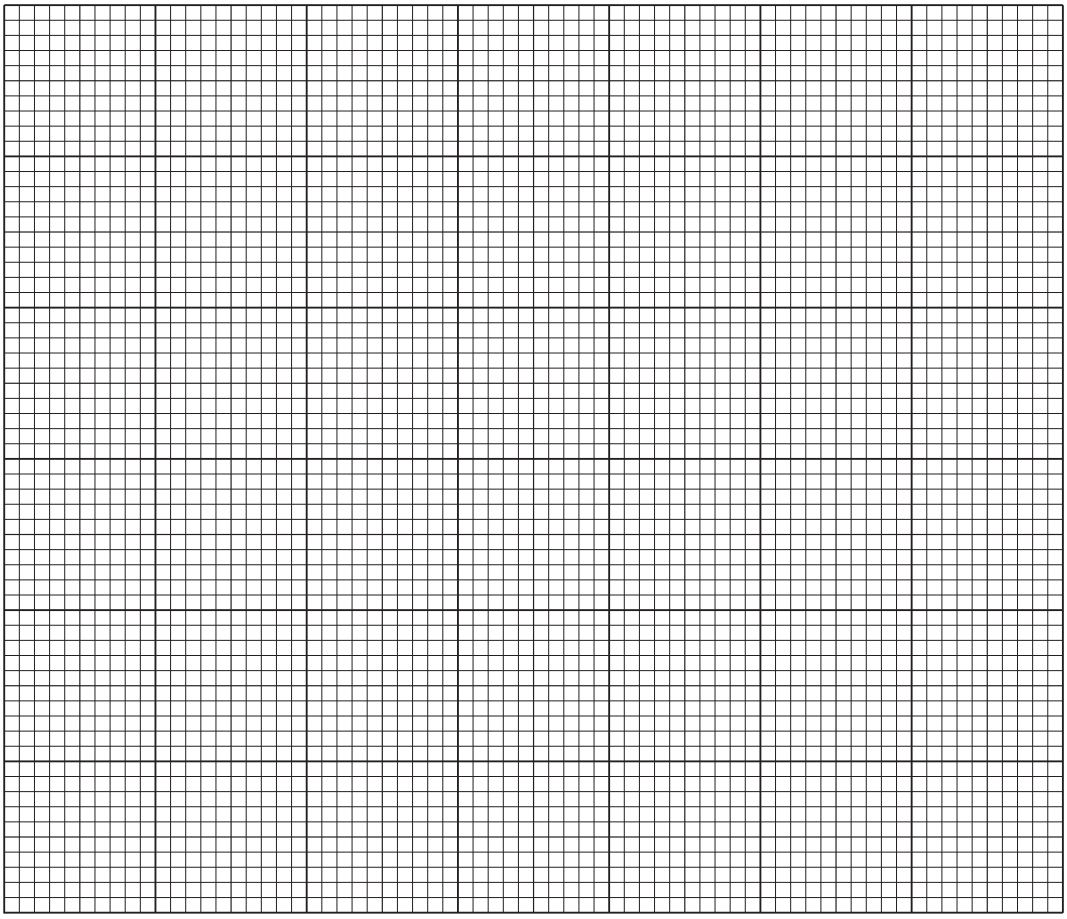
Table 2.1

distance of the light source from the plant / cm	number of bubbles produced in three minutes	rate of bubble production / bubbles per minute
80	312	104
100	312	104
120	309	
140	264	88
160	162	54
180	96	32
200	57	19

(i) Calculate the rate of bubble production when the light source was 120 cm from the plant.

..... bubbles per minute [1]

(ii) Plot a line graph on the grid to show the relationship between the distance of the light source from the plant and the **rate** of bubble production.



[4]

(iii) Estimate, using your graph, the **rate** of bubble production per minute if the distance from the light source was 170 cm.

..... bubbles per minute [1]

(iv) Describe the trends shown on your graph.

.....

.....

.....

.....

..... [2]

(v) The student repeated the experiment described in **2(b)** at a higher temperature. The student left the plant for ten minutes at the new temperature before starting to measure the rate of bubble production.

Suggest why the student waited for ten minutes before taking measurements.

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..... [1]

(vi) Table 2.1 shows that when the light source was 140 cm from the plant, the rate of bubble production was 88 bubbles per minute at the original temperature. At the higher temperature, the rate of bubble production when the light source was 140 cm from the plant was 122 bubbles per minute.

Calculate the percentage change in the number of bubbles when the temperature was increased.

Give your answer to the nearest whole number.

Space for working.

..... %
[3]

[Total: 19]

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