Cambridge Assessment International Education
Cambridge International General Certificate of Secondary Education

CANDIDATE NAME

CENTRE NUMBER

CANDIDATE NUMBER

7335270355

BIOLOGY **0610/52**

Paper 5 Practical Test **May/June 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 document consists of **10** printed pages and **2** blank pages.

1 Anaerobic respiration in yeast causes the blue dye, methylene blue, to become colourless.

You are going to investigate the effect of temperature on the rate of respiration in yeast.

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)(ii).

You should wear the safety equipment provided during the practical work.

Step 1 You are provided with a small beaker containing a yeast suspension. Stir the contents of this beaker with the glass rod.

Step 2 Label one test-tube **W**, one test-tube **WM**, one test-tube **C** and the final test-tube **CM**. Place them in the test-tube rack provided.

Step 3 Use a syringe to put $7\,cm^3$ of yeast suspension into test-tube **W** and $7\,cm^3$ of yeast suspension into test-tube **C**. Put test-tubes **W** and **C** back in the test-tube rack.

Step 4 Raise your hand when you are ready for water to be added to the beaker labelled **warm water**.

Step 5 Place test-tube **W** into the beaker labelled **warm water** and test-tube **C** into the beaker labelled **cool water**.

Step 6 Use the thermometer to measure the temperatures of the warm and cool water. Record the temperatures in Table 1.1 in **1(a)(i)**.

(a) (i) **Table 1.1**

beaker	temperature at the start / °C	temperature at the end / °C
warm water		
cool water		

[1]

Step 7 Start the stop-clock and wait for three minutes.

Step 8 During this waiting time, use a pipette to add **one** drop of methylene blue dye to test-tube **WM** and one drop of methylene blue dye to test-tube **CM**.

Step 9 After three minutes pour the contents of test-tube **W** into test-tube **WM**. Pour the contents of test-tube **C** into test-tube **CM**.

Step 10 Use a pipette to slowly add a layer of oil to test-tube **WM**. The layer of oil should be approximately 1 cm thick. The layer of oil will float on top of the yeast suspension and methylene blue mixture, as shown in Fig. 1.1.

Step 11 Place test-tube **WM** into the **warm water** beaker.

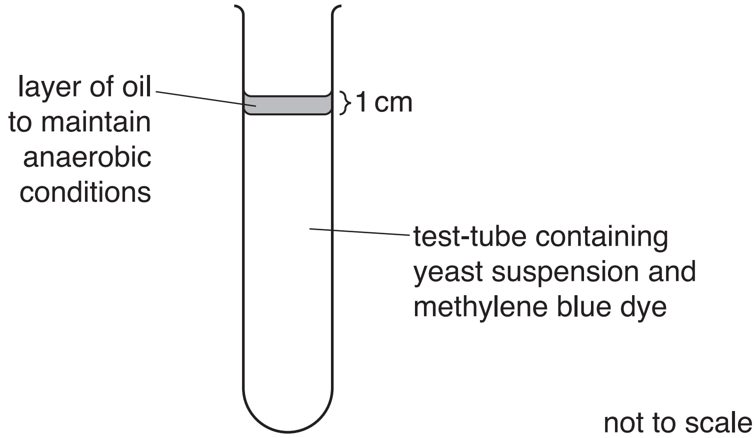

Fig. 1.1

Step 12 Repeat step 10 for test-tube **CM**.

Step 13 Place test-tube **CM** into the **cool water** beaker.

Step 14 Restart the stop-clock.

Step 15 Measure the time taken for the blue colour in test-tubes **WM** and **CM** to disappear. Record the times in seconds in your table in **1(a)(ii)**. If the time taken for the blue colour to disappear in each test-tube is more than 10 minutes stop timing and record **>600** in your table in **1(a)(ii)**.

Step 16 Measure the temperatures of the **warm water** and **cool water** beakers again and record these values in Table 1.1 in **1(a)(i)**.

(ii) Prepare a table to record your results.

[4]

(iii) State a conclusion for the results in your table in **1(a)(ii)**.

....

....

.... [1]

(iv) Identify **two** variables that were kept constant in this investigation.

1 ....

2 ....
[2]

(b) (i) The data you have recorded in Table 1.1 may indicate that there is a source of error with the method used in this investigation.

Identify the possible error and suggest an improvement to the method to reduce the effect of this error.

error ....

....

improvement ....

....

....
[2]

(ii) Identify **one** possible source of error in step 15 and suggest an improvement for this error.

error ....

....

improvement ....

....

....
[2]

(c) Anaerobic respiration in yeast produces a gas.

State the name of an indicator which could be used to show that the gas is carbon dioxide and state the expected result.

indicator ....

expected result ....
[2]

(d) Anaerobic respiration in yeast cells also produces ethanol. In high concentrations ethanol can slow down the rate of respiration.

Plan an investigation to determine the effect of different concentrations of ethanol on the rate of respiration in yeast cells.

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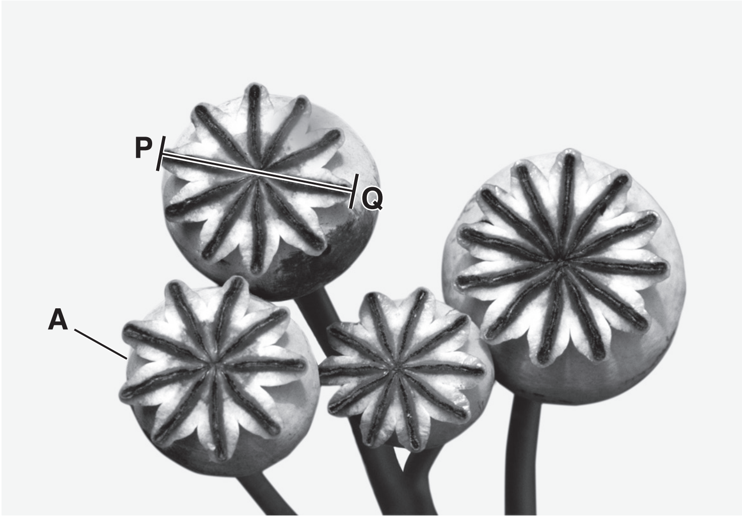
.... [6]

[Total: 20]

2 **(a)** Fig. 2.1 is a photograph showing four seed heads from a poppy plant.



magnification ×1.6

Fig. 2.1

(i) Draw a large diagram of the seed head labelled **A**.

[4]

(ii) Measure the length of line **PQ** on Fig. 2.1. Include the unit.

length of line **PQ** ....

Calculate the actual size of the seed head using the formula and your measurement.

$$\text{magnification} = \frac{\text{length of line } \mathbf{PQ}}{\text{actual diameter of the seed head}}$$

Give your answer to the nearest whole number and include the unit.

Show your working.

....

[3]

(b) A student investigated the effect of pH on the germination of seeds. The student planted 25 seeds for each pH value.

The results of the investigation are shown in Table 2.1.

Table 2.1

pH	number of seeds that germinated	percentage of seeds that germinated
4	20	80
5	23	92
6	24	96
7	19	76
8	15	
9	10	40

(i) Calculate the percentage of seeds that germinated at pH 8.

Show your working.

....%
[2]

(ii) Plot a line graph on the grid to show the effect of pH on the percentage of seeds that germinated using the data in Table 2.1.

[4]

(iii) Describe the effect of pH on the percentage of seeds that germinated shown in your graph.

[2]

(iv) The student wanted to determine a more accurate value for the optimum (best) pH for the germination of seeds.

Suggest further investigative work that the student should carry out.

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.... [2]

(c) During germination the starch within seeds is broken down to form reducing sugars.

Describe how you could test a sample of germinating seeds to find out if reducing sugars are present.

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.... [3]

[Total: 20]

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