Cambridge IGCSE

Cambridge International Examinations
Cambridge International General Certificate of Secondary Education

CANDIDATE NAME	
CENTRE NUMBER	
CANDIDATE NUMBER	

BIOLOGY **0610/62**

Paper 6 Alternative to Practical **February/March 2015**

1 hour

Candidates answer on the Question Paper.

No Additional Materials are required.

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.

1 Yeast is a single-celled organism that is used in bread-making and brewing.

Some students carried out an investigation into respiration in an active yeast culture.

The active yeast culture was prepared in a glucose solution and was kept in a warm environment. The glucose was dissolved in cooled, boiled water, (boiling removed the gases from the water) before the yeast was added.

The yeast culture was stirred and 10 cm^3 added to each of test-tubes **A** and **B**.

In test-tube **B**, a few drops of oil were carefully added to form a layer on the surface of the yeast culture.

The apparatus was set up as shown in Fig. 1.1.

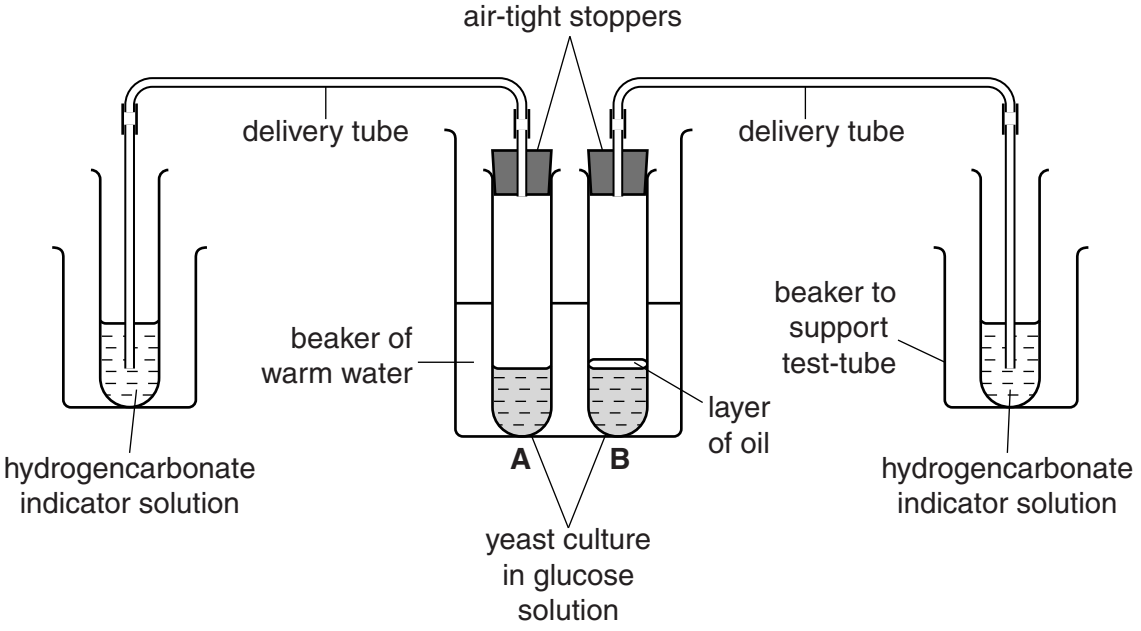


Fig. 1.1

The appearance of the yeast cultures and hydrogencarbonate indicator solutions were recorded. The numbers of bubbles released from test-tubes **A** and **B** into the hydrogencarbonate indicator solution were also recorded.

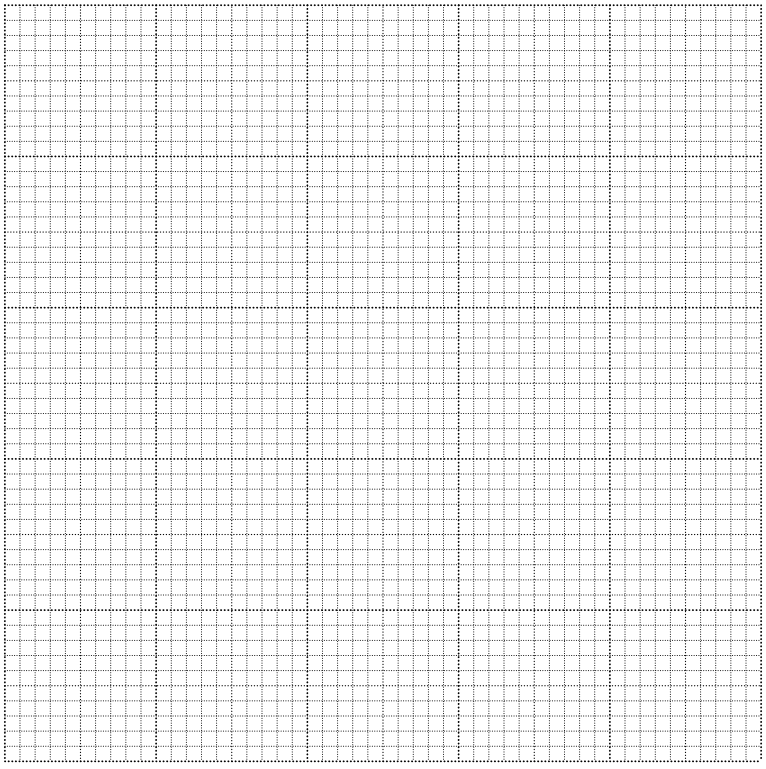
This was repeated at five minute intervals.

The results and observations were recorded in Table 1.1.

Table 1.1

time / min	appearance of yeast culture in **A** and **B**		number of bubbles released in one minute		appearance of the hydrogencarbonate indicator solution	
	A	**B**	**A**	**B**	**A**	**B**
0	pale cream bubbles forming	pale cream no bubbles	0	0	red	red
5	foam starting to form on top	bubbles forming	5	4	pale red	red
10	thicker foam on top	frothy below oil	8	6	pale pink	pale red
15	thicker foam on top	frothy below oil	11	9	yellow-pink	pale pink red
20	foam 2 cm in depth	foam 0.5 mm in depth	16	12	yellow	yellow-pink

(a) (i) Draw a graph of the results on the grid below. Use the same set of axes to show the number of bubbles released in one minute for the 20 minute period from test-tubes **A** and **B**.



[5]

(ii) Describe **and** explain the results and observations shown in Table 1.1.

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..... [5]

(iii) Suggest why the number of bubbles released per minute would decrease for both test-tubes **A** and **B** after a period of 24 hours.

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..... [1]

(b) Explain why:

(i) the yeast culture was stirred at the beginning of the investigation

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.....

..... [1]

(ii) the oil was introduced into test-tube **B**

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..... [1]

(iii) the test-tubes containing the yeast culture were kept in a container of warm water.

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..... [1]

(c) For this investigation give:

(i) the independent variable (variable that is deliberately changed)

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..... [1]

(ii) **two** variables that need to be controlled.

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..... [2]

(d) The dependent variable in this investigation was the rate of respiration. This cannot be measured directly.

Describe how the rate of respiration was determined in this investigation.

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..... [2]

(e) Fig. 1.2 shows yeast as seen using a microscope.

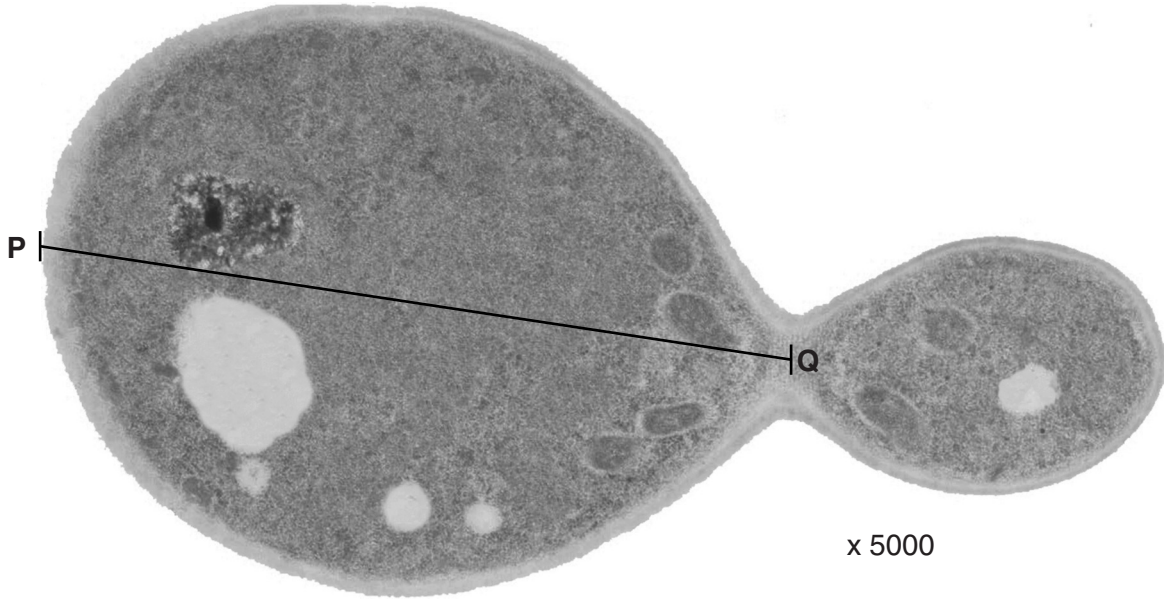

Fig. 1.2

(i) Name the process that is occurring in Fig. 1.2.

..... [1]

(ii) You are going to calculate the actual length of a yeast cell shown in Fig. 1.2.

Measure the length of line **PQ**.

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

Calculate the actual length of the yeast cell.

Show your working.

actual length of cell ..... mm [3]

[Total: 23]

2 Fig. 2.1 shows two halves of a fresh strawberry fruit. This is a false fruit as the edible part has developed from a swollen receptacle and the seeds are found in structures called achenes on the surface of the strawberry.

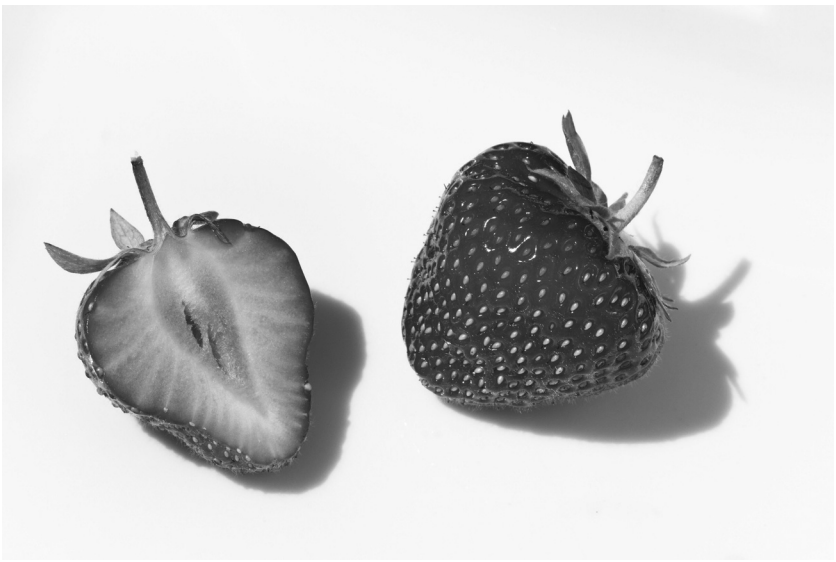

Fig. 2.1

(a) (i) Make a large, labelled drawing of this fruit to show the cut surface. Make a second large, labelled drawing to show the outer surface. The second drawing should show the arrangement of the seeds.

cut surface

outer surface

[5]

(ii) Suggest how the fruit may be dispersed to spread the seeds to new areas.

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..... [2]

(b) (i) Describe how you would safely test this fruit to show the presence of reducing sugar.

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..... [4]

(ii) Describe how you would test this fruit to show the presence of protein.

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..... [2]

(c) Fig. 2.2 shows two different strawberry fruits, **S** and **T**, from species of strawberry plants that grow in different habitats.

S **T**

Fig. 2.2

(i) Describe **two similarities**, visible in Fig. 2.2, between the two fruits.

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..... [2]

(ii) Complete Table 2.1 to describe **two differences**, visible in Fig. 2.2, between the two fruits.

Table 2.1

feature	**S**	**T**
seeds		
shape		

[2]

[Total: 17]

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