



UNIVERSITY OF CAMBRIDGE INTERNATIONAL EXAMINATIONS
International General Certificate of Secondary Education

CANDIDATE
NAME

CENTRE
NUMBER

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CANDIDATE
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BIOLOGY

0610/06

Paper 6 Alternative to Practical

October/November 2008

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 a pencil for any diagrams or graphs.

Do not use staples, paper clips, highlighters, glue or correction fluid.

DO **NOT** WRITE IN ANY BARCODES.

Answer **all** questions.

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.

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1	
2	
3	
Total	

This document consists of **8** printed pages and **4** blank pages.



- 1 Two uncooked hen's eggs of similar size were submerged in acid to dissolve the shell. The contents of the eggs are left intact, enclosed by the egg membrane.

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One de-shelled egg has been placed in distilled water for 2 days. The other egg has been placed in salt solution for 2 days.

Fig. 1.1 shows the two eggs after two days.

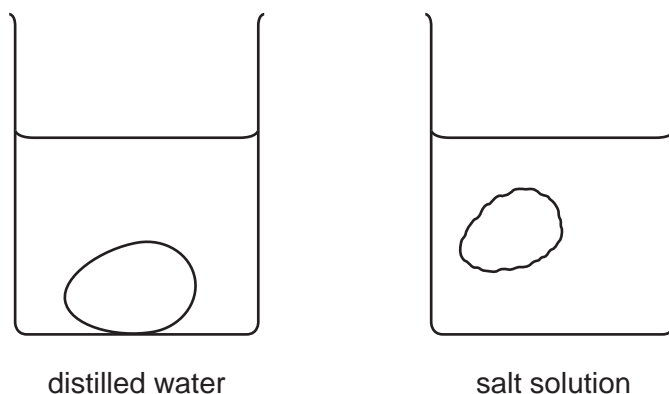


Fig. 1.1

- (a) (i) Complete Table 1.1 to compare the two eggs.

Table 1.1

	egg in water	egg in salt solution
size of the egg		
position in the liquid		
external appearance of the egg		

[3]

- (ii) Suggest an explanation for these differences.

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[5]

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Question 1 continues on page 4

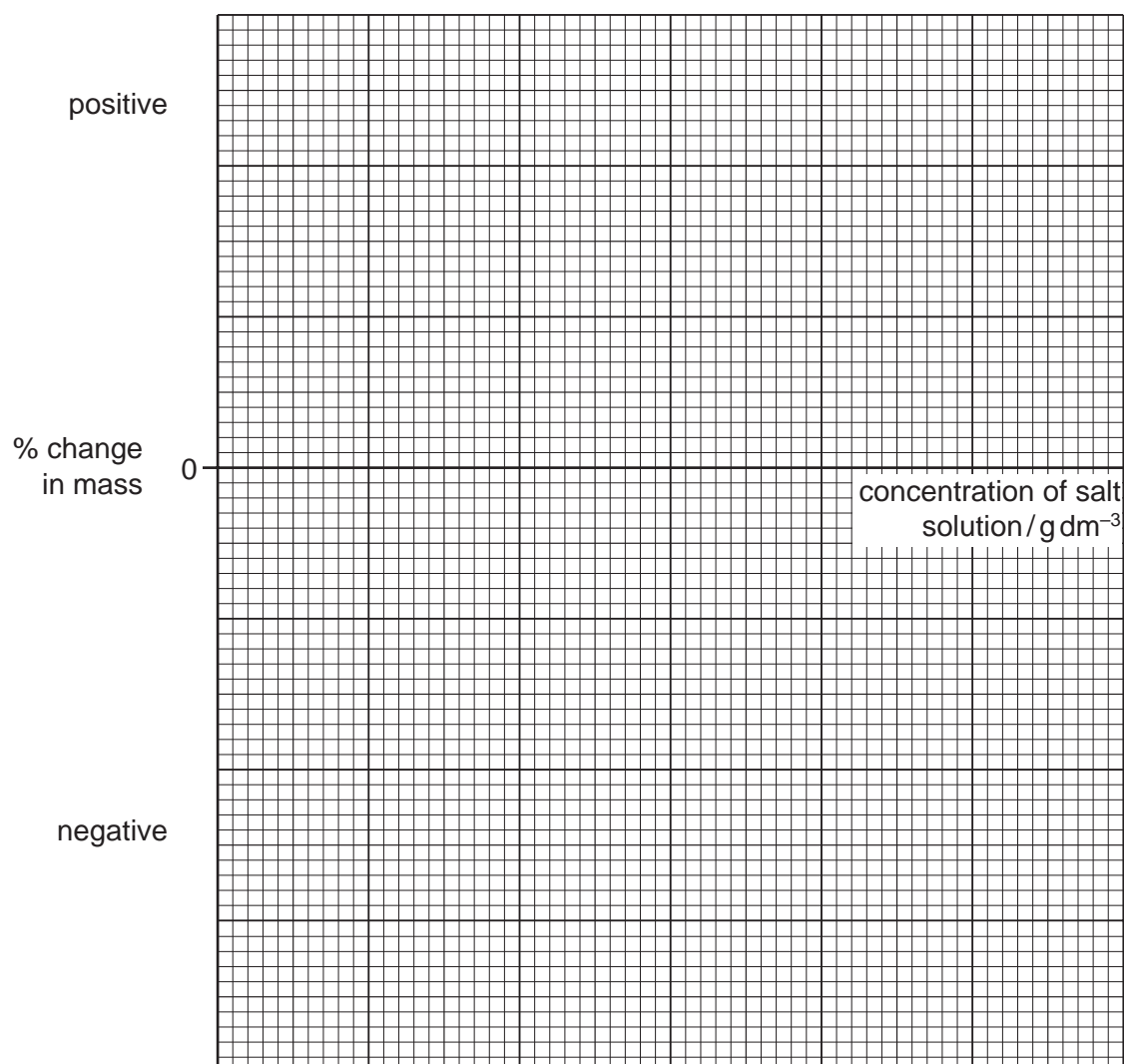
- (b) A student carried out a similar experiment and varied the concentration of salt in different solutions.

Table 1.2 shows the percentage change in mass of the eggs after 2 days.

Table 1.2

concentration of salt solution / g dm^{-3}	% change in mass
0.0	+7.3
10.0	+3.2
20.0	+0.8
30.0	-2.5
40.0	-6.4
50.0	-10.8

- (i) Draw a graph of this data on the axes.



[3]

- (ii) Determine the concentration of salt solution where there is no change in mass.

..... [1]

- (iii) Explain why there is no change in mass at this concentration of salt solution.

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..... [3]

- (c) Describe a food test which might show whether there is more protein to be found in the 'white' or in the 'yolk' of the egg.

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..... [4]

[Total: 19]

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- 2 An active yeast culture is placed in a test-tube. This test-tube is connected by a delivery tube to a second test-tube containing hydrogencarbonate indicator shown in Fig. 2.1.

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Hydrogencarbonate indicator changes colour according to pH. In alkaline solutions the indicator becomes purple and in acidic solutions the indicator becomes yellow.

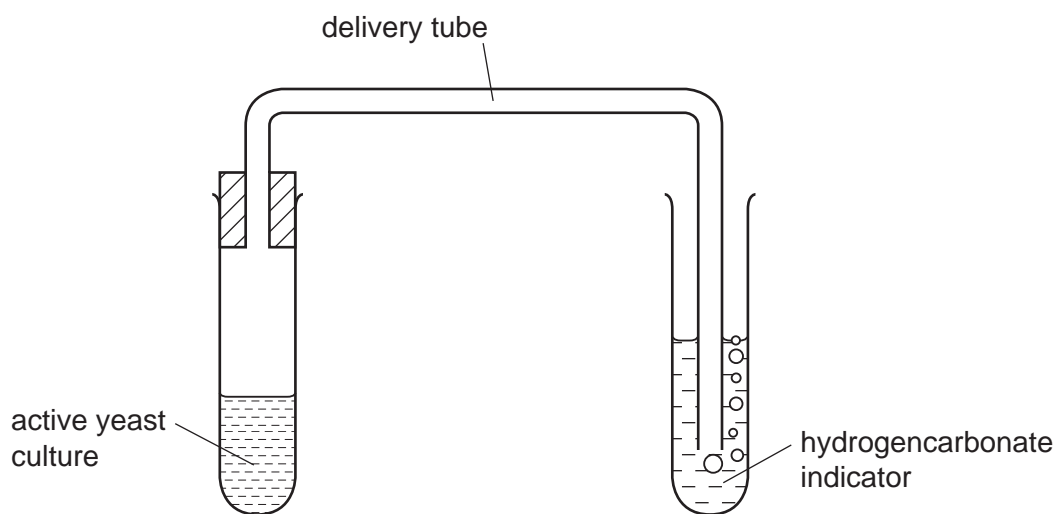


Fig. 2.1

At the start of the experiment the indicator is red in colour. After 15 minutes the indicator becomes yellow.

- (a) Explain the reason for this colour change.

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..... [3]

- (b) Describe how you would collect and measure the volume of gas given off per minute by 20 cm^3 of the active yeast culture.

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..... [6]

- (c) Fig. 2.2 shows a yeast cell reproducing asexually.

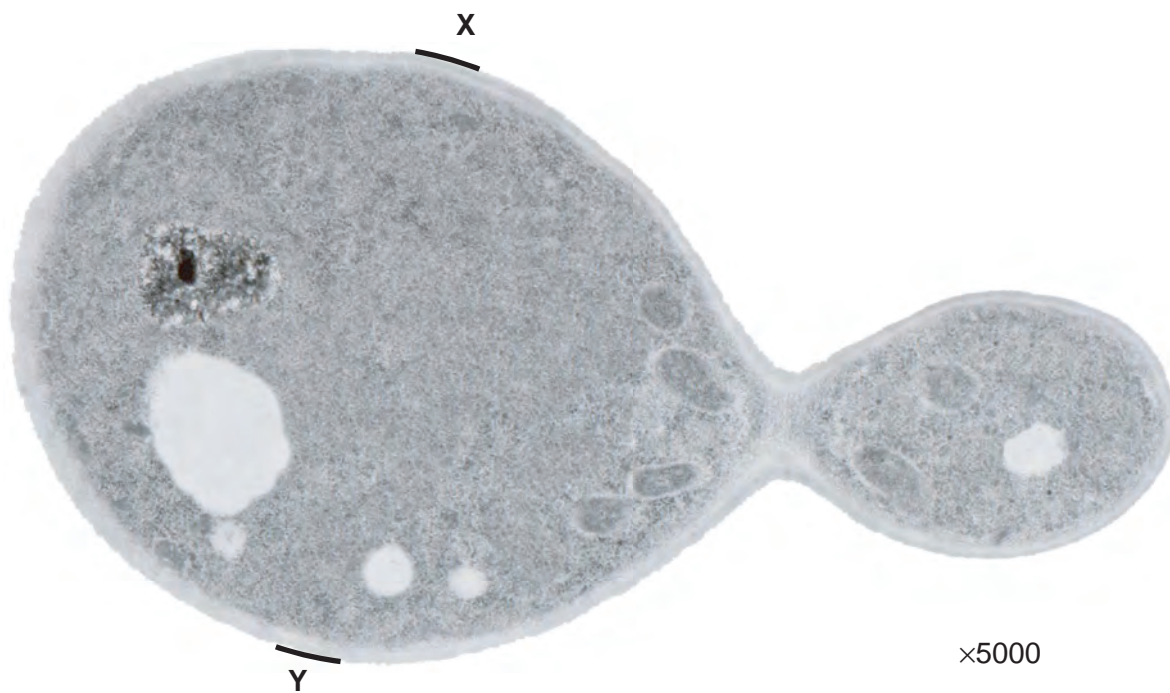


Fig. 2.2

- (i) Make a labelled drawing of the yeast cells.

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- (ii) Measure the diameter of the yeast cell in Fig. 2.2 between **X** and **Y**. [3]

diameter (distance between **X** and **Y**)

Calculate the magnification of your drawing. Show your working.

magnification [3]

[Total: 15]

3 Fig. 3.1 shows cells dividing to form gametes.

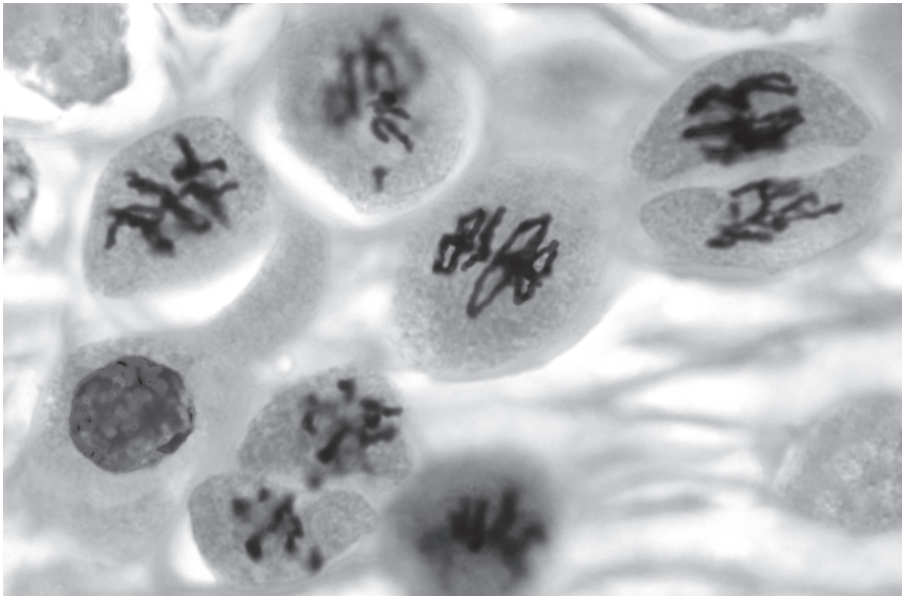


Fig. 3.1

(a) Label on Fig. 3.1

- (i) a chromosome,
- (ii) cytoplasm,
- (iii) a nucleus.

[3]

(b) Name where such dividing cells can be found,

- (i) in a plant,

..... [1]

- (ii) in a mammal.

..... [1]

(c) Suggest the importance of this type of division in the formation of gametes.

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 [1]

[Total:6]

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