Centre Number	Candidate Number	Name

CAMBRIDGE INTERNATIONAL EXAMINATIONS
International General Certificate of Secondary Education

BIOLOGY **0610/06**

Paper 6 Alternative to practical

May/June 2003

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 in the spaces provided on the Question Paper.
You may use a soft pencil for any diagrams, graphs or rough working.
Do not use staples, paper clips, highlighters, glue or correction fluid.

Answer **all** questions.
The number of marks is given in brackets [ ] at the end of each question or part question.

If you have been given a label, look at the details. If any details are incorrect or missing, please fill in your correct details in the space given at the top of this page.

Stick your personal label here, if provided.

For Examiner's Use	
1	
2	
3	
4	
TOTAL	

This document consists of **9** printed pages and **3** blank pages.

UNIVERSITY of CAMBRIDGE
Local Examinations Syndicate

[Turn over

1 Three different dough mixtures, samples **A**, **B** and **C** are prepared using the same quantity of flour and water. Each sample of dough is carefully mixed, kneaded, shaped and placed in separate measuring cylinders and kept in a warm place.

Sample **A** contains warm water, sugar, flour and yeast.
Sample **B** contains warm water, sugar and flour.
Sample **C** contains warm water, sugar, flour, yeast, and substance **X**.

The highest level of the dough is marked on the side of each measuring cylinder, as shown in Fig. 1.1.

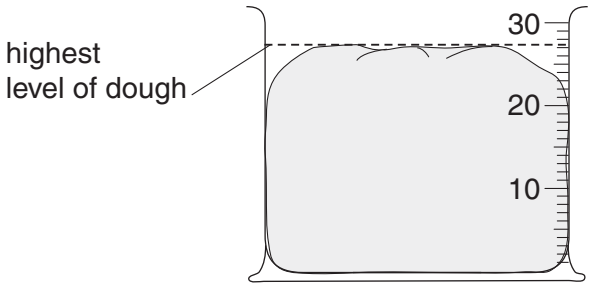


Fig. 1.1

(a) Suggest **two** other factors which should be kept constant to ensure that the results for the samples can be compared.

1. .....

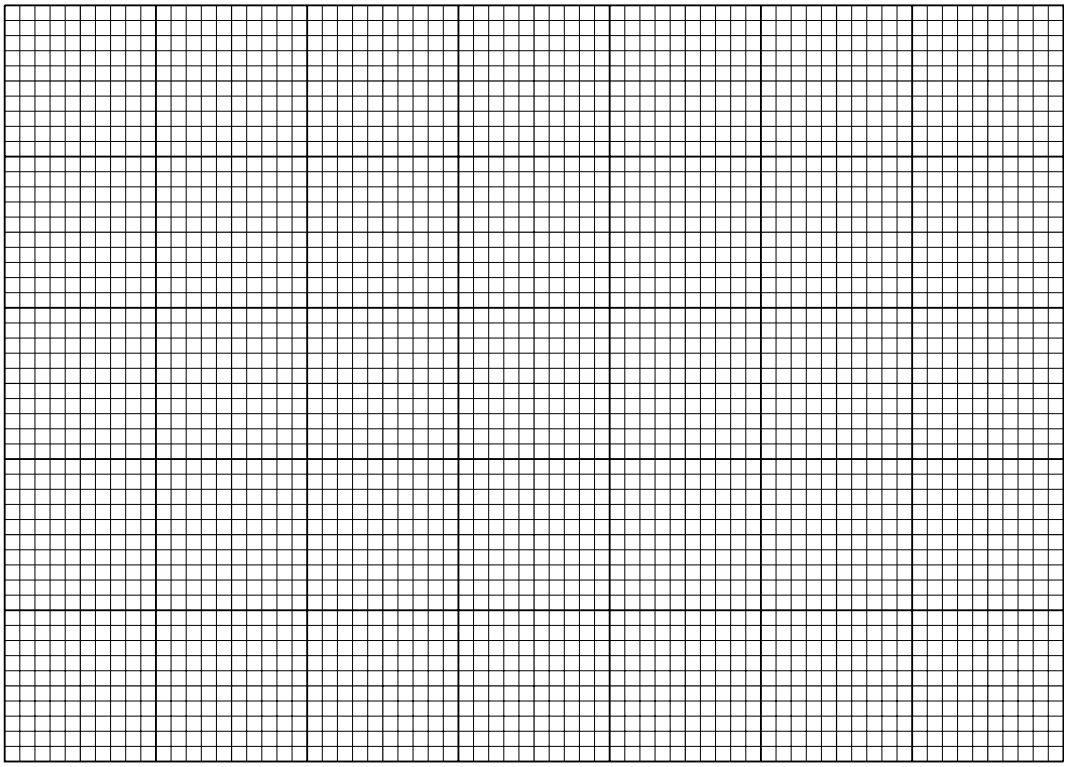
2. .....[2]

(b) At 20 minute intervals, the volume of each dough sample is measured and recorded. The results are shown in Table 1.1.

Table 1.1

time / min	volume of dough / cm^3		
	sample **A**	sample **B**	sample **C**
0	12	12	12
20	18	12	20
40	26	12	32
60	34	13	41
80	39	13	48
100	45	13	48
120	48	14	48

(i) On the grid opposite, plot the data shown in Table **1.1** for samples **A**, **B** and **C** as three curves on one set of axes.



[5]

(ii) Describe the curves you have drawn for the three samples.

.....

.....

.....

.....

.....[3]

(iii) Use your graph to find when there is the greatest difference in volume between samples **A** and **C**.

.....[1]

(iv) The volume of sample **A** changed differently to the volume of sample **B**. Suggest an explanation for this difference.

.....

.....

.....

.....[2]

(v) The volume of sample **A** changed differently to the volume of sample **C**. Suggest an explanation for this difference.

.....

.....

.....

.....[2]

[Total : 15]

2 Fig. 2.1 shows three stages in the germination of a grain of maize.

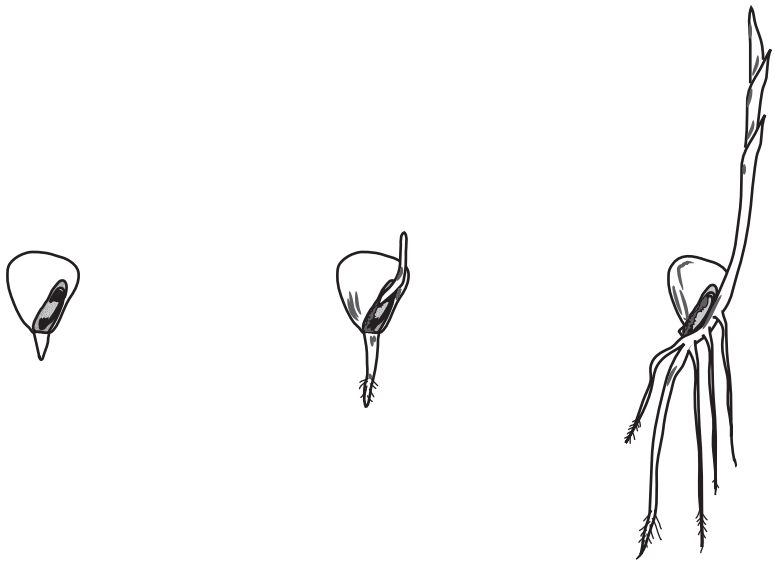


Fig. 2.1

(a) Name two conditions that are necessary for the successful germination of a seed, other than the presence of water.

1. ..... 2. .....[1]

(b) Describe an investigation that you could carry out to show the need in seed germination for one of the conditions you named in **(a)**.

.....

.....

.....

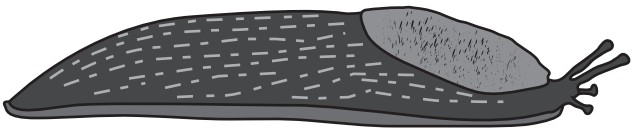
.....

.....[3]

[Total : 4]

[Turn over

3 Fig. 3.1 shows the external appearance of animal **A**.



animal **A**

Fig. 3.1

(a) (i) Make a large, labelled drawing of animal **A**.

Label **two** features that are characteristic of this group of animals.

[4]

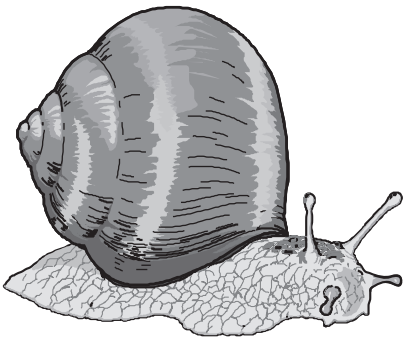
(ii) Measure the length of animal **A** in Fig. 3.1 and in your drawing. Calculate the magnification of your drawing.

*length of animal **A**: in Fig. 3.1* .....

in drawing .....

magnification .....[2]

Fig. 3.2 shows the external appearance of animal **B**, which is classified in the same group as animal **A**.



animal **B**

Fig. 3.2

(iii) State one similarity which indicates that these two animals are classified in the same group and state one difference between them.

similarity .....

difference .....[2]

(iv) Name the group to which animals **A** and **B** belong.

.....[1]

[Total : 9]

4 The apparatus shown in Fig. 4.1 was set up under bright light for a period of five hours. At the start the apparatus was completely full of water. During this time, a gas was collected at the top of the graduated tube.

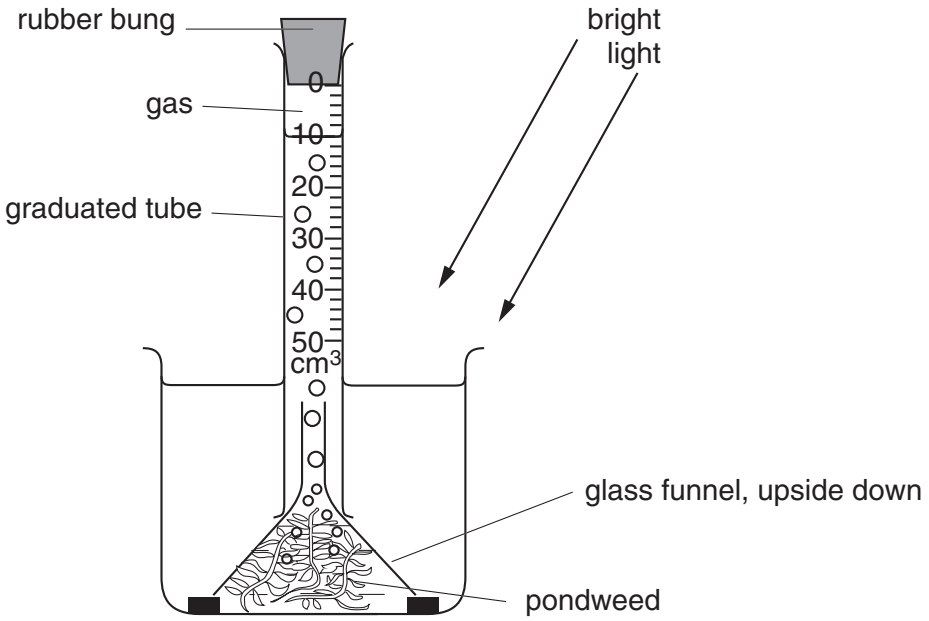


Fig. 4.1

(a) (i) How would you show this gas was oxygen?

.....[1]

(ii) Name the process within the plant responsible for the production of oxygen.

.....[1]

(iii) Determine the volume of gas collected in five hours and the rate of gas production per hour.

volume .....

rate .....[2]

(iv) How would you use this apparatus to obtain reliable results to show the effect of differing light intensities on the production of oxygen?

.....

.....

.....

.....[2]

(b) The pondweed was placed in hydrogencarbonate indicator solution, which was red in colour when the tube was set up. The tube was left for five hours in bright light, as shown in Fig. 4.2.

(Hydrogencarbonate indicator is purple in alkaline conditions, red in neutral conditions and yellow in acidic conditions.)

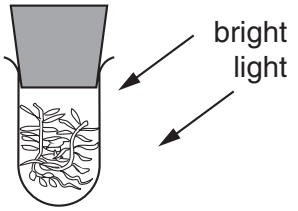


Fig. 4.2

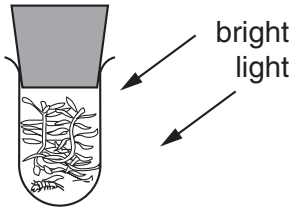


Fig. 4.3

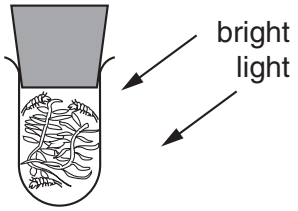


Fig. 4.4

(i) Suggest what colour you might observe in the tube in **Fig. 4.2** after five hours in bright light and give an explanation for this.

colour .....

explanation .....

.....[2]

(ii) One water shrimp was introduced into a similar tube with pondweed, **Fig. 4.3**, and, again, the tube was placed in bright light for five hours.

Suggest what colour you might observe and give an explanation for this.

colour .....

explanation .....

.....[2]

(iii) Three water shrimps were introduced into a similar tube with pondweed, **Fig. 4.4**, and, again, the tube was placed in bright light for five hours.

Suggest what colour you might observe and give an explanation for this.

colour .....

explanation .....

.....[2]

[Total : 12]

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