



UNIVERSITY OF CAMBRIDGE INTERNATIONAL EXAMINATIONS  
General Certificate of Education Ordinary Level

CANDIDATE  
NAME

CENTRE  
NUMBER

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CANDIDATE  
NUMBER

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**BIOLOGY**

**5090/32**

Paper 3 Practical Test

**May/June 2013**

**1 hour 15 minutes**

Candidates answer on the Question Paper.

Additional Materials: As specified 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 ink.  
You may use a soft pencil for any diagrams, graphs or rough working.  
Do not use red ink, 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.

Electronic calculators may be used.

For Examiner's Use	
1	
2	
3	
<b>Total</b>	

This document consists of **8** printed pages.



In order to plan the best use of your time, read through all the questions on this paper carefully before starting work.

- 1 The movement of food molecules from the intestines can be investigated using a length of Visking tubing to represent a part of the digestive system. This tubing is made of a flexible transparent material.

You will investigate the movement of starch and glucose through the walls of this tubing into water. Fig. 1.1 shows the apparatus you will use.

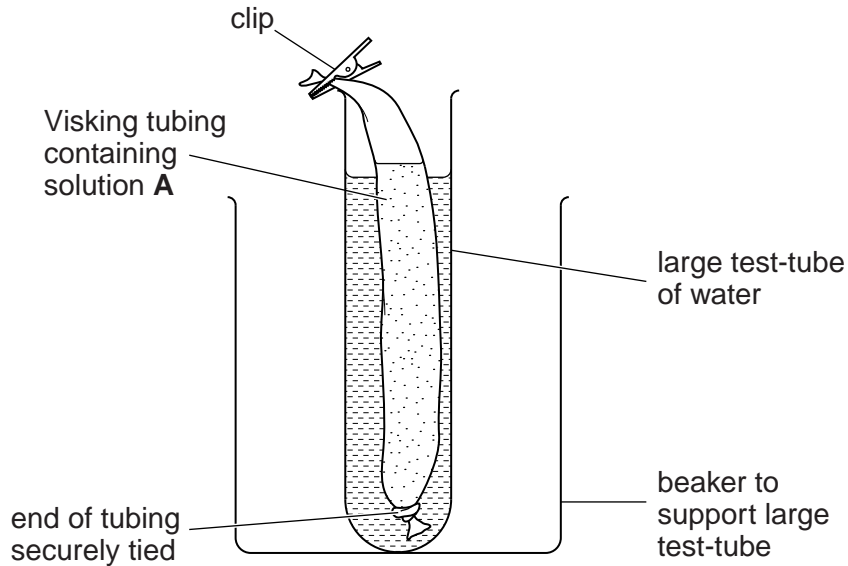


Fig. 1.1

- (a) Describe how you will carry out a test for a reducing sugar.

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..... [3]

You are provided with a length of soaked tubing that has been securely tied at one end.

You are provided with a solution of starch and glucose, labelled A.

- Using a pipette or small syringe, fill the tubing with solution A to a depth of approximately 5cm. It may be helpful to support the tubing in a large empty test-tube whilst filling it.
- Rinse the outside of the tubing with water from the beaker labelled 'rinsing water'.

- Put this tubing into a clean large test-tube. Use a clip or peg to attach the top of the tubing containing solution **A** to the top of the large test-tube.
- Pour clean water from the beaker labelled 'clean water' into the large test-tube to the level shown in Fig. 1.1.
- Support this large test-tube in a beaker.
- **Immediately** remove 1 cm<sup>3</sup> of water from the large test-tube and test it for reducing sugar.
- Record the time shown on the clock in Table 1.1. This is start time. Remove a drop of water from the large test-tube now and test it on a clean white tile for starch.
- Keep these samples until later.

**(b)** Enter your observations and conclusions for the reducing sugar test and the starch test in Table 1.1 for time 0 mins, start time.

**Table 1.1**

time / mins	clock time	reducing sugar test	starch test
0		observation .....	.....
		conclusion .....	.....
20		observation .....	.....
		conclusion .....	.....

**Leave the experiment for 20 minutes. Begin Question 2 while you wait.**

- After 20 minutes, repeat the same tests for reducing sugar and starch on a new sample of the water taken from the large test-tube surrounding the tubing. Remember to use clean pipettes each time. Record the clock time, your observations and conclusions in Table 1.1. [4]

**(c)** Suggest and explain what has happened during the 20 minutes to produce these results.

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.....[5]

**(d)** Suggest, giving your reasons, which part of the digestive system might be represented by the Visking tubing in the water in this investigation.

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.....[3]

**(e)** Explain why, in this investigation, the outside of the tubing was rinsed before it was put into the large test-tube of water.

.....

.....[1]

[Total:16]

2 Yoghurt is formed by the action of certain bacteria on milk.

You are going to measure the pH of fresh milk and yoghurt.

- Using the universal indicator paper provided determine and record the pH of the milk and yoghurt in Table 2.1.

**Do not taste any of these substances.**

(a) (i) Complete Table 2.1.

**Table 2.1**

food	colour of universal indicator paper	conclusion / pH
fresh milk		
yoghurt		

[2]

- Stir each sample of fresh milk and yoghurt with the spoon provided.
- (ii) Describe any differences you observe in texture between the fresh milk and the yoghurt.

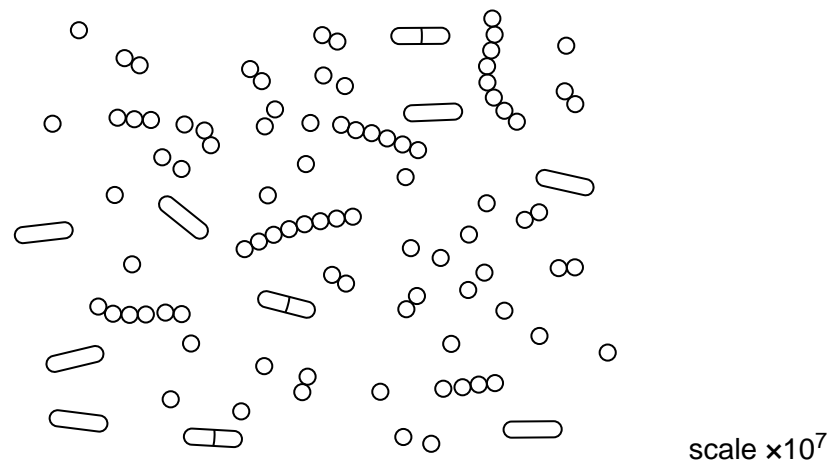
.....  
 ..... [1]

(b) With reference to your observations and Table 2.1, suggest how bacteria have produced yoghurt from milk.

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 ..... [2]

Fig. 2.1 shows some bacteria found in yoghurt.

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**Fig. 2.1**

(c) Describe and explain the appearance of these bacteria.

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..... [2]

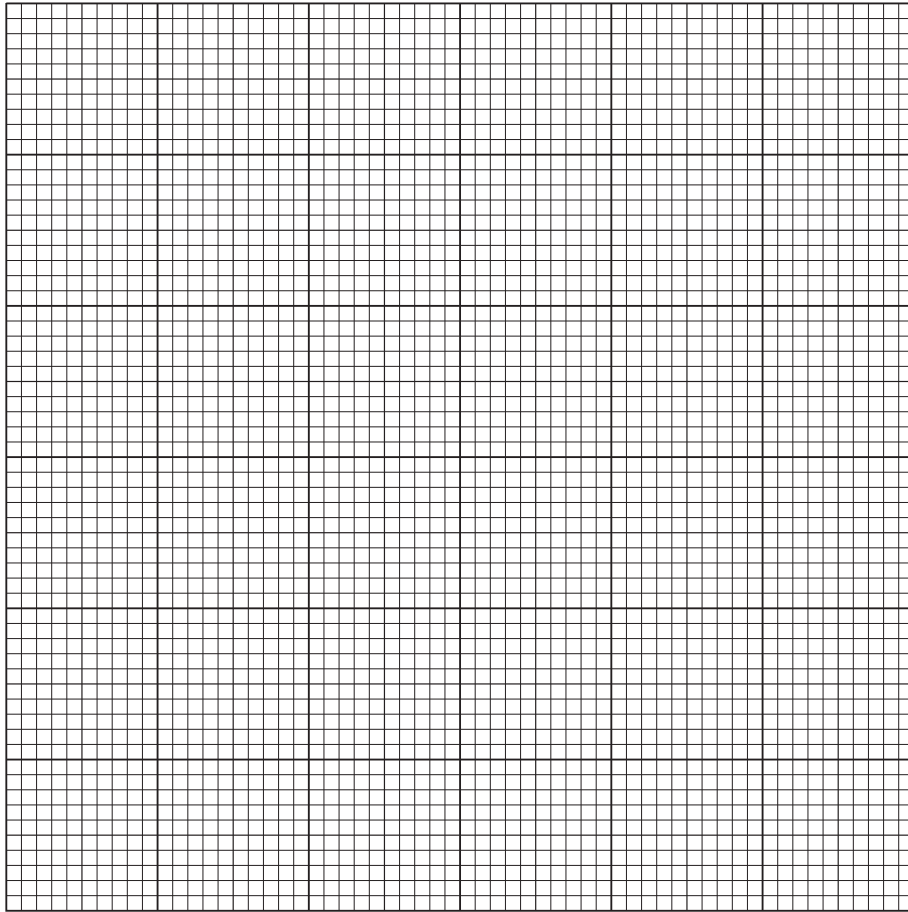
Yoghurt can form within hours.

An investigation was carried out to discover the increase in the number of bacteria in a yoghurt preparation over the first six hours. The results are shown in Table 2.2.

**Table 2.2**

time / hours	number of bacteria in $1 \text{ cm}^3$ / millions
0	4.0
1	4.8
2	5.9
3	8.9
4	12.2
5	16.4
6	16.6

(d) (i) Construct a graph on the grid below, from the figures in Table 2.2.



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[5]

(ii) Suggest why there was only a small increase in the number of bacteria between 5 and 6 hours.

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..... [1]

(e) Design, **but do not carry out**, a laboratory experiment, to investigate the effect of temperature on the formation of yoghurt from milk.

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..... [4]

[Total: 17]

3 You are provided with an insect-pollinated flower, labelled **W1**.

- Carefully remove some of the petals to expose the reproductive structures.

(a) (i) Make a large drawing of the flower with the petals removed and label the following structures – stamens, stigma and style.

[5]

(ii) Describe two visible features of this flower that indicate it is pollinated by insects.

1 .....

2 ..... [2]

[Total: 7]

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