UNIVERSITY OF CAMBRIDGE INTERNATIONAL EXAMINATIONS
General Certificate of Education Ordinary Level

CANDIDATE NAME

CENTRE NUMBER

CANDIDATE NUMBER

2773356708

BIOLOGY **5090/61**

Paper 6 Alternative to Practical **May/June 2013**

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, graphs or rough working.
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.

Electronic calculators may be used.

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

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1 Some students carried out an investigation into the movement of food molecules from the intestines using a length of Visking tubing to represent a part of the digestive system. Visking tubing is made of a flexible transparent material.

For Examiner's Use

- One end of the length of tubing was securely tied to close it as shown in Fig. 1.1.
- This tubing was filled with a solution containing both the reducing sugar glucose, and starch.
- The outside of the tubing was rinsed with water.
- The tubing was placed into a large test-tube filled with clean water and held closed and in position, by a clip.

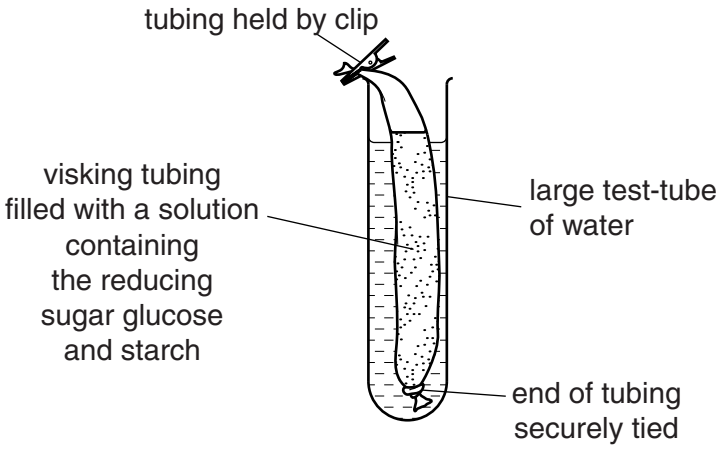


Fig. 1.1

Samples of the water from the large test-tube were tested for the presence of reducing sugar and starch at different time intervals.

(a) Describe how you could safely test for the presence of

(i) reducing sugar

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.....[4]

(ii) starch.

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.....[2]

(b) Explain why the outside of the tubing was rinsed before it was put into the large test-tube of water.

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.....[1]

The results from the samples of water tested are shown in Table 1.1.

For Examiner's Use

Table 1.1

sampling time / min	reducing sugar test	starch test
0	negative	negative
2	negative	negative
20	positive	negative

(c) Suggest and explain what had 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]

[Total: 15]

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[Turn over

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

For Examiner's Use

Samples of fresh milk and yoghurt were tested to find the pH using universal indicator paper. The results are shown in Table 2.1.

Table 2.1

	colour of universal indicator paper	pH
fresh milk	green	7
yoghurt	orange / red	4

Fig. 2.1 shows some bacteria found in yoghurt.

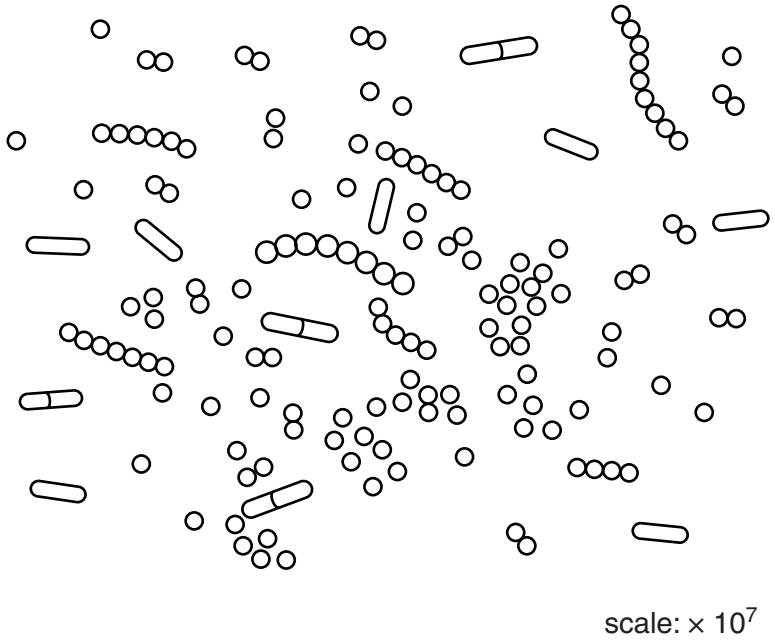


Fig. 2.1

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

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.....[2]

(b) Using Table 2.1, suggest how bacteria have produced yoghurt from milk.

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.....[2]

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Yoghurt can form within hours.

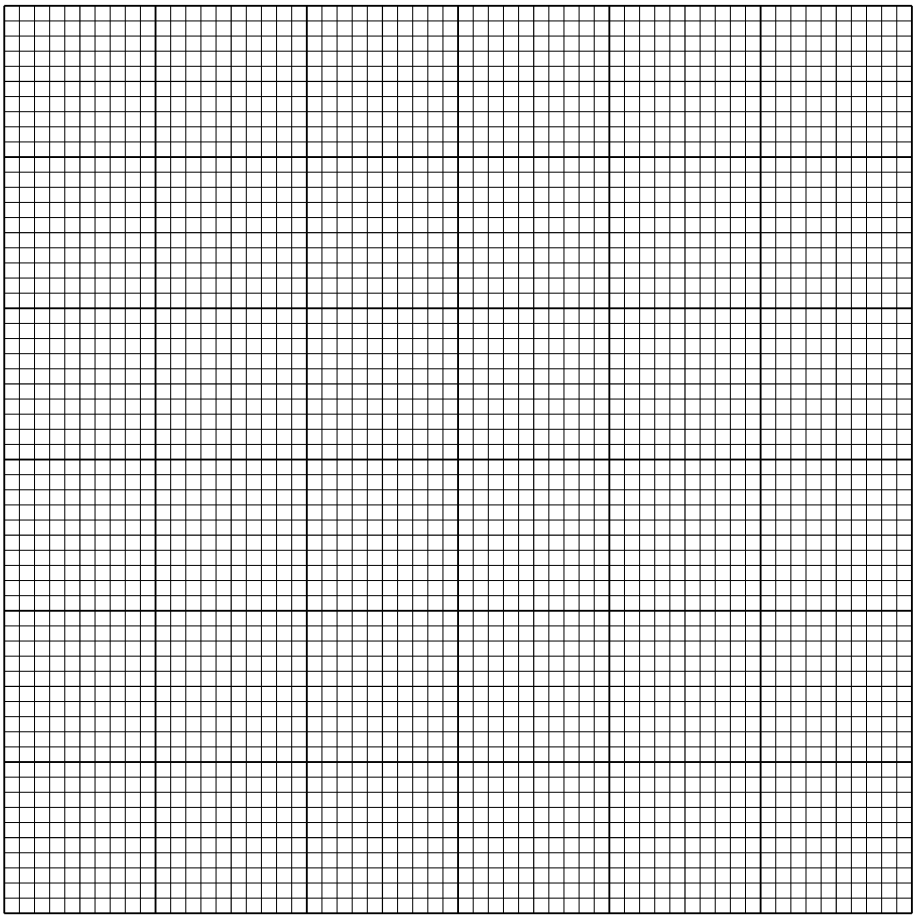
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An investigation was carried out to discover the increase in the number of bacteria in a yoghurt preparation over the first six hours. The results are shown in Table 2.2.

Table 2.2

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

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



[5]

For Examiner's Use

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

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(d) Design a laboratory experiment to investigate the effect of temperature on the formation of yoghurt from milk.

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.....[4]

[Total: 14]

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3 Fig. 3.1 shows some parts of an insect-pollinated flower.

For Examiner's Use



scale × 1

Fig. 3.1

(a) (i) Make a large drawing of this flower and label stamen, stigma and style.

[5]

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

For Examiner's Use

1 .....

2 .....

[2]

(b) Describe, giving practical details, how you would prepare some pollen grains from this flower for examination under the microscope.

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[Total: 11]

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