UNIVERSITY OF CAMBRIDGE INTERNATIONAL EXAMINATIONS
General Certificate of Education Ordinary Level

CANDIDATE NAME

CENTRE NUMBER

CANDIDATE NUMBER

0835972809

BIOLOGY **5090/31**

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	
Total	

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.

For Examiner's Use

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.

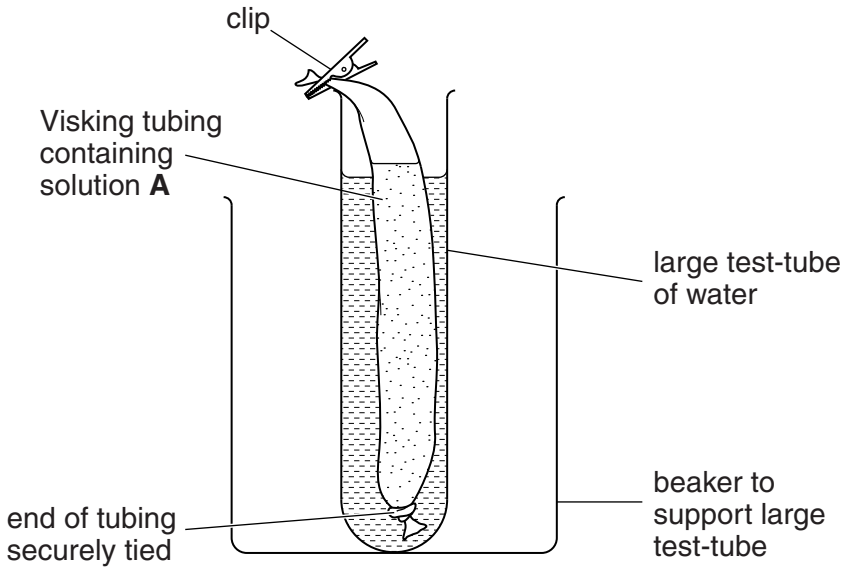

Fig. 1.1

(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 5 cm. 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^3 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]

[Turn over

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

For Examiner's Use

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

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[Total:16]

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

For Examiner's Use

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.

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

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[Turn over

Fig. 2.1 shows some bacteria found in yoghurt.

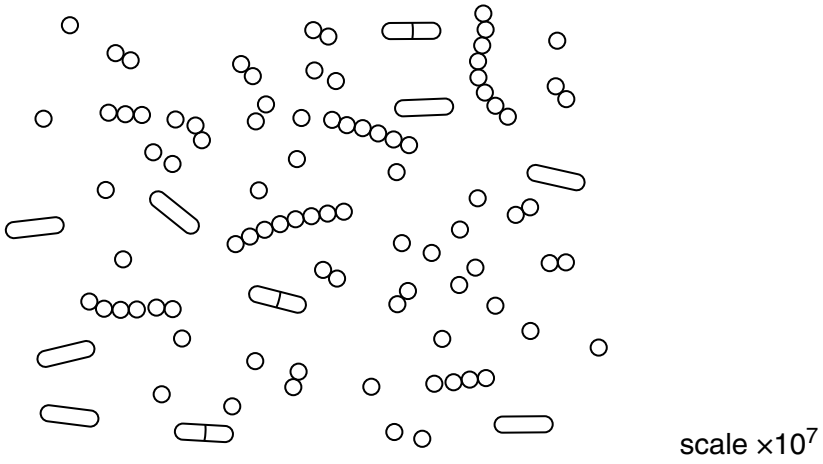

Fig. 2.1

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

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Yoghurt can form within hours.

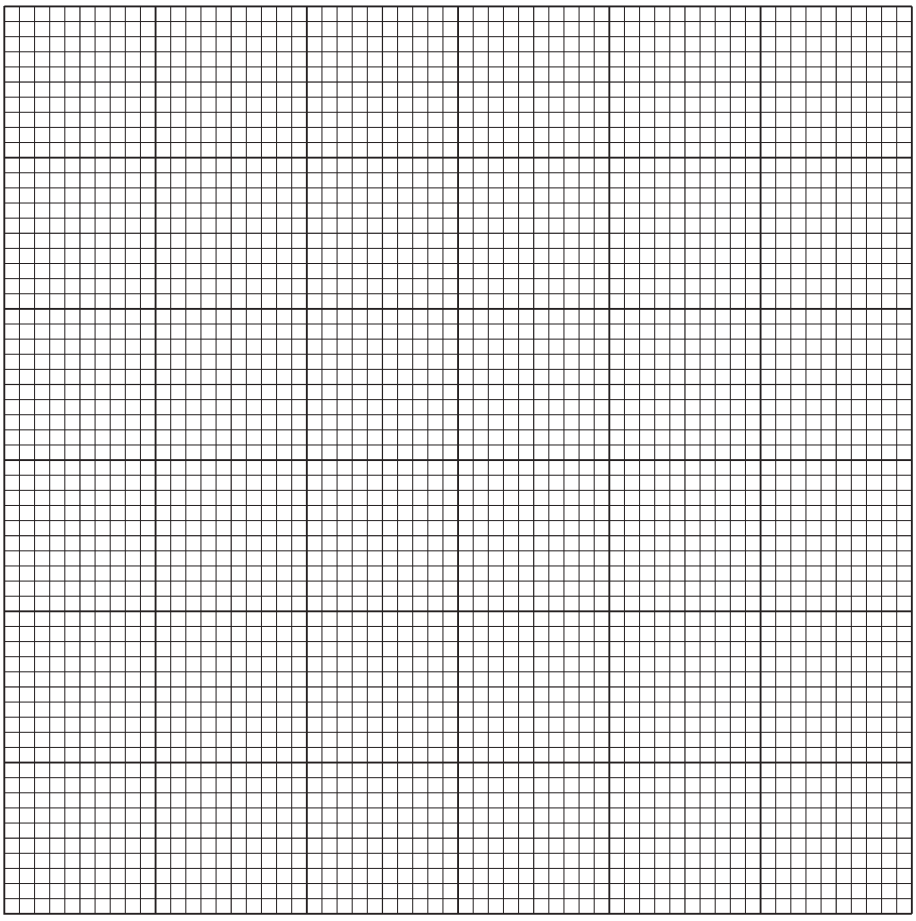
An investigation was carried out to discover the increase in the number of bacteria in a yoghurt preparation over the first six hours. The results are shown in Table 2.2.

Table 2.2

time / hours	number of bacteria in 1 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.

For Examiner's Use



[5]

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

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(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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[Total: 17]

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

For Examiner's Use

- 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]