UNIVERSITY OF CAMBRIDGE INTERNATIONAL EXAMINATIONS
General Certificate of Education Ordinary Level

CANDIDATE NAME									
CENTRE NUMBER						CANDIDATE NUMBER				

0223835273

BIOLOGY **5090/03**

Paper 3 Practical Test **October/November 2008**

1 hour 15 minutes

Candidates answer on the Question Paper.

Additional Materials: As listed 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 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 **both** 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.

For Examiner's Use	
1	
2	
Total	

This document consists of **7** printed pages and **1** blank page.

You are advised to read the whole question before starting.

For Examiner's Use

1 You have been given two cups. These cups represent two animals cooling.

- Cover all of the outside of one of the cups with paper tissue, **cup A**.
- Hold the paper securely round the cup with the two elastic bands.
- Use the pipette to squirt water from the beaker onto the tissue paper so that it is wet all over.
- Keep the tissue wet for the whole time of the experiment.
- Use the second cup just as it is, **cup B**.
- Ask the supervisor to fill both cups with hot water. (Take care: hot water)
- Take the temperature of the water in each cup. This is 'zero' time.

Temperature in **cup A** = …….. Temperature in **cup B** = …….

- Cover the cups with the card 'lids' and replace the lid after every temperature reading.
- After exactly one minute take the temperature in **cup A** again.
- Exactly one minute later take the temperature in **cup B**.
- Record your readings in Table 1.1.
- Continue taking readings like this and record them in Table 1.1.
- **If, at any time, the paper tissue appears to be getting dry, keep it wet by squirting on more water with the pipette, as you did earlier.**
- Record the room temperature at end of experiment. = ……

Table 1.1

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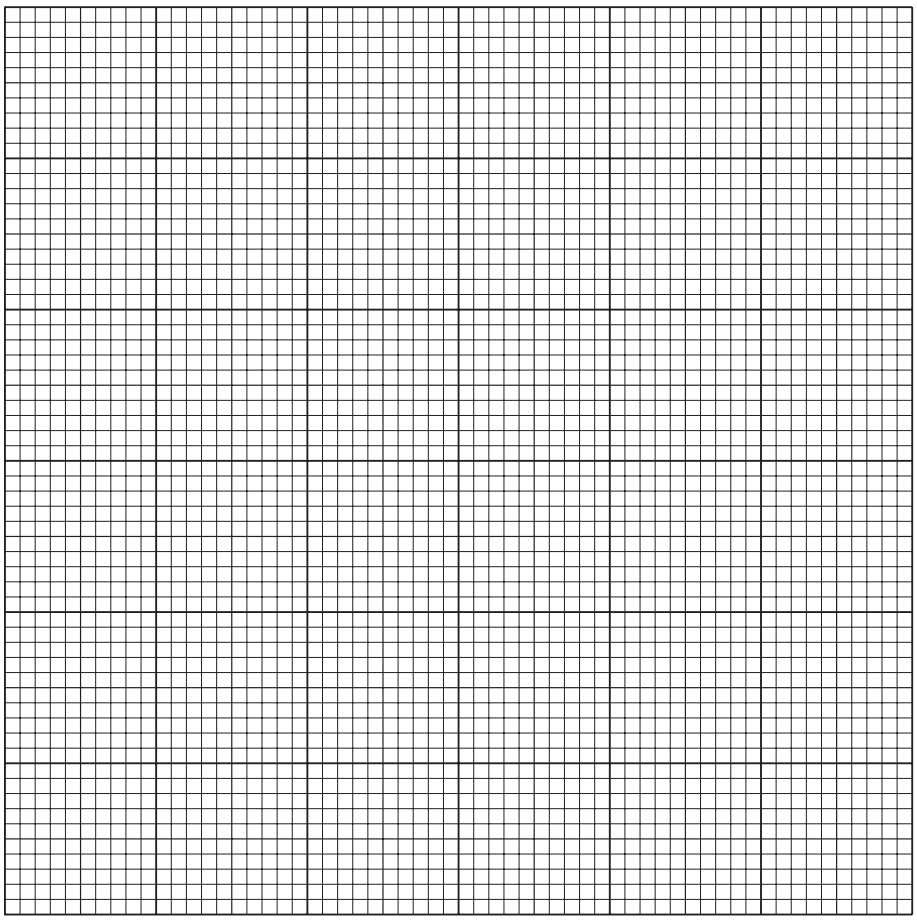
time from start / minutes	cup A temperature / °C	cup B temperature / °C
0 (zero time)		
1		
2		
3		
4		
5		
6		
7		
8		
9		
10		

[3]

(a) (i) Plot these results on the grid provided using the same axes for both curves.



[5]

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(ii) Suggest how the curves would have continued if the temperatures had been taken for another 10 minutes.

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.....

.....[2]

(b) (i) Explain the physical processes that are taking place in this experiment, affecting the rate of cooling of **cup A**.

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.....

.....[2]

(ii) Describe how the human skin carries out a similar cooling process when the body becomes too hot.

.....

.....

.....[2]

(iii) Describe how the cooling process in humans differs from that of **cup A**.

.....

.....

.....[2]

(c) Suggest three ways in which the experiment could be modified to make the data more reliable.

1.....

2.....

3.....[3]

[Total : 19]

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2 **(a)** • Place the slice of banana, **W1**, on the white tile and use the cotton-wool bud to smear iodine solution on half of the upper surface of the banana.
• Examine both the stained and unstained parts of the upper surface of the banana.

(i) Make a large, clear drawing of this upper surface of the banana to show its structure.
Labels are **not** required.

[3]

(ii) Draw part of the fruit wall ('skin', 'peel') of the banana, as seen through the hand lens, to show its pattern of veins (vascular bundles).
Labels are **not** required.

[3]

(iii) Calculate the magnification of your drawing in **(a) (i)**. Show clearly where you made a measurement on your drawing. Record your measurements and show all working clearly.

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Magnification = ……. [4]

(b) • Treat specimen **W2** with iodine solution in the same way as **W1**.
• Examine the specimen.

(i) State two ways in which the specimens can be seen to have a similar structure.

1 .....

2 .....[2]

(ii) Complete Table 2.1 to show three visible differences in the fruit wall (skin) of the two specimens.

Table 2.1

	specimen W1	**specimen W2**
1		
2		
3		

[3]

(iii) Complete Table 2.2 to show two visible differences in the internal structure of the two specimens.

For Examiner's Use

Table 2.2

	specimen W1	specimen W2
1		
2		

[2]

(c) The starch content of bananas decreases as the bananas ripen. Design, but do not try to carry out, an investigation to determine if this decrease in starch concentration results in an increase in the concentration of reducing sugars.

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.....[4]

[Total : 21]