Cambridge International Examinations
Cambridge International General Certificate of Secondary Education

CANDIDATE NAME									
CENTRE NUMBER						CANDIDATE NUMBER				

5410210281

BIOLOGY **0610/51**

Paper 5 Practical Test **October/November 2016**

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 an HB pencil for any diagrams or graphs.
Do not use staples, paper clips, glue or correction fluid.
DO **NOT** WRITE IN ANY BARCODES.

Answer **all** questions.

Electronic calculators may be used.
You may lose marks if you do not show your working or if you do not use appropriate units.

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	

The syllabus is approved for use in England, Wales and Northern Ireland as a Cambridge International Level 1/Level 2 Certificate.

This document consists of **11** printed pages and **1** blank page.

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Read through all the questions on this paper carefully before starting work.

1 Some animals have a body temperature that is higher than the temperature of the environment.

As a result these animals lose heat to the environment, causing their body temperature to fall.

You are going to investigate the effect of the volume of the body on the loss of heat to the environment.

The volume of the body of an animal and its temperature can be represented by hot water.

Complete question **1(a)** before starting the investigation.

Step 1 Label two beakers, one beaker **A** and another beaker **B**.

Step 2 Draw a line on beaker **A**, 6 cm up from the bottom of the beaker.

Step 3 Raise your hand when you are ready for hot water to be added to the container labelled **hot water**.

Step 4 Add hot water to beaker **A** up to the 6 cm mark.

Step 5 Place the thermometer in the water in beaker **A** and start the timer.
Immediately measure the temperature of the water and record it in your results table.
Leave the thermometer in the water throughout the investigation.

Step 6 After 1 minute, measure the temperature of the water in beaker **A** and record it in your results table.

Step 7 Repeat step 6 after 2, 3, 4 and 5 minutes and record these results.

Step 8 Raise your hand to get the container labelled **hot water** refilled with hot water.

Step 9 Draw a line on beaker **B**, 3 cm up from the bottom of the beaker.

Step 10 Add hot water to beaker **B** up to the 3 cm mark.

Step 11 Repeat steps 5 to 7 for beaker **B**.

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(a) Prepare a table to record your results in the space below.

[6]

(b) **(i)** The rate of heat loss is the fall in temperature per minute.

Calculate the rate of heat loss between 0 and 5 minutes for both beakers.
Include the units.

Show your working.

beaker **A**

.....

beaker **B**

.....
[4]

(ii) Using your results, suggest a relationship between the volume of the body and heat loss.

.....

.....

.....

.....[2]

(c) (i) State **two** variables in this investigation that have been controlled.

1 .....

2 .....
[2]

(ii) Suggest why the thermometer must be left in the water throughout the investigation.

.....

.....[1]

(iii) There is a possible source of error in step 2 and step 9 of this investigation.

Identify the source of error and describe how to modify steps 2 and 9 to improve this investigation.

.....

.....

.....

.....[2]

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(d) Some students were asked to test the hypothesis:

The colder the surroundings, the faster a small mammal's temperature will drop.

Describe how the students could modify the investigation you have carried out to test this hypothesis.

Do **not** carry out this experiment.

.....

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.....[6]

(e) Humans sweat when they get too hot.

The effect of the temperature of the room on the average rate of sweating was investigated.

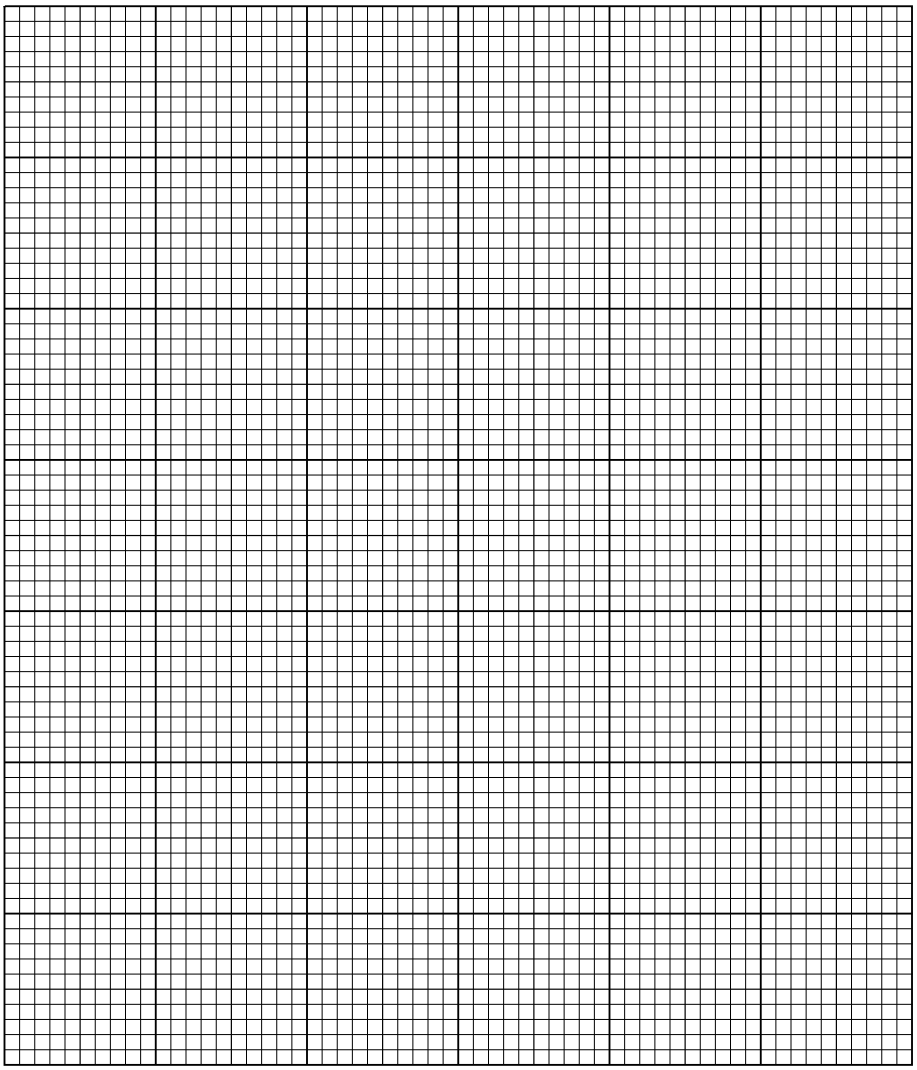
The results are shown in Table 1.1.

Table 1.1

temperature of room / °C	average rate of sweating / cm^3 per hour
13	10
22	40
30	320
36	740
40	1180

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(i) Plot a graph, using the data in Table 1.1, on the grid.



[4]

(ii) Describe the effect of the temperature of the room on the average rate of sweating.

.....

.....

.....

.....[2]

[Total: 29]

2 Fig. 2.1 shows photographs of five different flowers, **A**, **B**, **C**, **D** and **E**.
Some of the structures of flowers are labelled on the photographs.

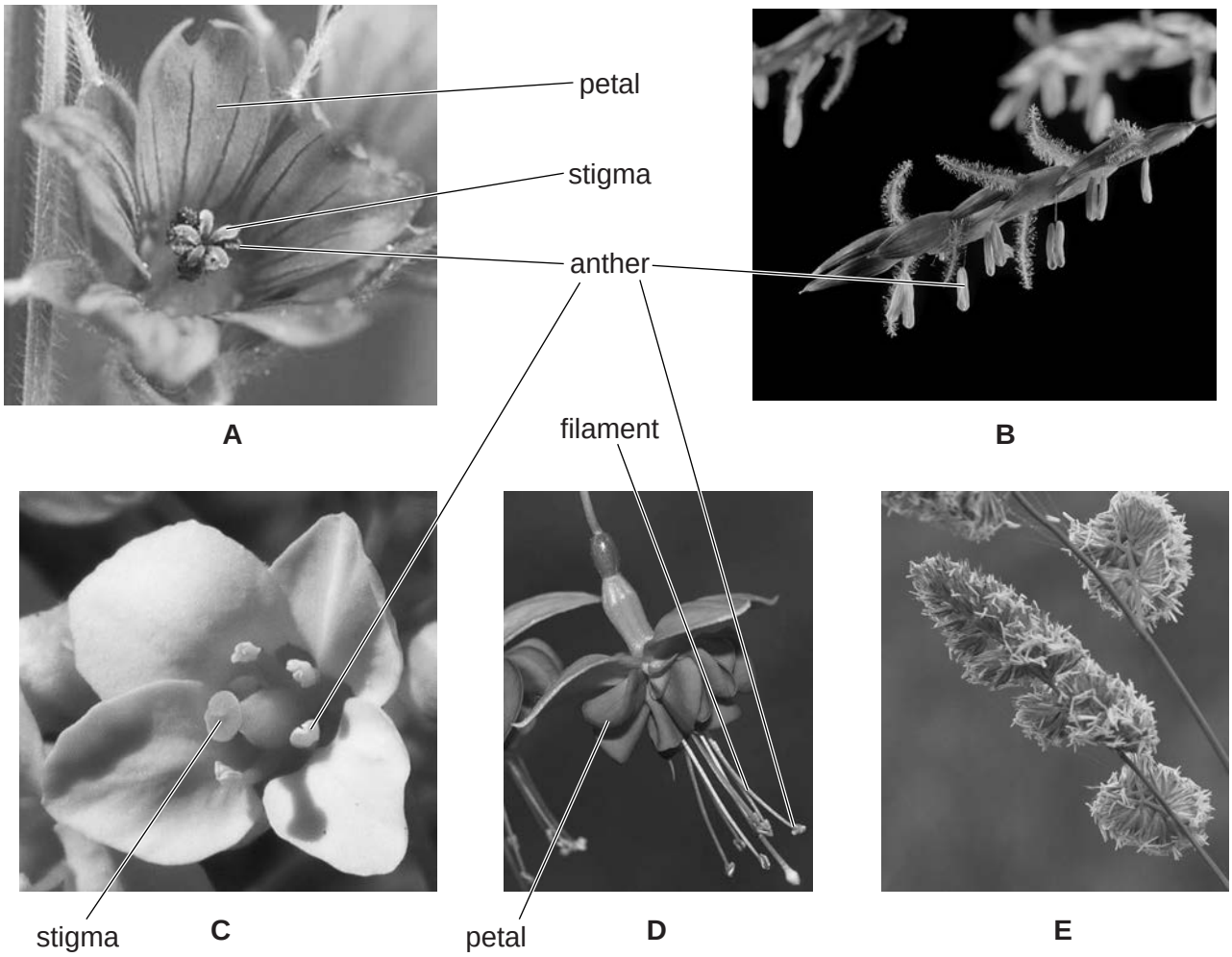


Fig. 2.1

The genus of the five flowers can be identified using this key:

1. petals present and large ..... go to 2
   petals absent or very small ..... go to 4

2. four petals ..... *Draba*
   more than four petals ..... go to 3

3. stigma clearly divided into 5 ..... *Geranium*
   stigma not clearly divided ..... *Fuschia*

4. anthers large and hanging on long filaments away from flower ..... *Sorghum*
   anthers small and close to flower ..... *Dactylis*

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(a) Use the key to identify flowering plants **A**, **B**, **C**, **D** and **E**.

letter	genus of flower
A	
B	
C	
D	
E	

[4]

(b) Specimen **F** is an insect-pollinated flower.

Carefully remove **one** complete stamen (anther and filament) from specimen **F** and place it on a white tile.

Examine the stamen using a hand lens.

(i) Make a large labelled drawing of the stamen.

[4]

(ii) Measure the length of the filament you selected from specimen **F**.
Include the unit.

Length of the filament .....

Measure the length of the filament on your drawing.

Draw a line on your drawing to show where you measured the filament.

Length of the filament on your drawing .....

$$\text{magnification} = \frac{\text{length of the filament on your drawing}}{\text{length of filament from specimen } \mathbf{F}}$$

Calculate the magnification of your drawing using the information above and your answers.

Show your working.

magnification .....
[3]

[Total: 11]

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