UNIVERSITY OF CAMBRIDGE INTERNATIONAL EXAMINATIONS
General Certificate of Education Ordinary Level

CANDIDATE NAME

CENTRE NUMBER

CANDIDATE NUMBER

BIOLOGY **5090/61**

Paper 6 Alternative to Practical **May/June 2011**

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 in the spaces provided on the Question Paper.
You may use a soft 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.

For Examiner's Use	
1	
2	
3	
Total	

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

1 An investigation was carried out to find the effect of different solutions on plant tissue. Some students cut strips of tissue from potato tubers, being careful to ensure that the initial length of each strip was 5.0 cm.

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They then placed some of these strips in the different solutions. After three hours, the strips were removed, carefully blotted dry and measured.

(a) (i) Measure these potato strips, as shown in Fig. 1.1, and record their final lengths.

A

had been in 30 g per 100 cm^3 sucrose solution final length .....

B

had been in 13 g per 100 cm^3 sucrose solution final length .....

C

had been in water final length .....

Fig. 1.1

[2]

(ii) Calculate the change in length between the initial length and your measured length.

A .....

B .....

C .....[2]

(iii) Describe and explain the changes in length.

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.....[4]

(b) Plan an investigation you could carry out, using a different plant tissue, to find the concentration of sucrose solution which would produce no change in mass.

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.....[5]

[Total: 13]

2 Some students wanted to know how much vitamin C six different fruit juices contained. They knew that a blue dye, DCPIP (dichlorophenolindolphenol) goes colourless when sufficient vitamin C is added.
They added one particular juice to a known volume of blue dye and, by recording how much juice was needed to decolourise this dye, were then able to work out how much vitamin C the juice contained. They repeated this procedure a further two times with that fruit juice.

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(a) Explain why this procedure was repeated three times.

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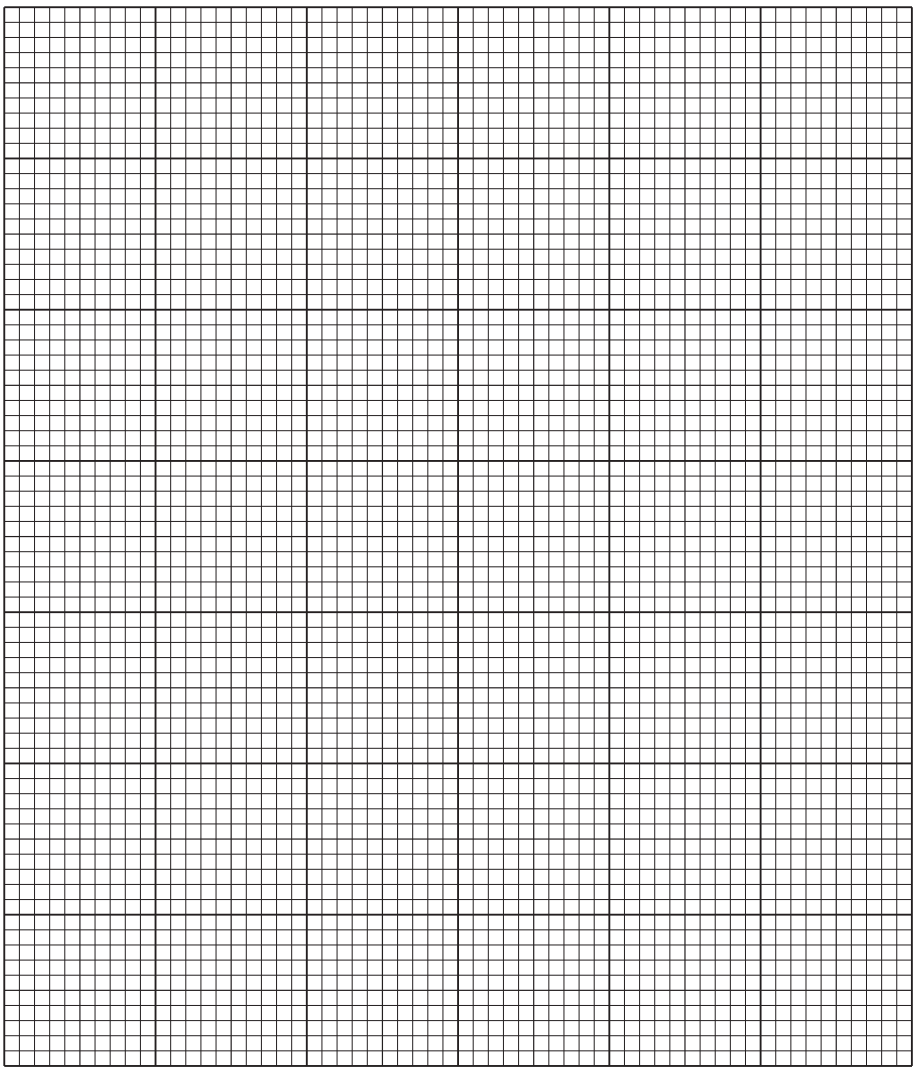
.....[1]

They then tested the other five fruit juices in the same way, keeping the volume of blue dye used in the tests constant. Their results are shown in Table 2.1.

Table 2.1

	kakadu plum	camu camu	gojiberry	blackcurrant	kiwifruit	orange
vitamin C / mg per 100 g	3100	2800	2500	200	90	50

(b) (i) Draw a bar chart of the vitamin C content of the fruits in Table 2.1.



[4]

(ii) Calculate how many times greater the vitamin C content of 100 g of kakadu plum is than that of 100 g of orange. Show your working.

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.....[1]

Fresh fruit and vegetables contain the highest levels of vitamin C.

(c) Describe how you would investigate how the length of time oranges are stored affects their vitamin C content.

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.....[5]

(d) Explain why humans need vitamin C in their diet.

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.....[2]

[Total: 13]

[Turn over

3 Fig. 3.1 is a photograph of a locust, an insect.

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Fig. 3.1

(a) (i) Make a large drawing of one back leg of this insect.

[4]

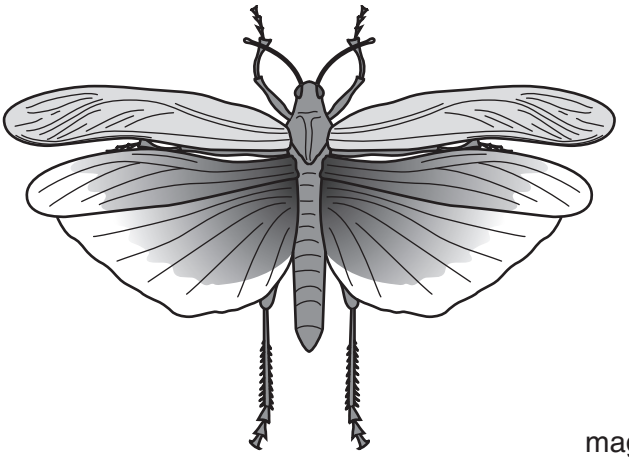
(ii) Calculate the ratio of the length of one front leg in Fig. 3.1 to the length of this back leg in Fig. 3.1.

length of front leg .....

length of back leg .....

ratio ..... [2]

Fig. 3.2 shows the locust in flight.



magnification x 1

Fig. 3.2

Fig. 3.3 shows two other insects, an aphid and a fly.

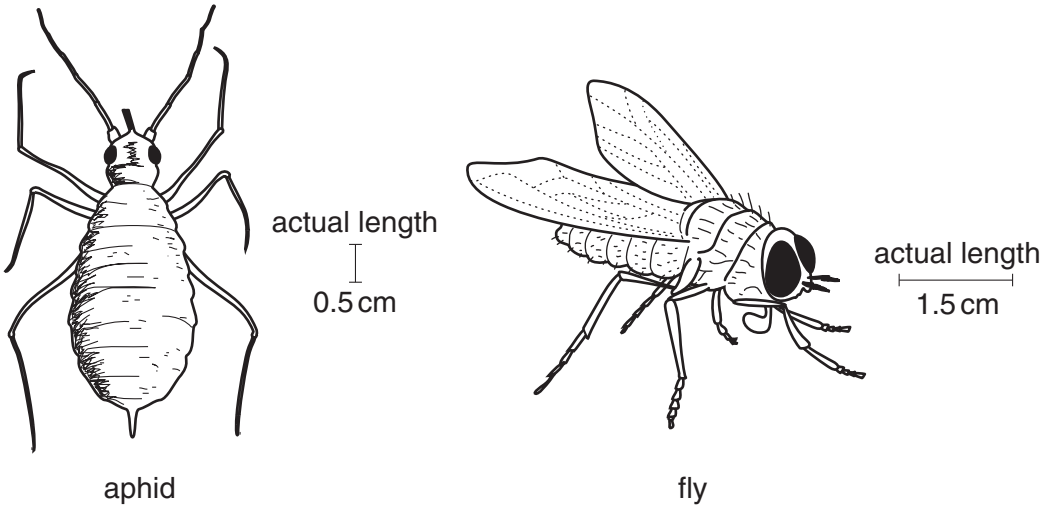


Fig. 3.3

(b) With reference to Fig. 3.2 and Fig. 3.3, list three similar features of these insects.

1. .....

2. .....

3. .....[3]

(c) **(i)** Describe **two** differences between the locust and the fly.

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.....[2]

(ii) Describe **one** difference between the locust and the aphid.

.....[1]

Question 3 continues on page 8

(iii) Calculate the magnification of the drawing of the fly.

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magnification .....[2]

[Total: 14]