UNIVERSITY OF CAMBRIDGE INTERNATIONAL EXAMINATIONS
International General Certificate of Secondary Education

CANDIDATE NAME									
CENTRE NUMBER						CANDIDATE NUMBER				

4990181549

BIOLOGY **0610/62**

Paper 6 Alternative to Practical **October/November 2011**

1 hour

Candidates answer on the Question Paper

Additional Materials: ruler

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 or graphs.
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	

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1 Fig. 1.1 shows a longitudinal section through a butternut squash, *Cucurbita moschata*.

This whole structure is a fruit.

For Examiner's Use

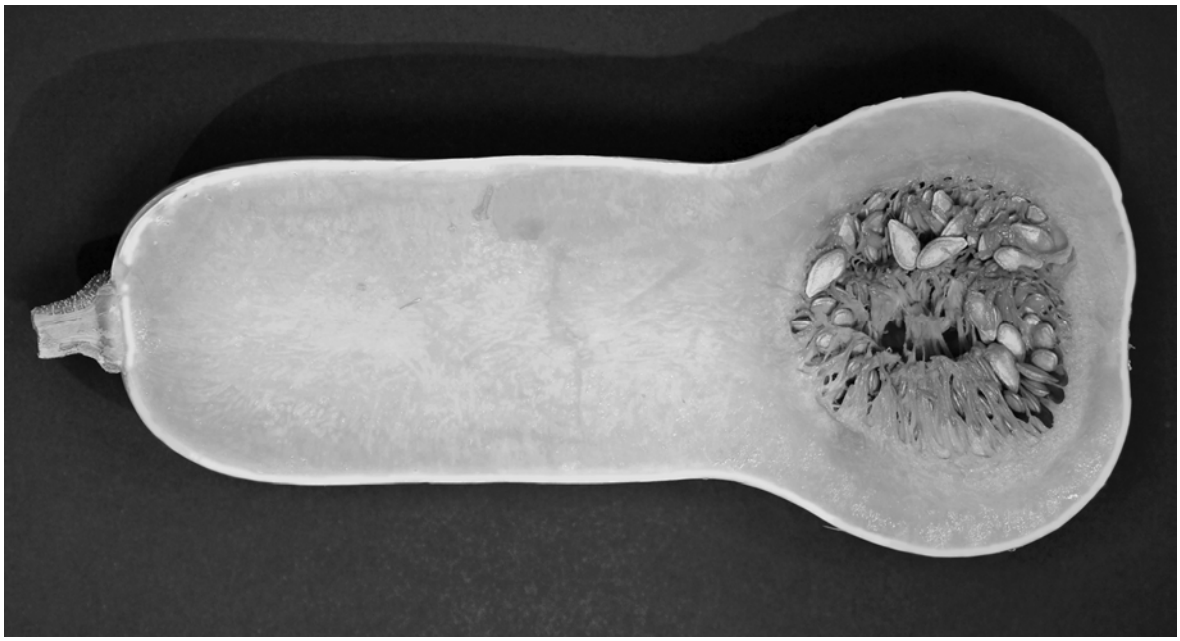

Fig. 1.1

(a) Make a large, labelled diagram of the fruit to show
- the arrangement of the seeds
- the thickness of the fruit wall.

[5]

Fig. 1.2 shows two seeds from this fruit.

For Examiner's Use

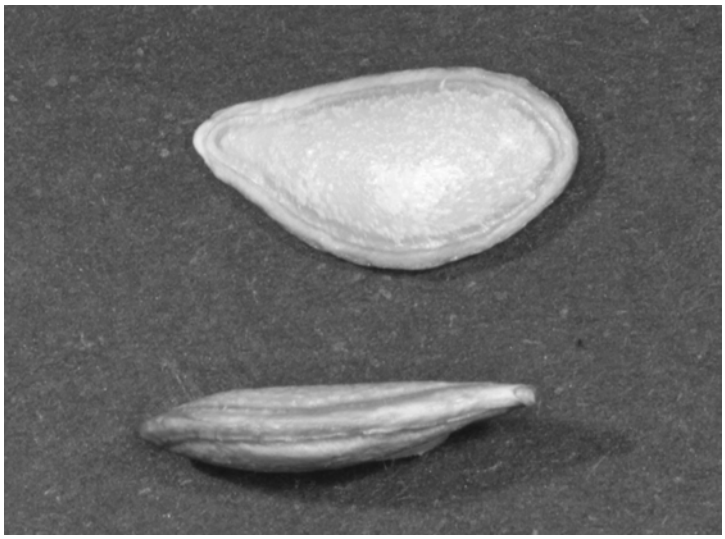

Fig. 1.2

(b) Describe the external appearance of this seed.

.....

.....

.....

..... [2]

Fig. 1.3 shows a seedling which has grown from a seed taken from this fruit.

For Examiner's Use

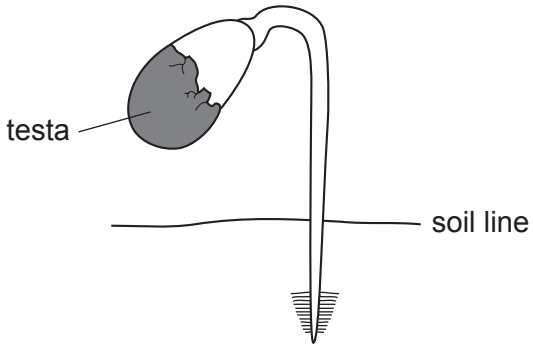

Fig. 1.3

(c) Complete the labelling of the seedling on Fig. 1.3.
The testa (seed coat) of this seedling has been labelled for you. [2]

(d) The internal contents of the seed will contain an embryo and stored food materials for germination.

Describe how you could carry out food tests on the internal structure of the seed to show if the seed contained fat or starch.

fat .....

.....

.....

starch .....

.....

..... [4]

(e) Describe how you would germinate these seeds.
Include the environmental conditions required.

.....

.....

.....

.....

.....

..... [4]

[Total: 17]

For Examiner's Use

2 An investigation was carried out to find the effect of salt (sodium chloride) solution, on potato tissue.

A large potato was cut into long thin strips, called chips. Each chip measured 60 mm in length.

One chip was placed in a concentrated salt solution and another chip was placed in distilled water.

After three hours these chips were removed from the liquids.

The chips are shown in Fig. 2.1.

salt solution distilled water

Fig. 2.1

(a) (i) Measure the length of the chips in Fig. 2.1.
Calculate any change in length.
Record your measurements in Table 2.1.

Table 2.1

	chip in salt solution	chip in distilled water
length / mm		
change / mm		

[2]

For Examiner's Use

(ii) Explain the changes that you have recorded for these two chips.

.....

.....

.....

.....

.....

.....

.....

.....

.....

..... [4]

(b) A similar investigation was carried out by a group of students.
They measured the mass of five chips before putting each chip in a different concentration of **sucrose** solution.
The chips were left in the solution for two hours.
After two hours each chip was removed from the sucrose solution and its mass measured.

Their results are shown in Table 2.2.

Table 2.2

concentration of sucrose solution / g dm^{-3}	mass at start / g	mass after 2 hours / g	difference in mass / g	percentage change
0.0	1.36	1.49	+0.13	+9.56
35.0	1.41	1.48	+0.07	+4.96
70.0	1.46	1.47	+0.01	+0.68
175.0	1.47	1.38	–0.09	–6.12
345.0	1.45	1.31	–0.14	……

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(i) Complete Table 2.2 by calculating the percentage change in mass for the most concentrated solution. Show your working.

[1]

(ii) Suggest why it is necessary to calculate the percentage change in mass when comparing the chips.

.....

.....

[1]

(iii) Plot a graph to show the percentage change in mass against the concentration of the sucrose solution. Use the grid and axes provided.

[4]

(c) (i) Use your graph to find the concentration of sucrose solution in which the mass of chip would stay the same.

..... g dm^{-3} [1]

(ii) Explain why the mass of a chip in this solution would stay the same.

.....

.....

.....

[1]

[Total: 14]

For Examiner's Use

3 Fig. 3.1 shows three animals **A**, **B** and **C** which belong to the same group of arthropods.

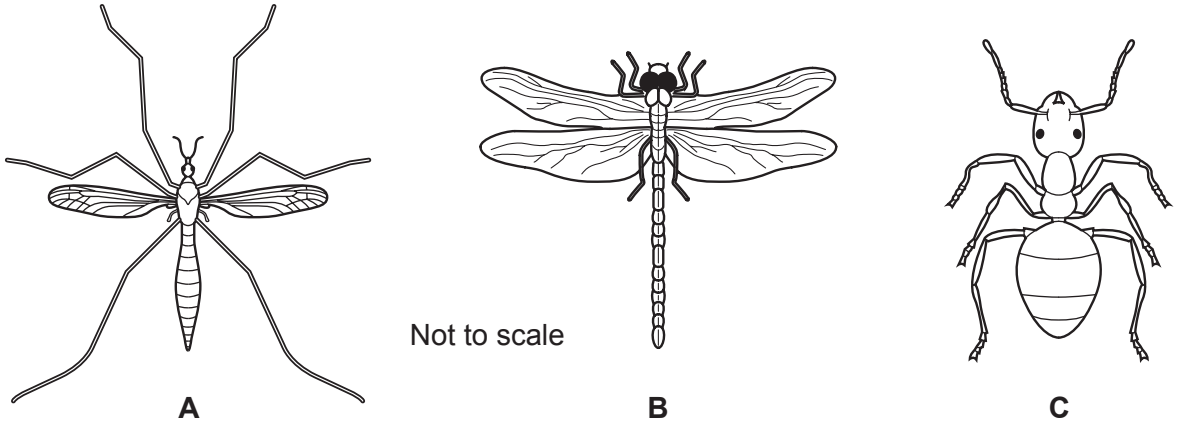

Fig. 3.1

(a) (i) List three visible features, other than size, which are used to classify them all in the same group of arthropods.

1 .....

2 .....

3 ..... [3]

(ii) Give one visible difference, other than size, between animal,

A and **B** .....

A and **C** ..... [2]

(iii) Name the group of arthropods to which these three animals belong.

..... [1]

(b) Name one other group of arthropods and describe how this group differs from the one you have named in **(a)(iii)**.

group of arthropods .....

difference 1 .....

difference 2 ..... [3]

[Total: 9]

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