UNIVERSITY OF CAMBRIDGE INTERNATIONAL EXAMINATIONS
International General Certificate of Secondary Education

CANDIDATE NAME									
CENTRE NUMBER						CANDIDATE NUMBER				

5235632697

BIOLOGY **0610/06**

Paper 6 Alternative to Practical **May/June 2007**

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.
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.

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1	
2	
3	
4	
Total	

This document consists of **10** printed pages and **2** blank pages.

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1 An investigation was carried out to show the effects of temperature on plant growth.

- Two sets of soaked bean seeds were placed on moist paper in containers.
- The containers were wrapped in foil to keep out the light.
- One container was placed for three days in a refrigerator at 4 °C.
- The other container was left for three days in a warm place at 30 °C.

Fig. 1.1 and Fig. 1.2 show these two sets of germinated bean seedlings after three days.

seedlings grown in refrigerator at 4 °C

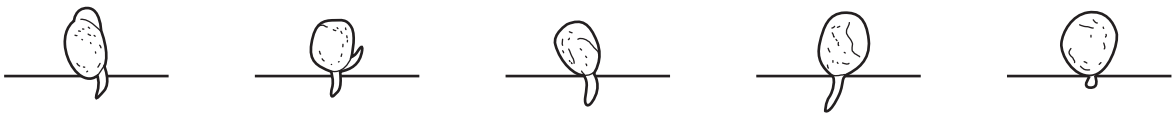

Fig. 1.1

seedlings grown in a warm place at 30 °C

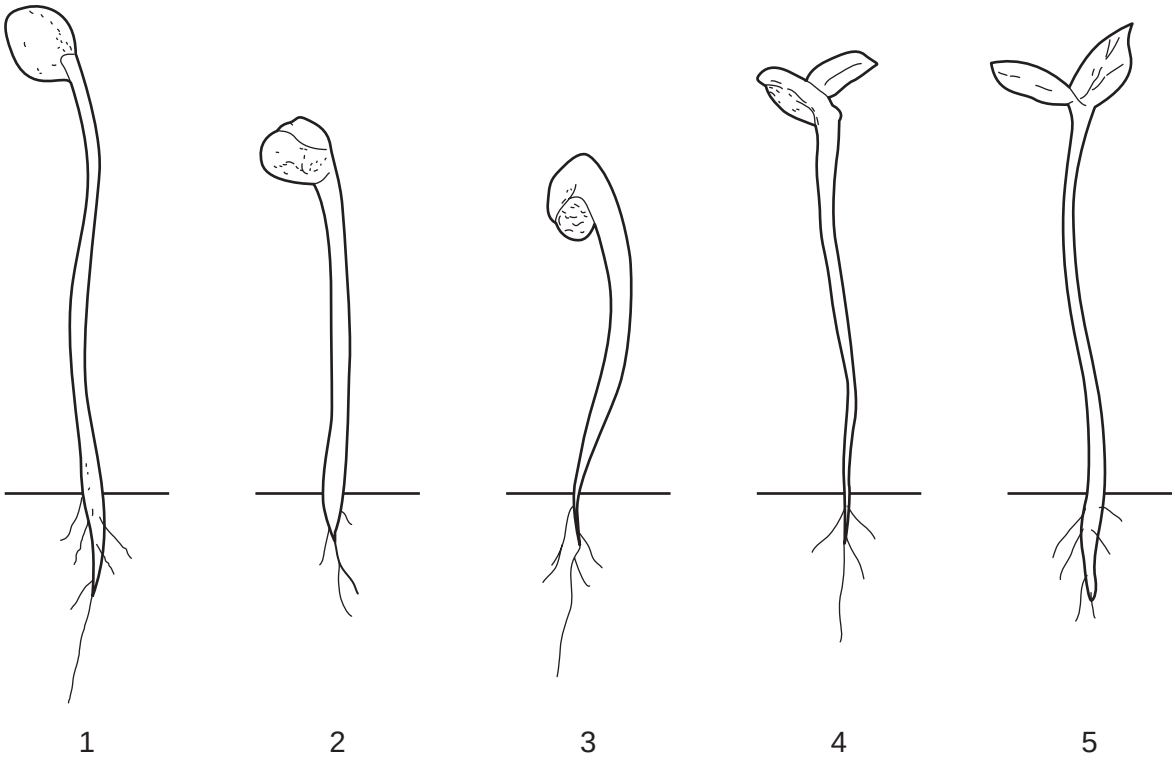

Fig. 1.2

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(a) (i) Measure the overall length of the seedlings to the nearest mm and record these measurements in Table 1.1.

Table 1.1

length of seedling / mm		
seedling	grown in refrigerator at 4 °C	grown in a warm place at 30 °C
1		
2		
3		
4		
5		
mean		

[3]

(ii) Calculate the mean length of the seedlings in Fig 1.1 and the mean length of the seedlings in Fig. 1.2 and also record these values in Table 1.1.

[2]

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[Turn over

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(b) (i) Describe and explain the differences in appearance of the set of seedlings grown at 4 °C and those grown at 30 °C.

.....

.....

.....

.....

.....

.....

.....

..... [6]

(ii) Explain why it is necessary to measure the length of more than one seedling and calculate the mean.

.....

..... [1]

[Total: 12]

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2 Fig. 2.1 shows a stage in the life cycle of an animal.

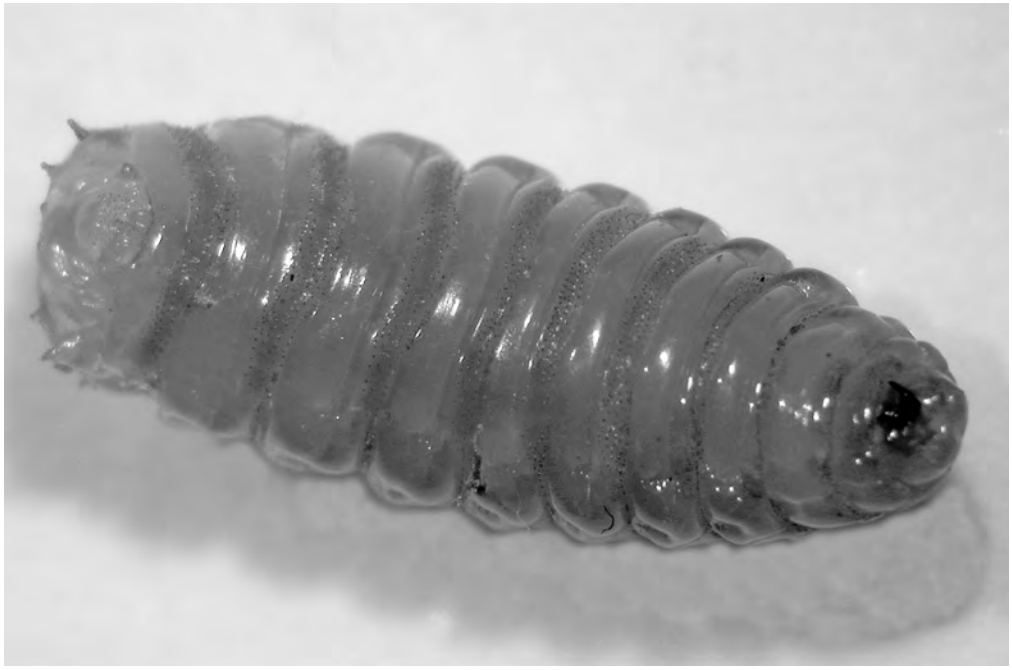

Fig 2.1

(a) Make a large, labelled drawing of the stage shown in Fig. 2.1.

[4]

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(b) Fig. 2.2 shows an adult of a similar species.

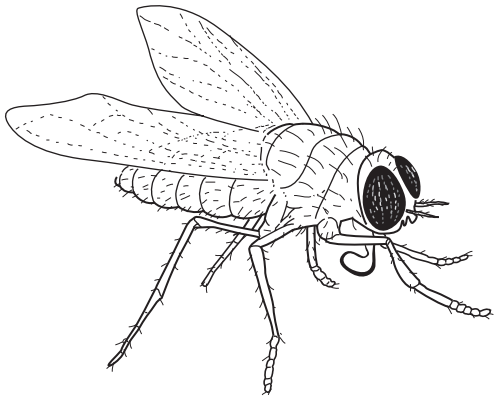

Fig. 2.2

(i) Name the group of organisms to which this animal belongs.

..... [1]

(ii) List three features of the adult stage visible in Fig. 2.2 which helped you to classify this animal.

1 .....

2 .....

3 ..... [3]

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(c) Temperature will affect the length of the life cycle of this animal. Figs. 2.3 and 2.4 show two stages in its life cycle.

Fig. 2.3

Fig. 2.4

The data in Table 2.1 shows the days for the development between the stages shown in Figs. 2.2, 2.3 and 2.4.

Table 2.1

temperature / °C	Time taken for development between life cycle stages / days	
	from stage shown in Fig. 2.3 to that in Fig. 2.4	from stage shown in Fig. 2.4 to adult shown in Fig. 2.2
10	43	23
16	27	16
21	16	12
25	10	7
32	5	4

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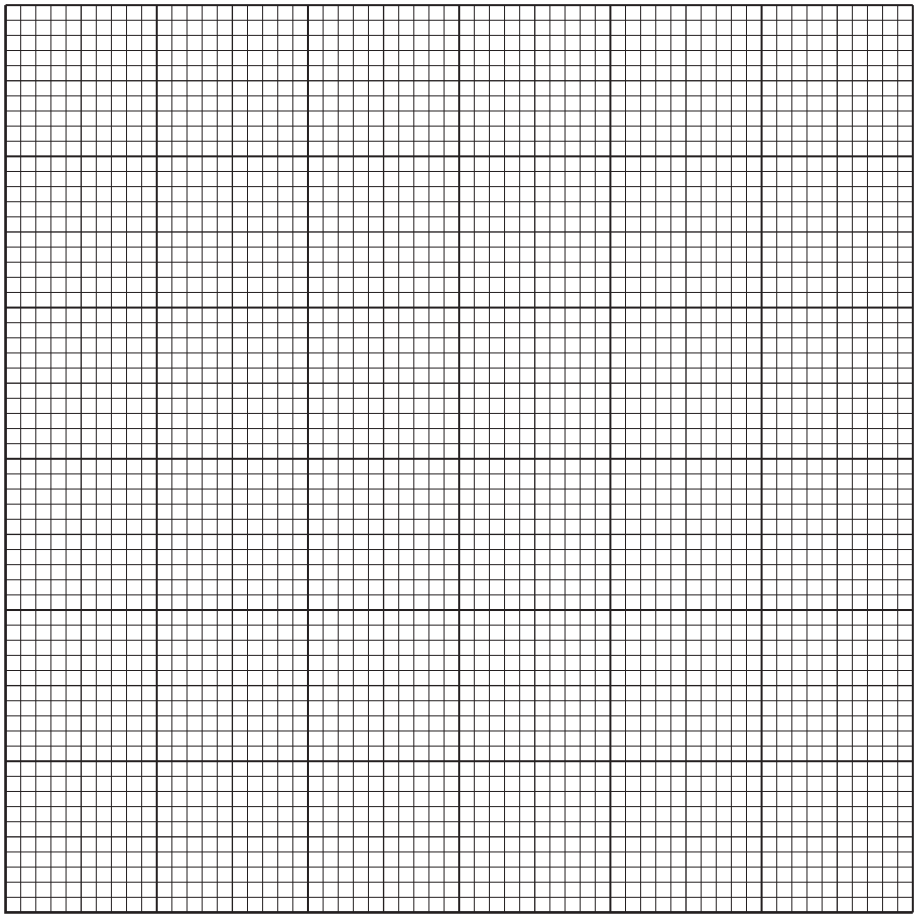
(i) Using this data, plot a suitable graph to show the effect of temperature on the time taken for development of the stage shown in Fig. 2.4 to the adult stage shown in Fig. 2.2.



[5]

(ii) Describe and explain the effect of temperature on the development of this animal.

.....

.....

..... [3]

[Total:16]

3 Fig. 3.1 shows part of a root tip cut longitudinally. The section has been stained to show the DNA of the nucleus.

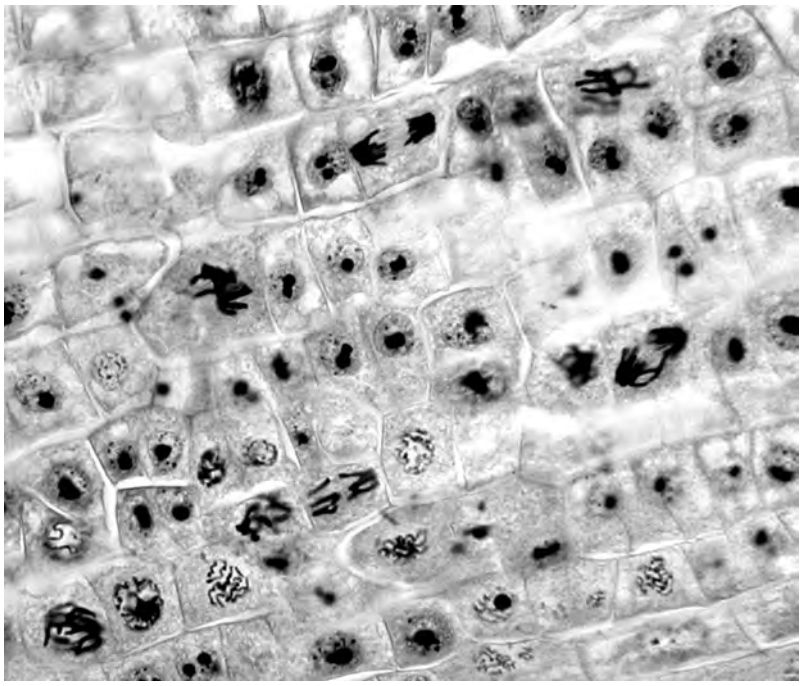


Fig. 3.1

(a) (i) Draw a circle around a cell that shows the 'daughter' chromosomes have just separated at the equator and are moving towards the poles of the cell (anaphase). [1]

(ii) Describe two visible features of these dividing cells.

1 .....

2 ..... [2]

(iii) Name the type of cell division taking place.

..... [1]

(b) Suggest what happens to these cells after cell division, as the root grows.

.....

.....

..... [2]

[Total: 6]

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4 A nutritional drink was said to contain simple sugars and protein.

Describe how you could find out if these food substances were present in the drink.

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..... [6]

[Total: 6]

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