



UNIVERSITY OF CAMBRIDGE INTERNATIONAL EXAMINATIONS
International General Certificate of Secondary Education

CANDIDATE
NAME

CENTRE
NUMBER

--	--	--	--	--

CANDIDATE
NUMBER

--	--	--	--



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.

For Examiner's Use	
1	
2	
3	
4	
Total	

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



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

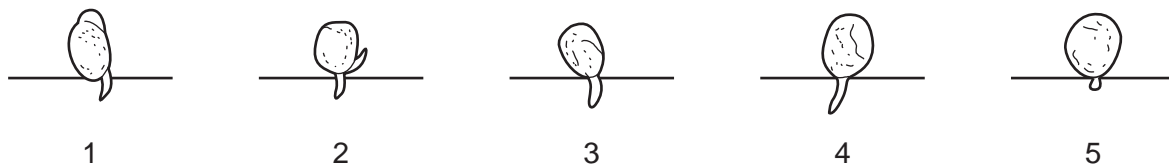


Fig. 1.1

seedlings grown in a warm place at 30 °C

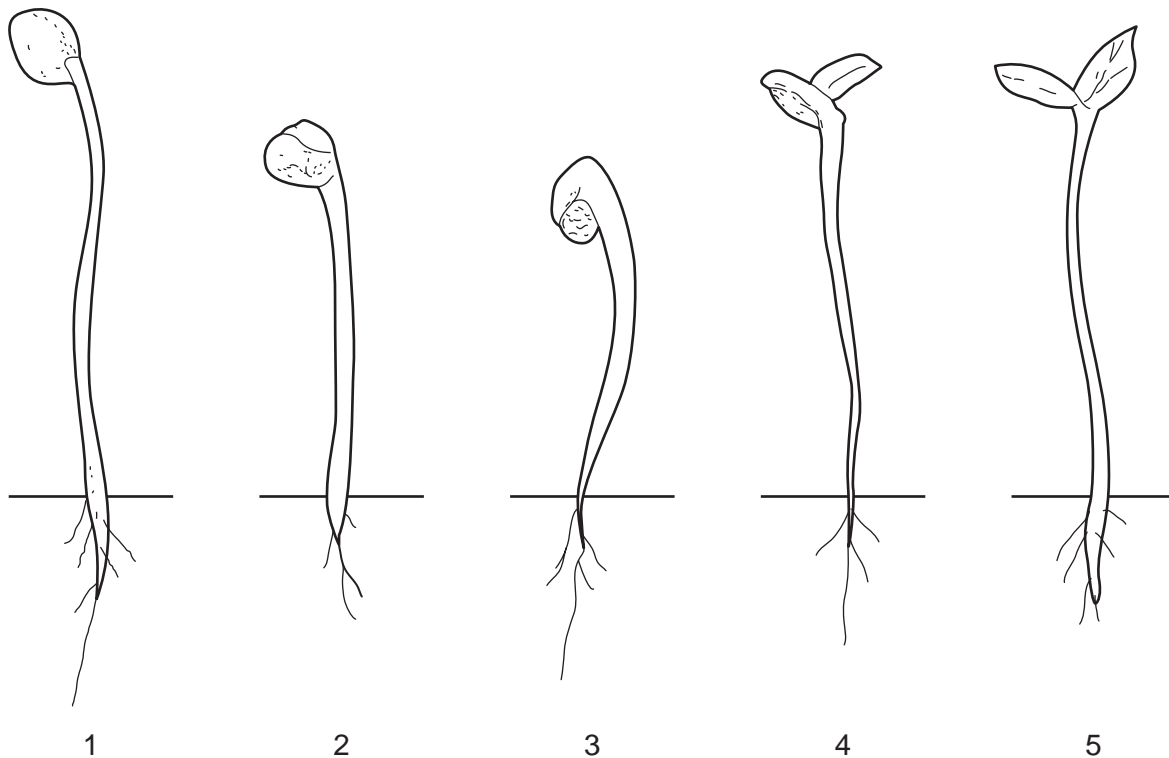


Fig. 1.2

- (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]

- (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]

BLANK PAGE

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

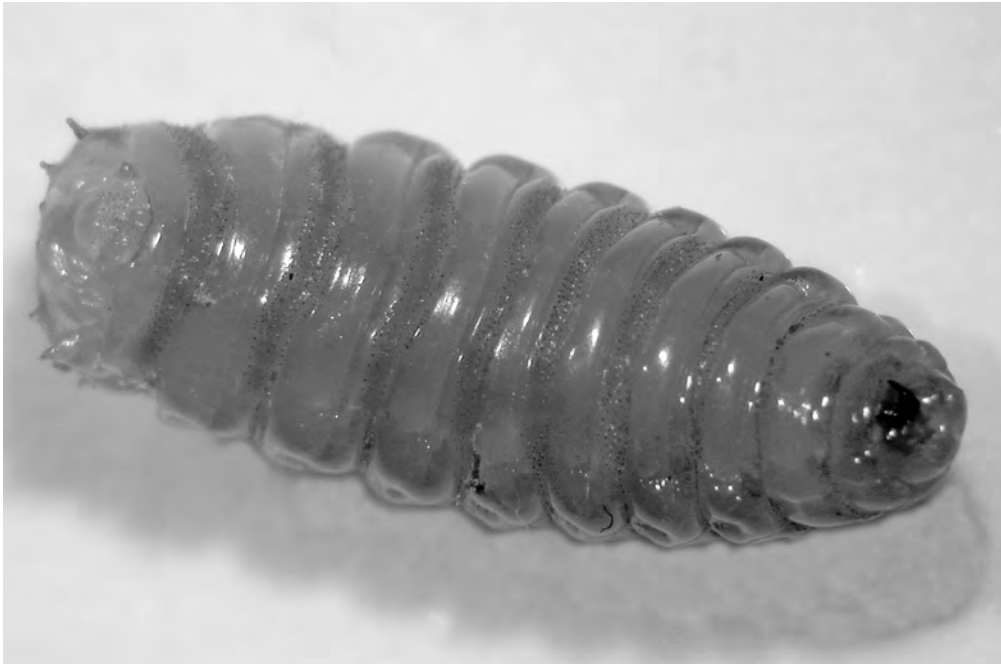


Fig 2.1

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

[4]

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

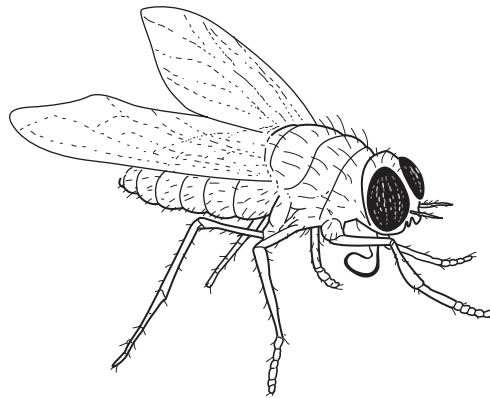


Fig. 2.2

(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]

- (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



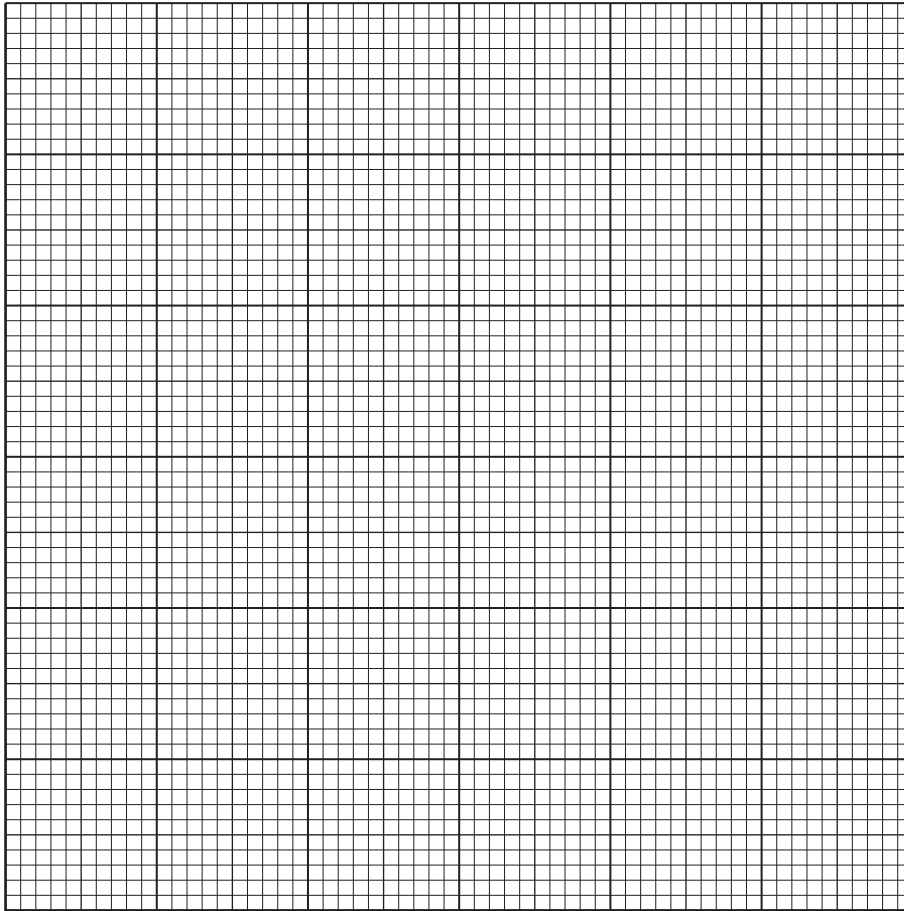
Fig. 2.4

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

- (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.

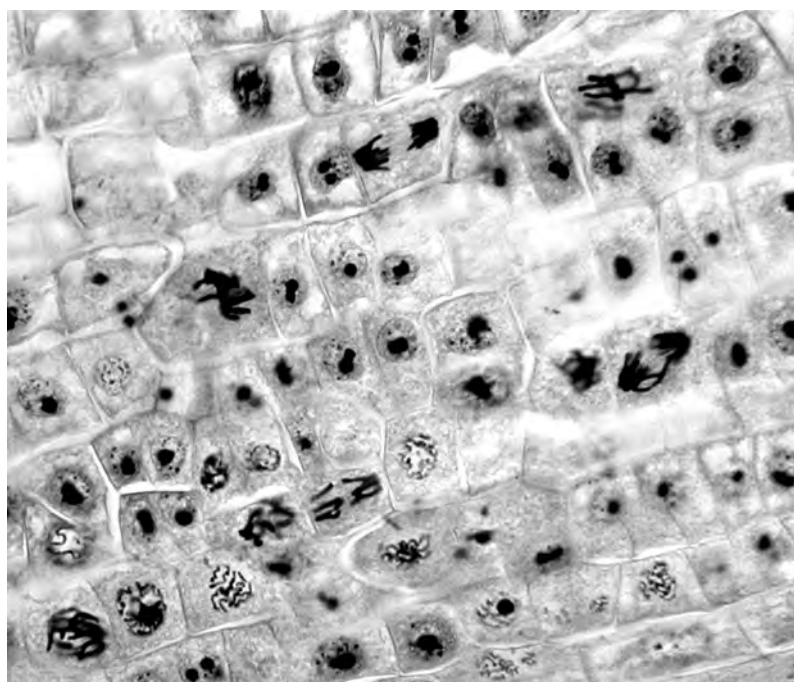


Fig. 3.1

- (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]

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

[6]

[Total: 6]

BLANK PAGE

Permission to reproduce items where third-party owned material protected by copyright is included has been sought and cleared where possible. Every reasonable effort has been made by the publisher (UCLES) to trace copyright holders, but if any items requiring clearance have unwittingly been included, the publisher will be pleased to make amends at the earliest possible opportunity.

University of Cambridge International Examinations is part of the Cambridge Assessment Group. Cambridge Assessment is the brand name of University of Cambridge Local Examinations Syndicate (UCLES), which is itself a department of the University of Cambridge.