

Reproduction

Question Paper 3

Level	IGCSE
Subject	Biology
Exam Board	CIE
Topic	Reproduction
Sub-Topic	
Paper Type	Alternative to Practical
Booklet	Question Paper 3

Time Allowed: 54 minutes

Score: /45

Percentage: /100

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

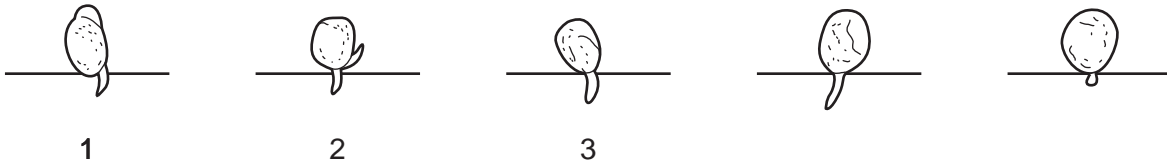


Fig. 1.1

seedlings grown in a warm place at 30 °C

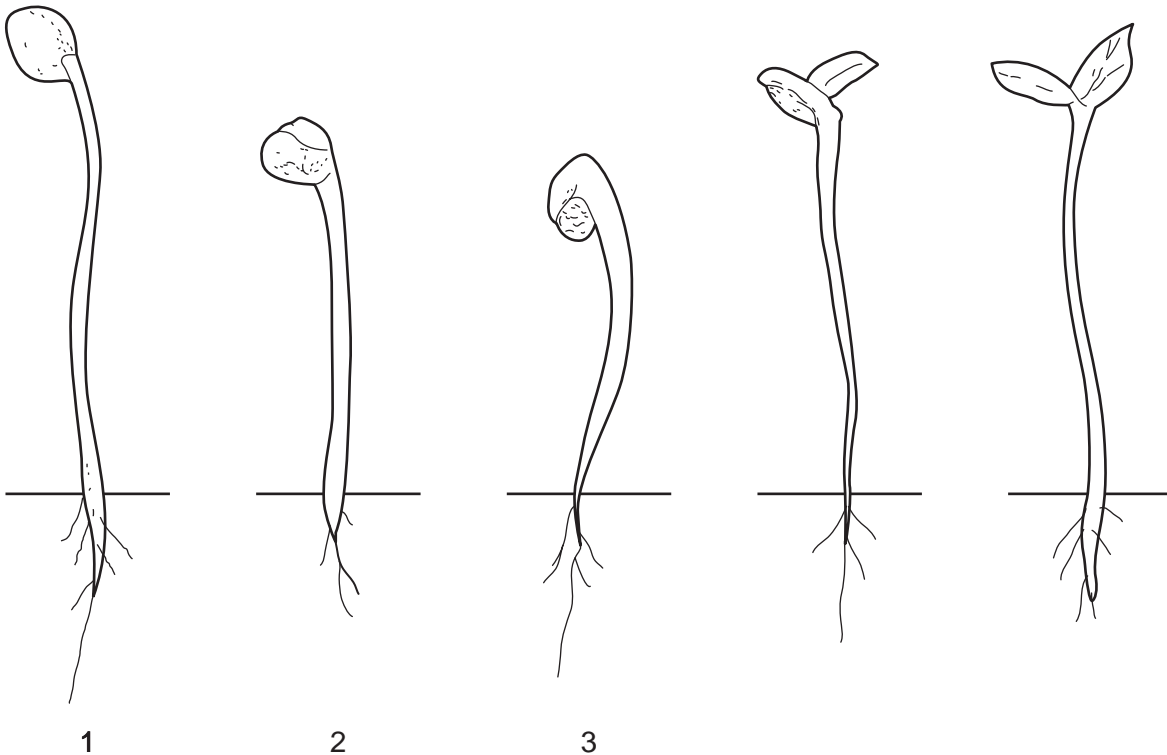


Fig. 1.2

- (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.

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..... [6]

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

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..... [1]

[Total: 12]

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

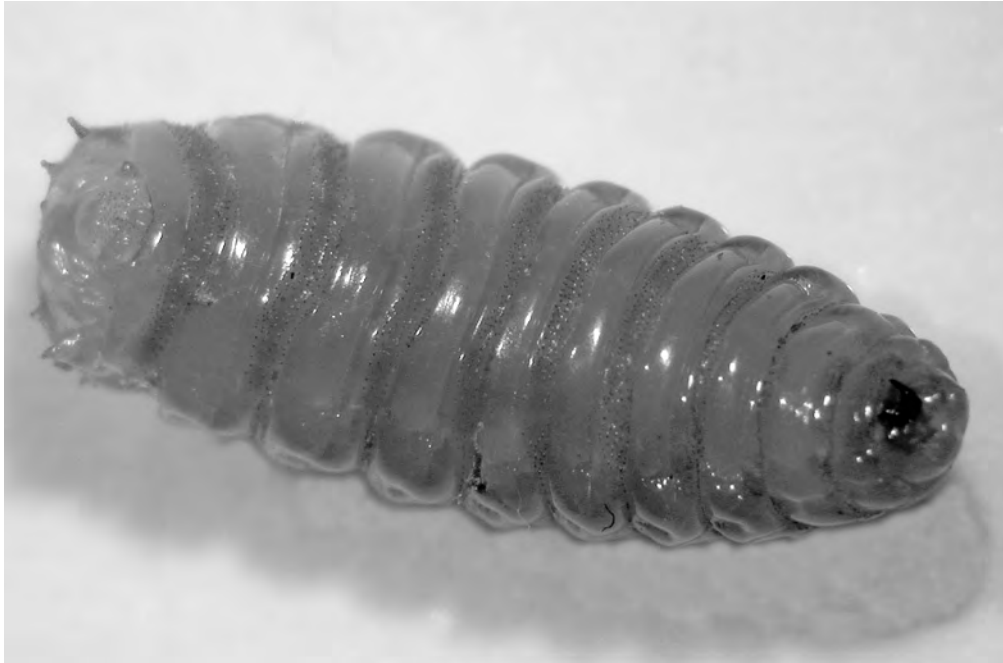


Fig 2.1

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

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

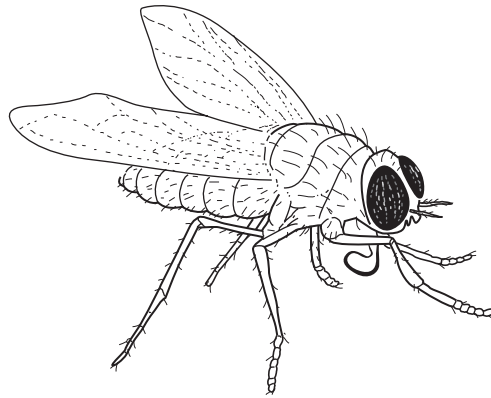


Fig. 2.2

(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



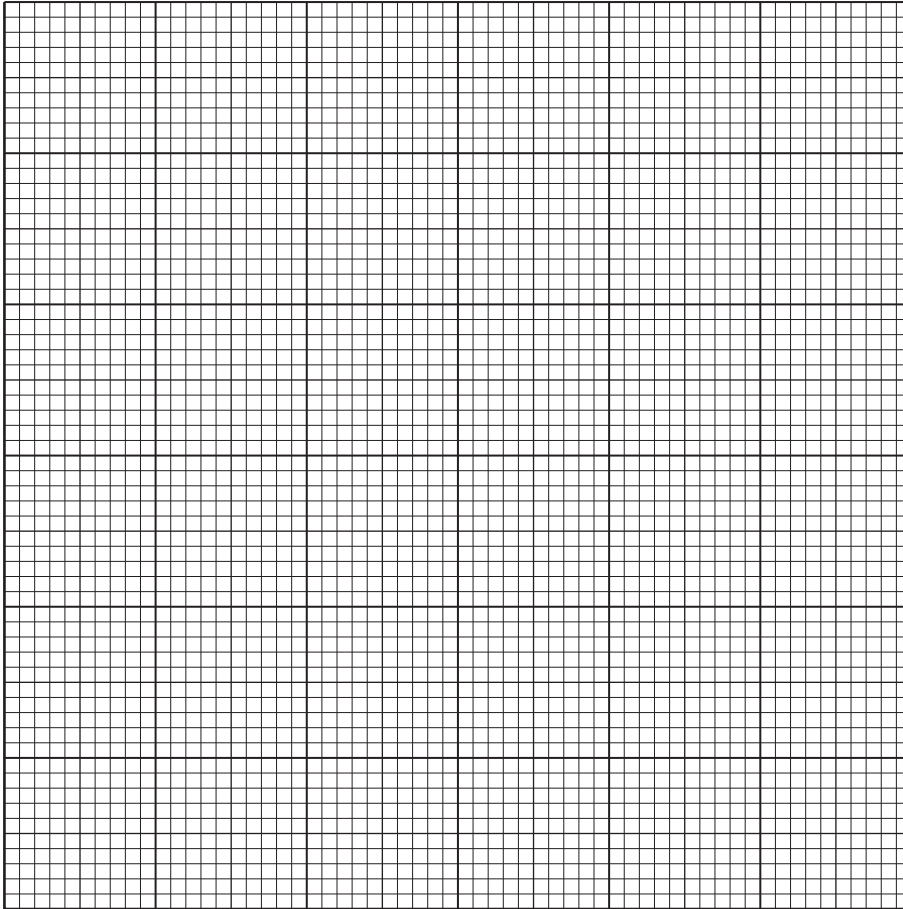
Fig. 2.4

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.

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..... [3]

[Total:16]

- 3 Some seeds were obtained by breeding a pair of tobacco plants. Seeds from a single packet of these tobacco seeds were germinated in two dishes labelled **A** and **B**. Fig. 3.1 shows the germinating tobacco seeds.

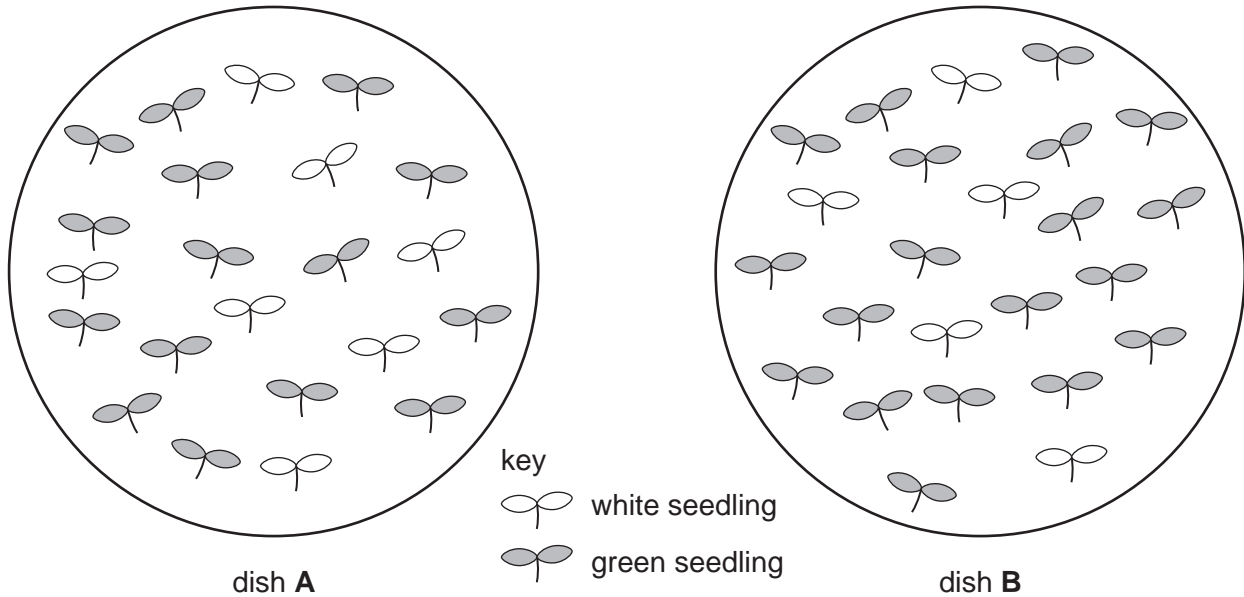


Fig. 3.1

- (a) Count the number of green seedlings and the number of white seedlings on the two dishes **A** and **B** and complete Table 3.1.

Table 3.1

dish	number of seedlings	
	green	white
A		
B		
total		

[3]

- (b) Using the total numbers in Table 3.1, suggest and explain what these results indicate about the inheritance of the green pigment.

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[2]

(c) Suggest and explain which of these seedlings would be able to grow and produce flowers.

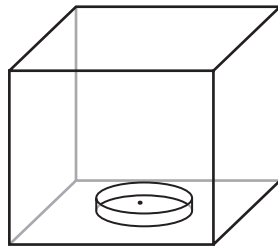
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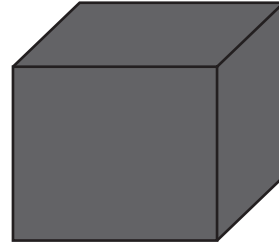
..... [3]

[Total: 8]

- 4 Two cress seeds were germinated in shallow dishes, which were placed in boxes as shown in Fig. 3.1. The boxes were placed by a sunlit window.



clear plastic box

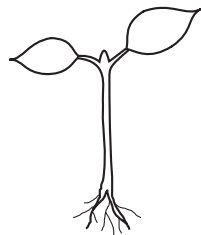


box made of black card

Fig. 3.1

The dishes were removed from the boxes after a week and the seedlings observed.

The seedlings differed in appearance, as shown in Fig. 3.2.



the seedling from the clear plastic box



the seedling from the box made of black card

Fig. 3.2

- (a) (i) Complete the table to describe two differences, visible in Fig. 3.2, between the seedling from the clear plastic box and the seedling from the box made of black card.

seedling from the clear plastic box	seedling from the box made of black card
1
2

(ii) Outline how this method could be improved to obtain more accurate and reliable results.

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..... [4]

Fig. 3.3 shows a box with a slit in one side and the seedling that was grown in the box.

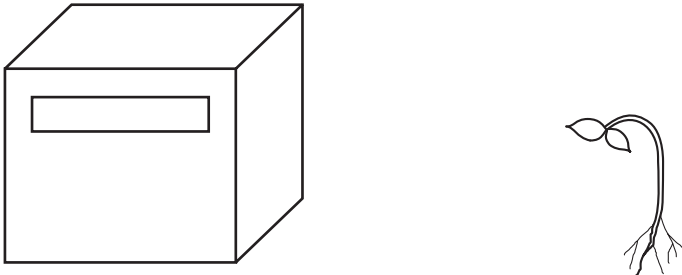


Fig. 3.3

(b) Describe and explain the appearance of the seedling grown in this box.

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..... [3]

[Total 9]