

Control and co-ordination in plants

Question Paper 2

Level	International A Level
Subject	Biology
Exam Board	CIE
Topic	Control and co-ordination
Sub Topic	Control and co-ordination in plants
Booklet	Theory
Paper Type	Question Paper 2

Time Allowed : 81 minutes

Score : / 67

Percentage : /100

Grade Boundaries:

A*	A	B	C	D	E	U
>85%	'77.5%	70%	62.5%	57.5%	45%	<45%

- 1 The passage below summarises the effects of gibberellins on seed germination.

Complete the passage by using the most appropriate scientific term(s).

When a seed is shed from the parent plant, it is in a state of ,
which means it is metabolically inactive.

When water is absorbed by a seed, it stimulates the production of gibberellin by the
..... within the seed. The gibberellin stimulates the synthesis of
amylase by cells in the layer.

Amylase hydrolyses starch molecules in the converting them
to soluble molecules. These molecules are converted to
glucose which is transported to the embryo, providing a source of carbohydrate that can be
respired to provide as the embryo begins to grow.

Gibberellin causes these effects by regulating genes that are involved in the synthesis of
amylase. It has been shown that application of gibberellin to seeds can cause an increase in
the of the DNA coding for amylase.

[Total: 7]

2 The passage below summarises the effects of auxin on the growth of a shoot.

Complete the passage by using the most appropriate scientific term(s).

Auxin is synthesised in the growing tips of shoots (apical buds). It is transported from here down the shoot by from cell to cell and also to a lesser extent by flow in the

Auxin seems to be involved in determining whether a plant grows upwards or whether it branches sideways. When the apical bud is actively growing, it tends to stop lateral buds from growing. This is called apical The plant grows upwards rather than branching out sideways.

However, if the apical bud is cut off, the lateral buds start to grow. It is thought that removal of the apical bud causes the concentration of auxin in lateral buds to so the buds can now grow by cell and cell

[Total: 7]

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5 An investigation was carried out into the effects of a plant growth regulator, auxin (IAA), on apical dominance.

- The apical buds of 20 pea plants were cut off and discarded.
- The cut surfaces of 10 pea plants were coated with an inert paste containing auxin.
- The cut surfaces of the other group of 10 pea plants were coated with the inert paste alone.
- A further group of 10 pea plants did not have their apical buds removed and were not coated with paste. This was a control group.

The lengths of the side shoots of plants in each of the three groups were measured at regular time intervals and mean values calculated.

The results are shown in Fig. 7.1.

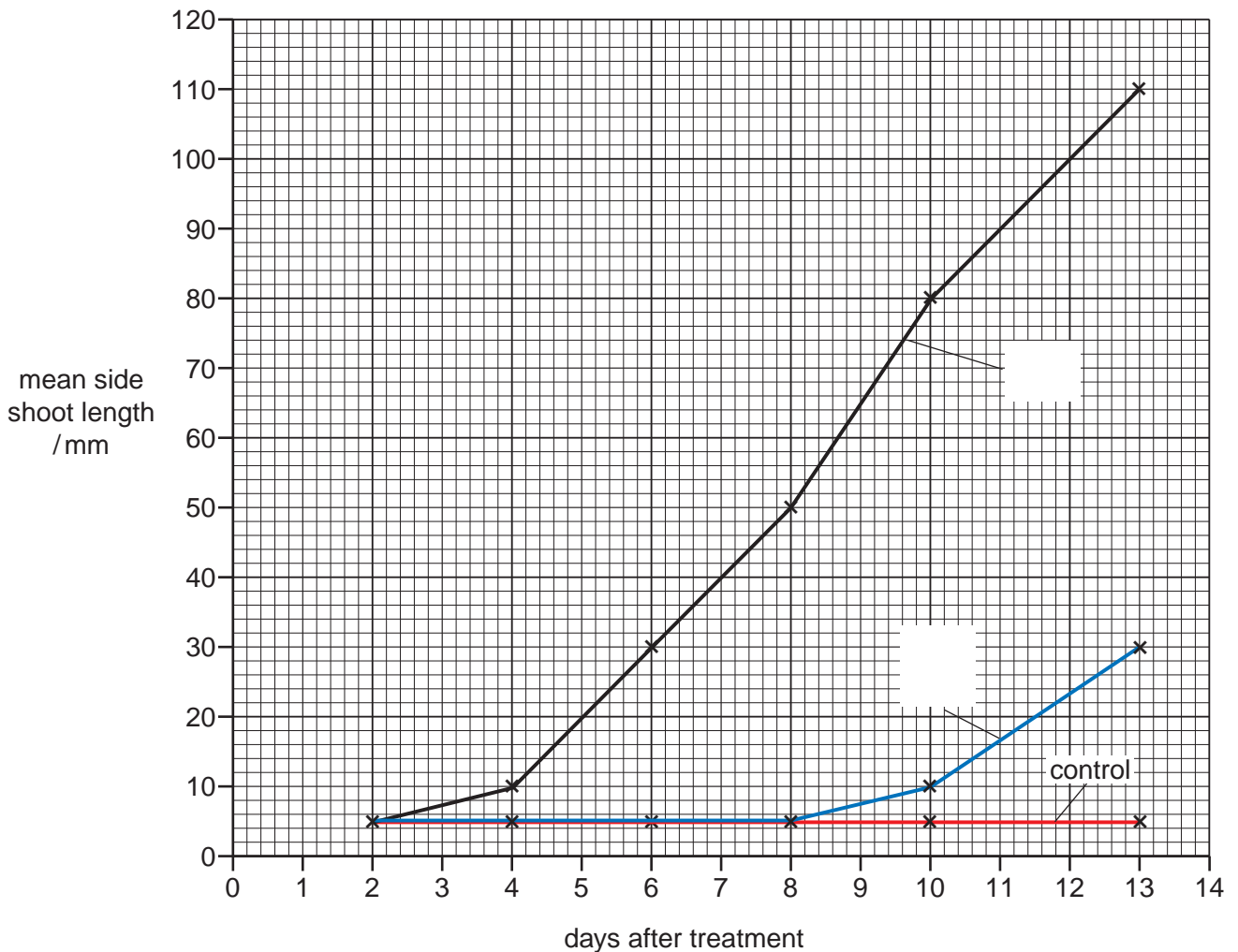


Fig. 7.1

- (a) Explain why the side shoots increase in length when the terminal buds are removed.

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..... [3]

- (b) Calculate the percentage difference, at 13 days, in the mean length of side shoots of plants treated with paste alone compared with the plants treated with paste and auxin.

Give your answer to the nearest whole number.

Show your working.

Answer% [2]

- (c) Using data from Fig. 7.1, describe **and** explain the effect of auxin on the growth of side shoots.

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..... [3]

[Total: 8]

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