14. Coordination and response

14.5 Tropic responses

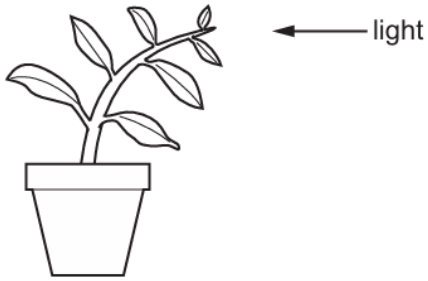
Paper 1 and 2

Question Paper

Paper 1

Questions are applicable for both core and extended candidates

1 The diagram shows a plant shoot growing towards the light.



What is the name of this plant shoot's response to light?

A gravitropism

B photosynthesis

C phototropism

D reflex

2 What is phototropism?

A absorbing mineral ions

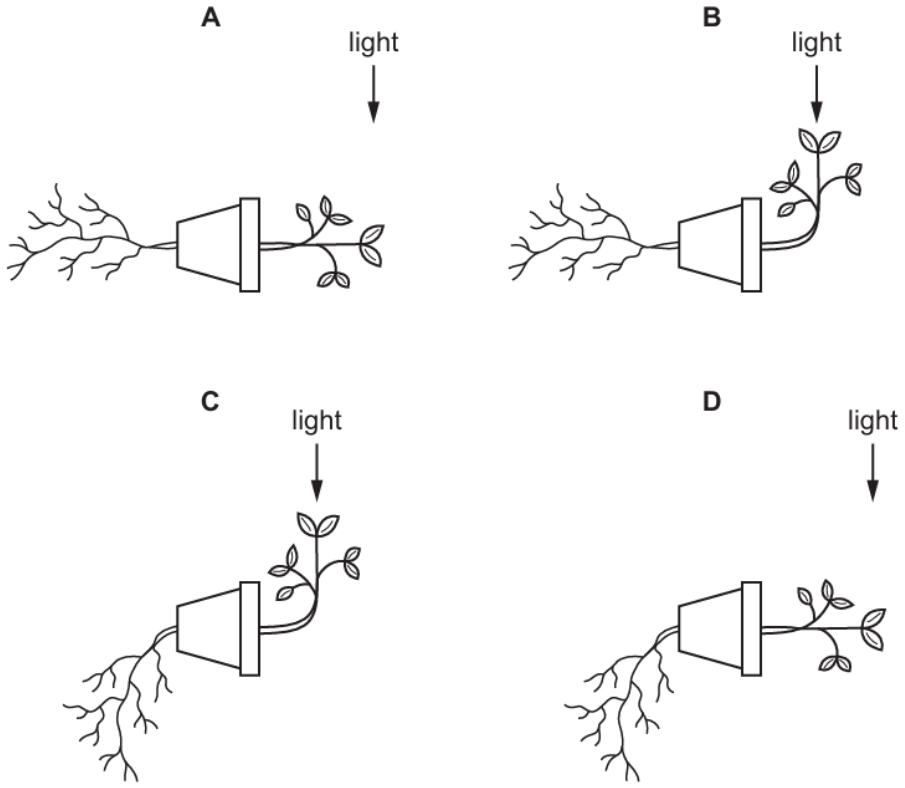
B absorbing water

C directional growth in response to gravity

D directional growth in response to light

3 A plant pot is placed on its side.

Which diagram shows a plant with roots showing gravitropism and shoots showing phototropism?



4 Which statements about tropisms in plants are correct?

1 Shoots grow towards light and away from gravity.

2 Shoots grow away from light and towards gravity.

3 Roots grow towards light and away from gravity.

4 Roots grow away from light and towards gravity.

A 1 and 3 **B** 1 and 4 **C** 2 and 3 **D** 2 and 4

5 Which words complete the statements?

Plant growth towards light is called .....1..... .

When a plant shoot grows towards a light source, it is showing a .....2..... to light.

Light acts as the .....3..... .

	1	2	3
A	movement	response	stimulus
B	movement	stimulus	response
C	phototropism	response	stimulus
D	phototropism	stimulus	response

6 Which row about tropic responses is correct?

	gravitropism	phototropism
A	root grows away from gravity	shoot grows away from light source
B	root grows away from gravity	shoot grows towards light source
C	root grows towards gravity	shoot grows away from light source
D	root grows towards gravity	shoot grows towards light source

7 Which statement describes the plant response known as phototropism?

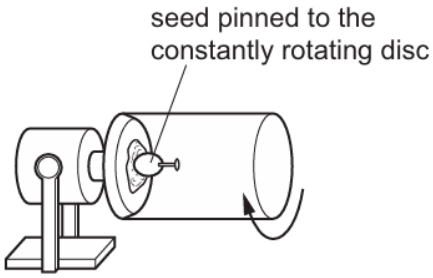
A All parts of a plant grow towards light.

B All parts of a plant grow away from light.

C Plant shoots grow towards light.

D Plant roots grow towards light.

8 A seed is placed and grown on a rotating disc, as shown.



Which diagram shows the appearance of the seedling shoot after seven days?

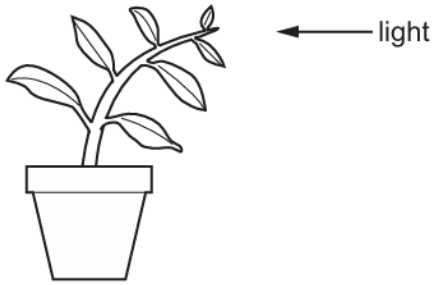
A **B** **C** **D**

9 Gravitropism and phototropism are names given to specific plant growth responses.

How do shoots and roots normally respond?

	direction of growth of shoots		direction of growth of roots	
	light	gravity	light	gravity
A	towards	away	away	towards
B	away	towards	towards	away
C	towards	away	towards	away
D	away	towards	away	towards

10 The diagram shows a plant shoot growing towards the light.



Which response is shown by the shoot of the plant?

A gravitropism

B photosynthesis

C phototropism

D reflex

11 What is meant by the term *tropism*?

A absorption of light by chlorophyll

B growth of parts of a plant towards or away from a stimulus

C growth of seed into a small plant

D level at which an organism feeds in a food chain

Paper 2

Questions are applicable for both core and extended candidates unless indicated in the question

12 A shoot grows towards the direction of light.

These statements compare shoot cells on the side in the light with cells on the side in the shade.

1 Cells on the side in the light have more auxin.

2 Cells on the side in the shade have more auxin.

3 Cells on the side in the light elongate more.

4 Cells on the side in the shade elongate more.

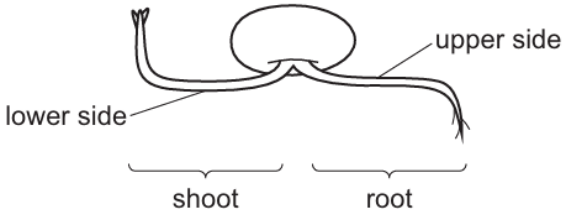
Which statements explain why the shoot grows towards the light? **(extended only)**

A 1 and 3 **B** 1 and 4 **C** 2 and 3 **D** 2 and 4

13 A growing seedling was pinned sideways onto a wooden board that was covered in wet blotting paper.

The seedling was kept in a dark box.

The diagram shows the seedling after 24 hours. Auxin had become concentrated on the lower side of the shoot and the root.



What can be concluded from this experiment about the effect of auxin on the seedling? **(extended only)**

A A high concentration of auxin stimulates cell elongation on the lower side of the root.

B A high concentration of auxin stimulates cell elongation on the lower side of the shoot.

C A low concentration of auxin stimulates cell elongation on the upper side of the shoot.

D A low concentration of auxin stimulates cell elongation on the upper sides of the shoot and the root.

14 What is a correct statement about auxin in shoots? **(extended only)**

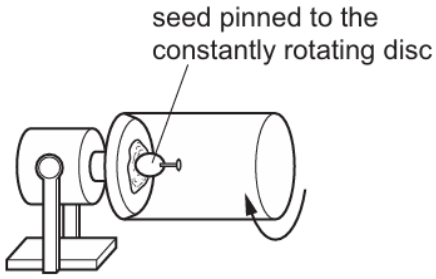
A It is made only on the shaded side of the shoot.

B It is more concentrated on the side of the shoot that receives the most light.

C It moves through the shoot by osmosis.

D It stimulates cell elongation.

15 A seed is placed and grown on a rotating disc, as shown.



Which diagram shows the appearance of the seedling shoot after seven days?

A **B** **C** **D**

16 Which statements about auxin are correct? **(extended only)**

1 Auxin is made in all cells in plants.

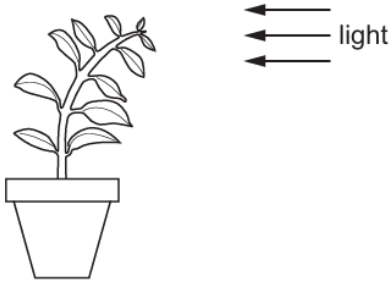
2 Auxin causes cells to elongate.

3 Auxin moves between the cells by osmosis.

4 Auxin is unequally distributed.

A 1 and 3 **B** 1 and 4 **C** 2 and 3 **D** 2 and 4

17 The diagram shows a plant next to a window.



Which statement explains the plant shoot's growth? **(extended only)**

A There is a higher concentration of auxin in the cells on the shaded side of the shoot. This prevents cell elongation.

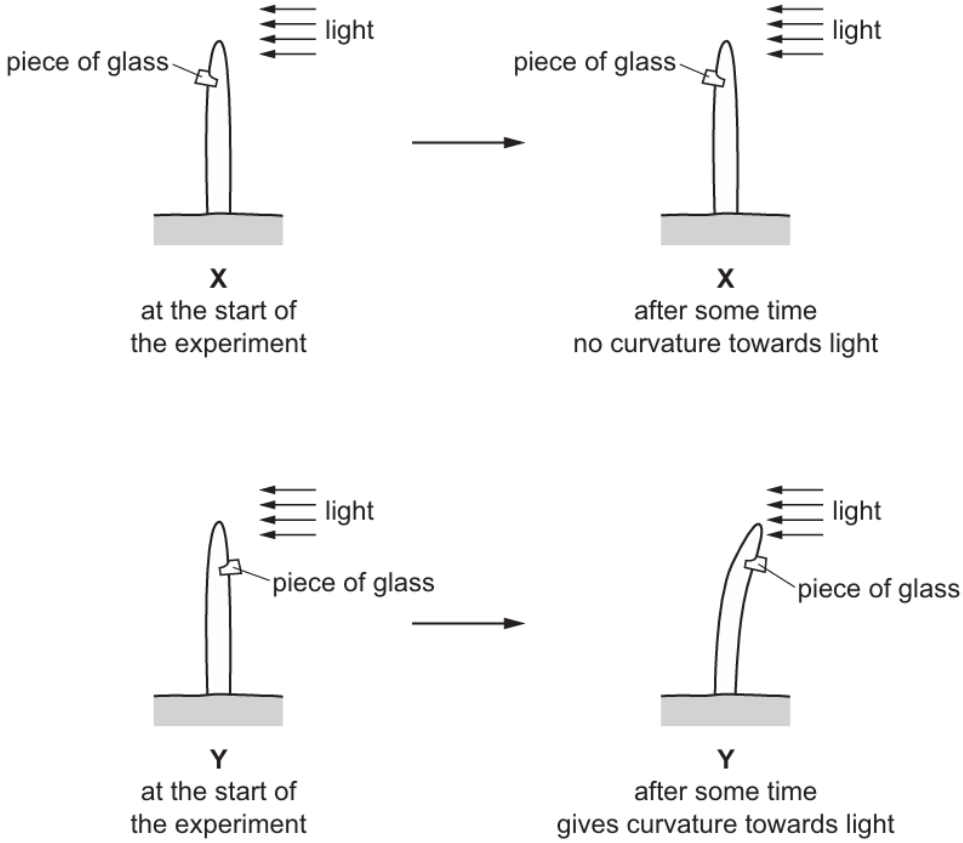
B There is a higher concentration of auxin in the cells on the shaded side of the shoot. This stimulates cell elongation.

C There is a lower concentration of auxin in the cells on the shaded side of the shoot. This prevents cell elongation.

D There is a lower concentration of auxin in the cells on the shaded side of the shoot. This stimulates cell elongation.

18 A student used two seedlings X and Y to investigate phototropism. **(extended only)**

The diagram shows their investigation.



Which statement explains the difference in results between **X** and **Y**? **(extended only)**

A The piece of glass destroyed the auxin on the shaded side of the seedling.

B The piece of glass destroyed the auxin on the side of the seedling facing the light.

C The piece of glass in **X** stopped the auxin travelling down the shaded side of the seedling.

D The piece of glass in **X** stopped the auxin travelling down the side of the seedling facing the light.