

WJEC (Eduqas) Biology GCSE  
Topic 4.4 Plant Hormones  
Questions by Topic

1.

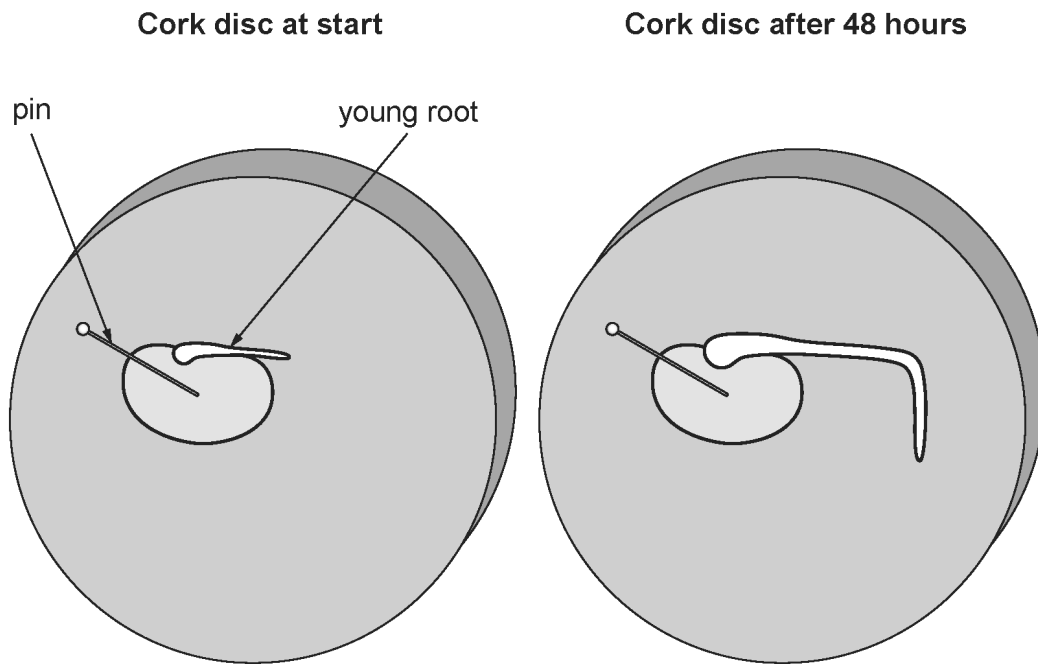
(a) What is meant by the term *tropism*?

[1]

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(b) Some students in a school laboratory pinned a young bean seedling to a vertical (upright) cork disc which they left in the dark for 48 hours. After 48 hours the seedling was examined and the young root was found to have **grown** downwards. This is shown in the diagram below.



(i) State why the young root has **grown** downwards.

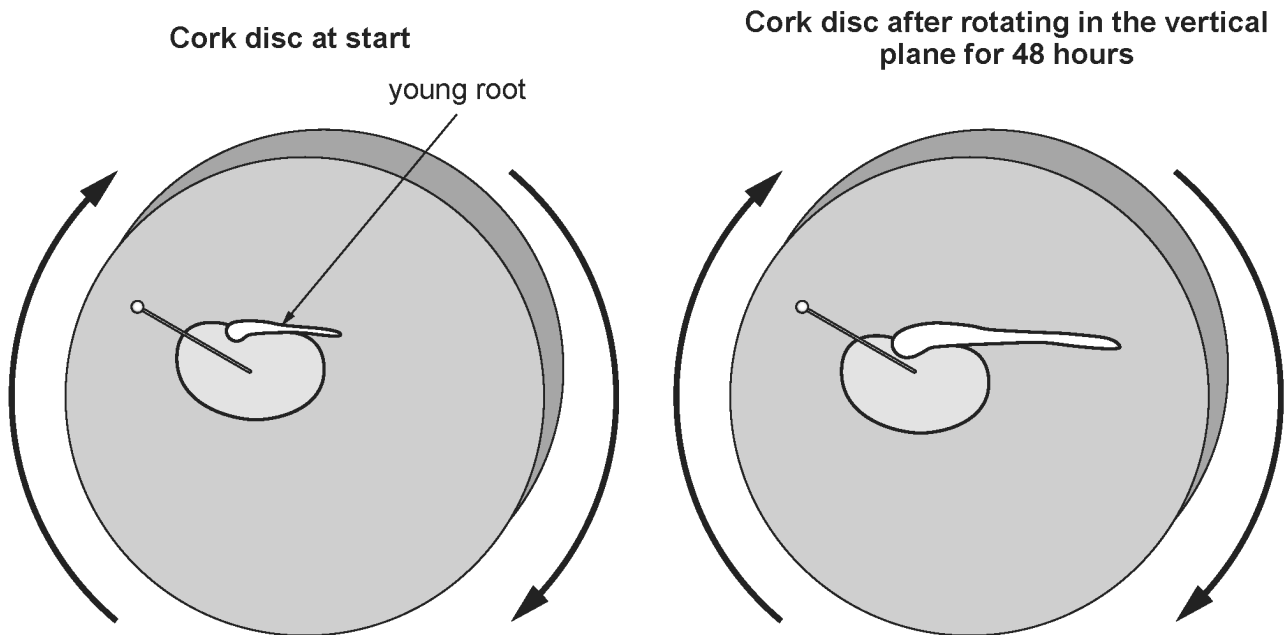
[1]

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- (ii) At the same time another young bean seedling was pinned to a rotating vertical cork disc. After 48 hours in the dark, the young root was found to have continued to grow straight.

This is shown in the diagram below.



Give a reason for the appearance of the young root after 48 hours.

[1]

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2. Describe an experiment you would set up to investigate the positive growth response (phototropism) of plant shoots to light coming from one side. In your account you must explain the use of a control in your investigation. [6 QWC]

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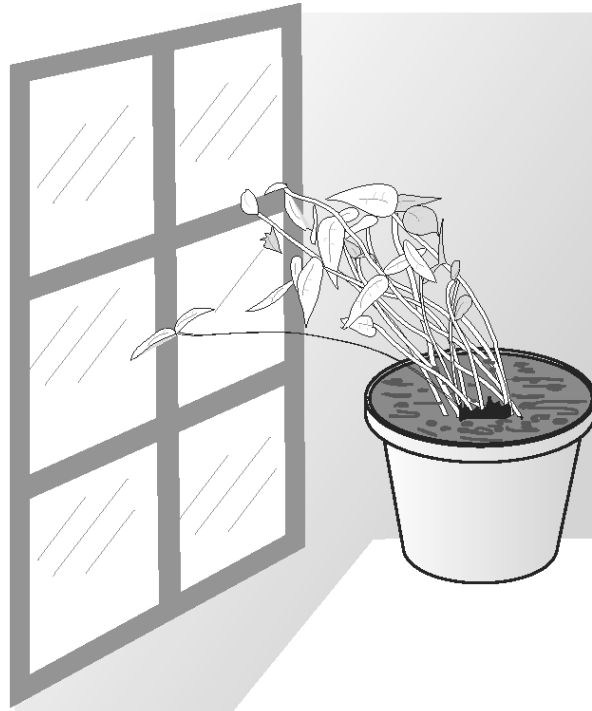
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3. The plant in the diagram below shows positive phototropism.



(a) In a phototropic response, state what is:

(i) the stimulus; ..... [1]

(ii) the response. .... [1]

(b) **Circle** the correct answer below to complete the following sentence. [1]

The response is due to **gravity** / a hormone / an impulse.

(c) State the advantage of phototropism to the plant. [1]

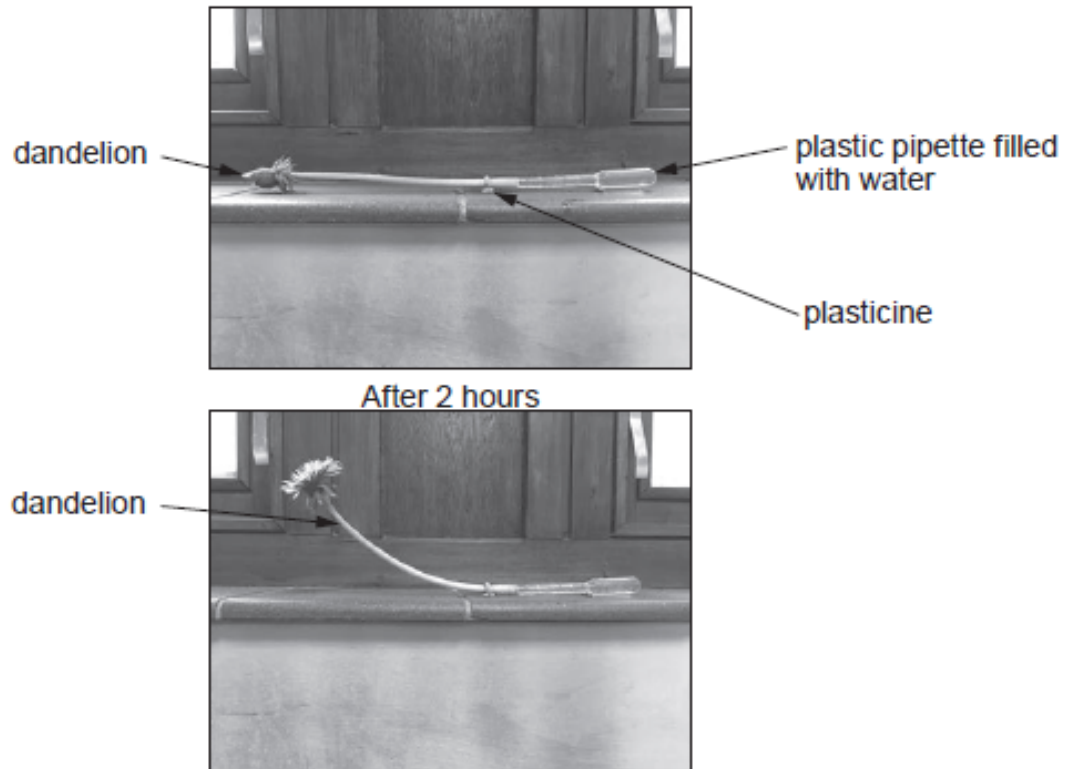
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4. Some students investigated the tropic responses of the dandelion (*Taraxacum officinale*).

(a) State what is meant by tropic responses. [1]

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(b) The students set up the apparatus shown below on a south-facing window-sill.



The students concluded that the dandelion had shown positive phototropism.

Suggest why the students cannot be confident in their conclusion. Explain how they could change the method to improve confidence in their conclusion. [3]

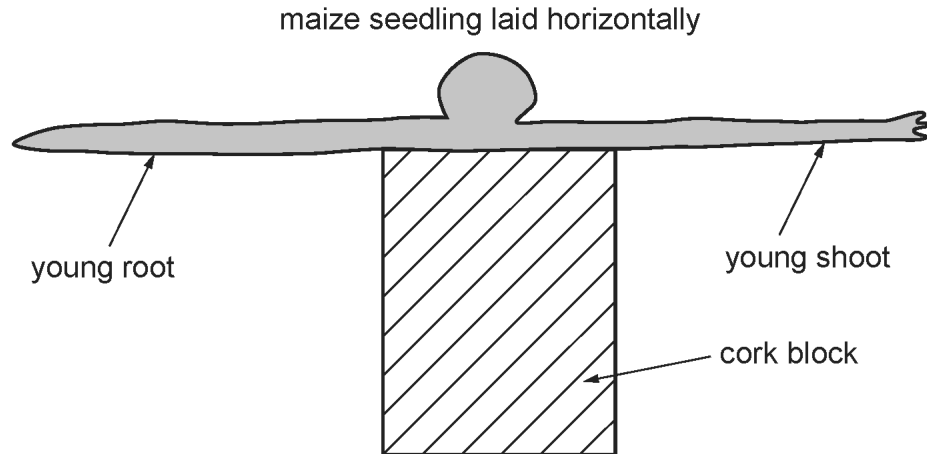
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(c) State the name of the plant hormone responsible for phototropism. [1]

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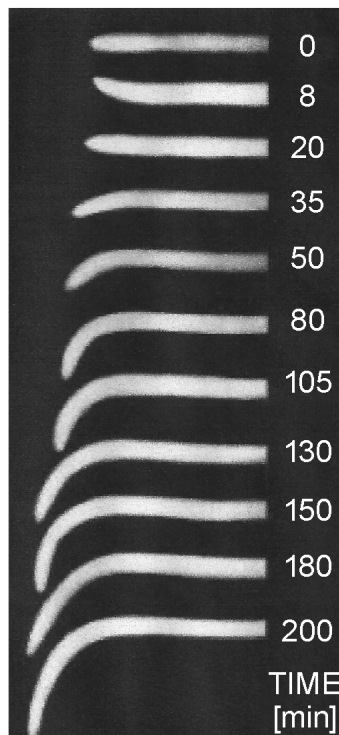
5.

A young maize seedling was laid horizontally in a dark room.



A series of time-lapse photographs was taken of the **young root**, at various time intervals, over a 200 minute period.

The series of photographs is shown below.



(a) (i) State three observations, **shown in the photographs**, about the young root over the time of the investigation. [3]

I. ....

II. ....

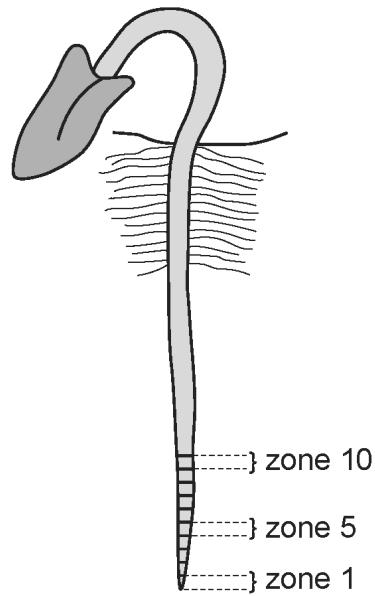
III. ....

(ii) Name the response shown by the young root between 35 and 200 minutes. [1]

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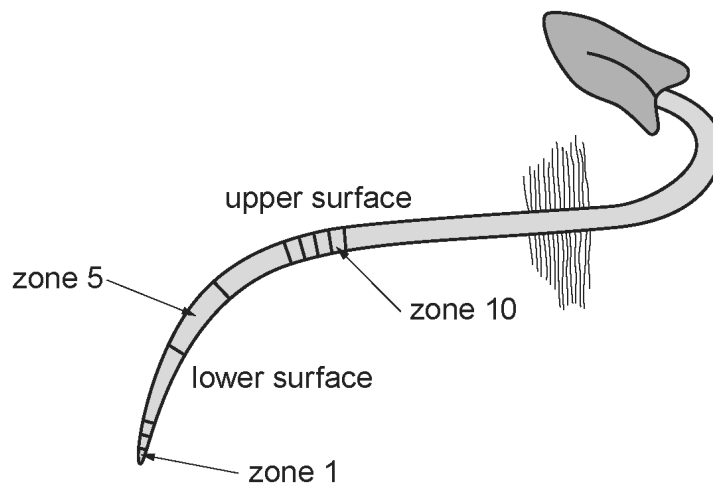
- (b) The root tip of a young seedling was marked with ink at 2 mm intervals. Each of the 2 mm divisions is known as a zone and three zones are labelled in the drawing.

Drawing 1



The seedling was laid horizontally for 180 minutes after which time a drawing was made. This is shown below.

Drawing 2



- (i) **Using Drawing 2 only** compare the growth rate of the upper and lower surfaces of the young root. [1]

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- (ii) Name the type of chemical responsible for the curvature of the young root. [1]

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6.

(a) What is a *tropism*?

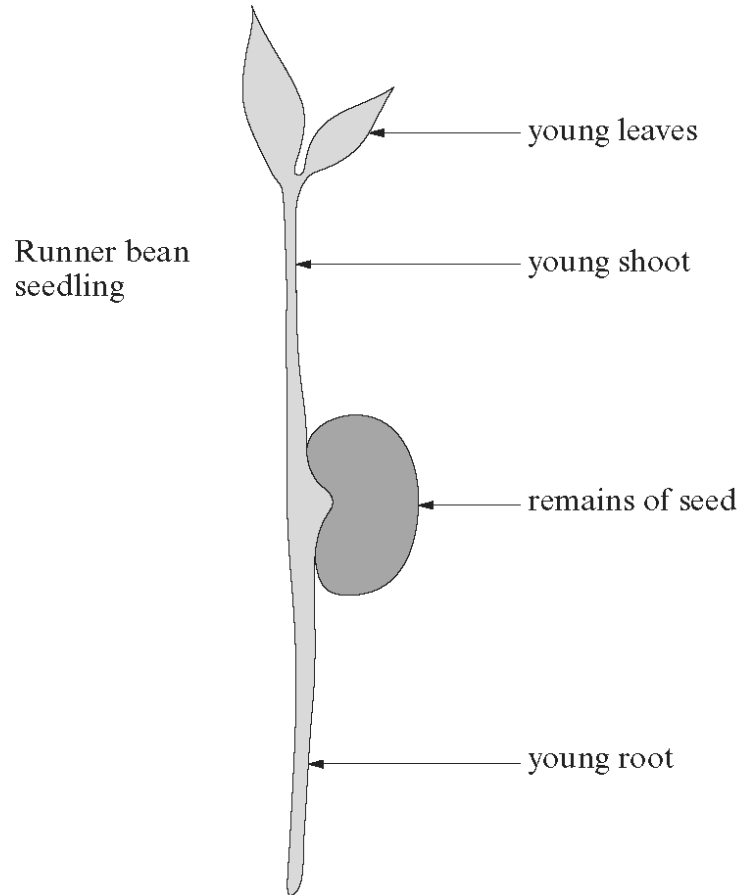
[2]

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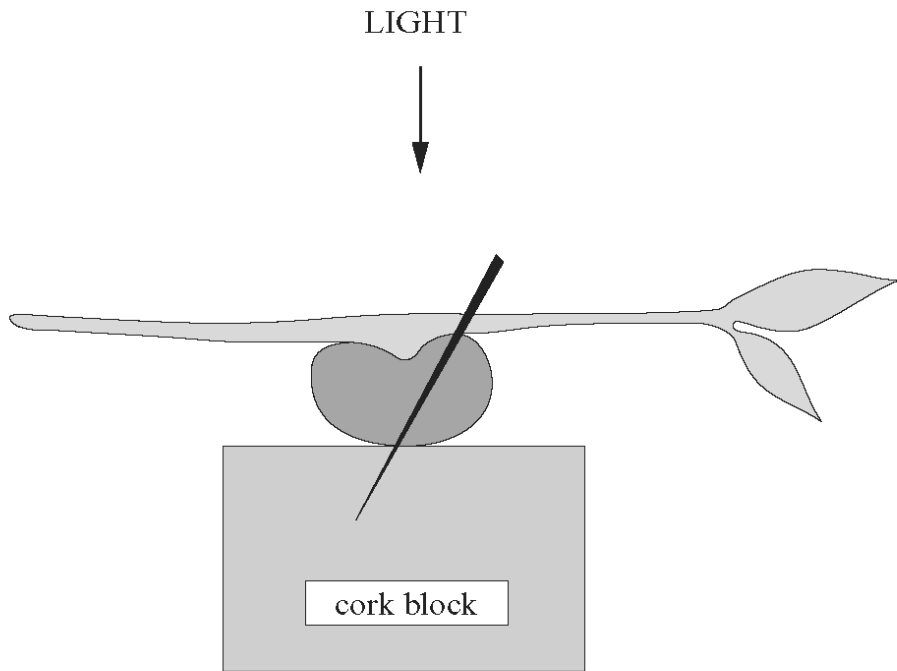
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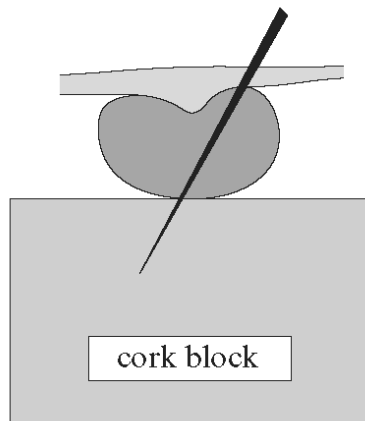
(b) A number of runner bean seedlings were grown in soil in a laboratory. After 5 days the seedlings were removed from the soil and their young roots were washed. The straightest of the seedlings was then selected.



The runner bean seedling was positioned horizontally and pinned to a cork block as shown below.



- (i) After 3 days the seedling was examined.  
 Complete the diagram below by sketching the expected appearance of the young root and shoot. [2]



- (ii) Name the response shown by

I the root, .....

[1]

II the shoot. ....

[1]

6