

Question Number	Answer	Acceptable answers	Mark
<b>1(a)(i)</b>	C - positive gravitropism		<b>(1)</b>

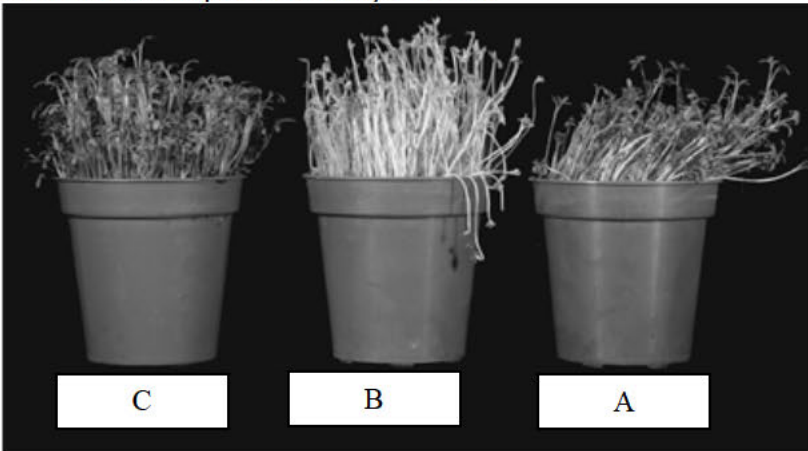
Question Number	Answer	Acceptable answers	Mark
<b>1(a)(ii)</b>	<p>An explanation to include three of the following points:</p> <p>auxin (1)</p> <p>moves to / on the underside of the plant root (1)</p> <p>inhibits the elongation of root cells (on the underside of the root) (1)</p> <p>cells on upper side continue to elongate (1)</p> <p>making the root grow downwards (1)</p>	Grows towards gravity (1)	<b>(3)</b>

Question Number	Answer	Acceptable answers	Mark
<b>1(a)(iii)</b>	<p>A suggestion to include the following points</p> <p>anchor the plant /make plant stable (1)</p> <p>root can reach water / absorb water / access to mineral ions (1)</p>	Accept nutrients/named mineral ion/ mineral for mineral ions	<b>(2)</b>

Question Number	Answer	Acceptable answers	Mark
<b>1(b)(i)</b>	<p>A suggestion to include the following</p> <p>to see what the shoot should do under normal conditions /to compare the control results with the experimental results (1)</p>		<b>(1)</b>

Question Number	Answer	Acceptable answers	Mark
<b>1(b)(ii)</b>	<p>A explanation to include three of the following:</p> <p>Rebecca's shoot did not curve and Andrew's shoot did curve (1 )</p> <p>Rebecca's experiment (black cap will) does not allow light to shine on the tip (1)</p> <p>auxin / plant growth substance will not move (to shaded side of shoot) / is evenly distributed (1)</p> <p>Andrew's experiment</p> <p>jelly will allow auxin / plant growth substance to diffuse /move (through to shaded side) (1)</p> <p>causing cell elongation (1)</p>	<p>auxin is made/found in the tip</p>	<p><b>(3)</b></p>

**(Total for question 1 = 10 marks)**

Question number	Answer	Mark
2(a)(i)	<p>1 mark for 1 or 2 correctly labelled pots 2 marks for all pots correctly labelled</p>  <p style="text-align: center;">C                      B                      A</p>	(2)

Question number	Answer	Mark
2(a)(ii)	D	(1)

Question number	Answer	Mark
2(a)(iii)	Auxin	(1)

Question number	Answer	Mark
2(b)	<p>An answer that combines the following points to provide a logical description of the method:</p> <ul style="list-style-type: none"> <li>• remove the tip from one of the plant shoots and leave the other (1)</li> <li>• measure the changes in growth and direction of movement (1)</li> </ul>	(2)

Question number	Answer	Mark
2(c)(i)	<p>An explanation that makes reference to: identification – knowledge (1 mark) and reasoning /justification – knowledge (1 mark):</p> <ul style="list-style-type: none"> <li>• it surrounds the pine leaf (1)</li> <li>• so prevents water loss from the pine leaf/prevents dehydration (1)</li> </ul>	(2)

Question number	Answer	Mark
2(c)(ii)	D	(1)

**(Total for question 2 = 9 marks)**

Question Number	Answer	Acceptable answers	Mark
<b>3(a)(i)</b>	<b>D</b> <input checked="" type="checkbox"/> positive phototropism		<b>(1)</b>

Question Number	Answer	Acceptable answers	Mark
<b>3(a)(ii)</b>	An explanation to include the following linked points  (auxins) move to the shaded side of a shoot (1)  causing cells on the shaded side to <u>elongate</u> (1)	accept move to the side opposite the light  accept get longer for elongate Ignore references to cell division	<b>(2)</b>

Question Number	Answer	Acceptable answers	Mark
<b>3(b)(i)</b>	there is an increase in the % of bananas that ripen as the ethylene concentration increases	Ignore positive effect	<b>(1)</b>

Question Number	Answer	Acceptable answers	Mark
<b>3(b)(ii)</b>	An explanation to include two of the following points <ul style="list-style-type: none"> <li>• concentration of ethylene to use is 3% (1)</li> <li>• would be more expensive to increase the ethylene concentration above 3%</li> <li>• when there is no added ripening benefits past 3%(1)</li> <li>• below 3% not all bananas are ripe (1)</li> </ul>	Do not credit ideas related to longer shelf life as the question asks about ripening	<b>(2)</b>

Question Number		Indicative Content	Mark
<b>QWC</b>	<b>*3(c)</b>	<p>A description to include some of the following points</p> <ul style="list-style-type: none"> <li>• selective weedkillers</li> <li>• allows broad-leaved plants to grow uncontrollably and die</li> <li>• narrower-leaved plants and crops left unaffected</li> <li>• auxins and or gibberellins are used</li> </ul> <ul style="list-style-type: none"> <li>• rooting powders</li> <li>• plant cuttings are dipped into rooting powder</li> <li>• roots develop rapidly</li> <li>• large number of plants can be produced from the same plant</li> <li>• no need to wait for plants to grow from seeds</li> <li>• auxins are used</li> </ul> <ul style="list-style-type: none"> <li>• seedless fruit production</li> <li>• the fruit will develop but the seeds inside will not</li> <li>• fruits are able to grow larger (larger biomass)</li> <li>• gibberellins are used</li> </ul>	<b>(6)</b>
<b>Level</b>	<b>0</b>	No rewardable content	
<b>1</b>	<b>1 - 2</b>	<ul style="list-style-type: none"> <li>• a limited description of at least one use of plant hormones</li> <li>• the answer communicates ideas using simple language and uses limited scientific terminology</li> <li>• spelling, punctuation and grammar are used with limited accuracy</li> </ul>	
<b>2</b>	<b>3 - 4</b>	<ul style="list-style-type: none"> <li>• a simple description of two or more uses of plant hormones</li> <li>• the answer communicates ideas showing some evidence of clarity and organisation and uses scientific terminology appropriately</li> <li>• spelling, punctuation and grammar are used with some accuracy</li> </ul>	
<b>3</b>	<b>5 - 6</b>	<ul style="list-style-type: none"> <li>• a detailed description of two or more uses of plant hormones with at least auxin, gibberellins or other relevant hormone in the correct context</li> <li>• the answer communicates ideas clearly and coherently uses a range of scientific terminology accurately</li> <li>• spelling, punctuation and grammar are used with few errors</li> </ul>	

Total for question 3 = 12 marks