

## Properties of Plants - Questions by Topic

Q1.

Question Number	Answer	Additional Guidance	Mark
	<p>1. cellulose (molecule) is a { polymer / chain / eq } of <math>\beta</math>-glucose / eq ;</p> <p>2. cellulose molecules held together { by hydrogen bonds / as microfibrils } ;</p> <p>3. idea of arrangement of microfibrils in { parallel / net / mesh / criss cross / eq } ;</p> <p>4. reference to { matrix / hemicelluloses / pectin / eq } ;</p>	<p>1. ACCEPT many <math>\beta</math>-glucose</p> <p>4. IGNORE lignin</p>	<b>(3)</b>

Q2.

Question Number	Answer	Mark
<b>(a)</b>	<p>1. slime layer / (slime) capsule ;</p> <p>2. cell wall ;</p> <p>3. circular DNA / loop of DNA / nucleoid / eq ;</p> <p>4. plasmids ;</p> <p>5. { 70s / small / eq } ribosomes ;</p> <p>6. pili ;</p> <p>7. allow reference to mesosome ;</p>	<b>(3)</b>

Question Number	Answer	Mark															
(b)	<table border="1"> <thead> <tr> <th>Organelle</th> <th>Single membrane</th> <th>Double membrane</th> </tr> </thead> <tbody> <tr> <td>nucleus</td> <td></td> <td><input checked="" type="checkbox"/></td> </tr> <tr> <td>Golgi apparatus</td> <td><input checked="" type="checkbox"/></td> <td></td> </tr> <tr> <td>mitochondrion</td> <td></td> <td><input checked="" type="checkbox"/></td> </tr> <tr> <td>lysosome</td> <td><input checked="" type="checkbox"/></td> <td></td> </tr> </tbody> </table>	Organelle	Single membrane	Double membrane	nucleus		<input checked="" type="checkbox"/>	Golgi apparatus	<input checked="" type="checkbox"/>		mitochondrion		<input checked="" type="checkbox"/>	lysosome	<input checked="" type="checkbox"/>		(4)
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Q3.

Question Number	Answer	Additional Guidance	Mark
(i)	Beta-glucose	Allow b glucose / $\beta$ glucose	(1)

Question Number	Answer	Mark
(ii)	<p>The only correct answer is B – by glycosidic bonds in an unbranched chain</p> <p><i>A is not correct because a cellulose molecule is not branched</i></p> <p><i>C is not correct because a cellulose molecule is not branched</i></p> <p><i>D is not correct because the monomers in a cellulose molecule are not held together by hydrogen bonds</i></p>	(1)

Question Number	Answer	Mark
(iii)	<p>The only correct answer is C – middle lamella</p> <p><i>A is not correct because there is no calcium pectate in the amyloplast</i></p> <p><i>B is not correct because there is no calcium pectate in the chloroplast</i></p> <p><i>D is not correct because there is no calcium pectate in the tonoplast</i></p>	(1)

Q4.

Question Number	Answer	Mark
	<p><b>D</b> - store starch granules</p> <p><i>The only correct answer is D</i></p> <p><i>A is not correct because amyloplasts do not allow fluid exchange</i></p> <p><i>B is not correct because amyloplasts do not consist mainly of pectin</i></p> <p><i>C is not correct because amyloplasts are not membranes surrounding the vacuole</i></p>	<b>(1)</b>

Q5.

Question Number	Answer	Mark
<b>(a)(i)</b>	D ;	<b>(1)</b>

Question Number	Answer	Mark
<b>(a)(ii)</b>	A ;	<b>(1)</b>

Question Number	Answer	Mark
<b>(a)(iii)</b>	B ;	<b>(1)</b>

Question Number	Answer	Mark
<b>(b)(i)</b>	<ol style="list-style-type: none"> <li>1. idea of one (or a few) cell types / a group of cells ;</li> <li>2. idea of working together for the { same / specific /one / eq } function ;</li> <li>3. often have the same origin / eq ;</li> </ol>	<b>(2)</b>

Question Number	Answer	Mark
<b>(b)(ii)</b>	<ol style="list-style-type: none"> <li>1. transport of water / eq ;</li> <li>2. transport of minerals / eq ;</li> <li>3. (structural) support / eq ;</li> </ol>	<b>(2)</b>

Question Number	Answer	Mark
* (c)	<p>(QWC- Spelling of technical terms must be correct and the answer must be organised in a logical sequence)</p> <ol style="list-style-type: none"> <li>1. (<i>cellulose</i>) contains <u>beta</u> <i>glucose</i> / eq ;</li> <li>2. (glucose molecules) joined by <i>condensation</i> reactions ;</li> <li>3. appropriate reference to <i>glycosidic</i> bonds ;</li> <li>4. appropriate reference to (only) 1- 4 (glycosidic bonds) ;</li> <li>5. reference to inversion of alternate glucose molecules in the chain ;</li> <li>6. { unbranched / straight } chain ;</li> <li>7. idea of microfibril composed of many <i>cellulose molecules</i> ;</li> <li>8. (<i>cellulose chains</i>) held together by <i>hydrogen</i> bonds ;</li> </ol>	(4)

Q6.

Question Number	Answer	Additional Guidance	Mark
	<p>An explanation that makes reference to the following points:</p> <ul style="list-style-type: none"> <li>• ( a shortage of magnesium ions ) limits the production of chlorophyll (1)</li> <li>• lack of { glucose / carbohydrate / cellulose } due to less photosynthesis (1)</li> <li>• ( therefore ) plant leaves may be yellow / plants may be small (1)</li> </ul>	<p>ALLOW a named carbohydrate / sugar</p> <p>ALLOW slow growth, stunted growth, pale leaves, leaves not green IGNORE wilting</p>	(3)

Q7.

Question Number	Answer	Mark
(i)	C starch is branched and supplies energy more quickly than cellulose	(1)

Question Number	Answer	Additional Guidance	Mark
(ii)	<p>An explanation making reference to the following:</p> <ul style="list-style-type: none"> <li>to produce { glucose / maltose } (1)</li> <li>which is { soluble / transported / enters cells easily / used in respiration } (1)</li> </ul>	<p>NOT beta-glucose</p> <p>ALLOW converse for starch</p> <p>IGNORE ref to size of molecules</p>	(2)

Q8.

Question Number	Acceptable Answer	Additional guidance	Mark
(i)	B		(1)

Question Number	Acceptable Answer	Additional guidance	Mark
(ii)	C		(1)