

Question Number	Answer	Mark
1	1. glucose ; 2. cellulose ; 3. hydrogen / H ; 4. pits ; 5. plasmodesmata/ plasmodesma ;	(5)

Question Number	Answer	Mark
2 (a)	1. idea of a {group / number / collection / eq} of cells ; 2. idea of working together to carry out the {same / specific / one / eq} function ;	(2)

Question Number	Answer	Mark
2 (b) (i)	C ;	(1)

Question Number	Answer	Mark
2 (b) (ii)	B ;	(1)

Question Number	Answer	Mark
2 (c) (i)	1. idea of preventing {microbes / bacteria / fungi} FROM {contaminating / escaping / entering / eq} ; 2. reference to {harmful / pathogenic / eq} {micro-organisms / eq} ;	(2)

Question Number	Answer	Mark
2 (c) (ii)	idea of allowing light in (for photosynthesis) / reducing water loss / prevent entry of organisms (that would affect plant growth) ;	(1)

Question Number	Answer	Mark
2 (c) (iii)	<ol style="list-style-type: none">1. (tissue R) is xylem ;2. (tissue R) is dead / eq ;3. no genetic material / DNA /genes / no nucleus present ;4. (tissue R) is not totipotent / eq ;5. it is already { differentiated / specialised) ;6. unable to {divide / undergo mitosis} / eq ;	(3)

Question Number	Answer	Mark
3 (a) (i)	<ol style="list-style-type: none"> 1. centre of point added to graph at 700μm for 10% ; 2. error bar from 720 μm to 680 μm ; 3. points correctly joined by neat ruled straight lines ; 	(3)

Question Number	Answer	Mark
3 (a) (ii)	<ol style="list-style-type: none"> 1. up to 10% sucrose, {an increase in sucrose increases (mean) length of pollen tube / positive correlation } / eq ; 2. greatest increase between 5% and 10%/ eq ; 3. greatest (mean length of pollen tube) at 10% / eq ; 4. idea that above 10% the pollen tubes are shorter e.g. negative effect or correlation ; 5. credit correct manipulation of the data e.g. 570-580 μm longer when grown in 10% sucrose compared to 0% sucrose ; 6. appropriate comment on significance of overlapping {error / range} bars between {5% and 30% / 10% and 20%} ; 	(3)

Question Number	Answer	Mark
3(b)	<ol style="list-style-type: none"> 1. idea of {forms a pathway/ grows down } through the style / eq ; 2. grows towards { ovary / ovule / micropyle / egg cell / eq} ; 3. reference to digestive enzymes; 4. transports {generative nucleus / haploid nuclei / male gametes / eq} / eq ; 5. fuses with embryo sac (membrane) / tip breaks down when it enters the micropyle / allows male nuclei to enter embryo sac /eq ; 	(3)

Question Number	Answer	Mark
5 (a) (i)	xylem (tissue/vessels) / eq ;	(1)

Question Number	Answer	Mark
5 *(a)(ii) QWC	<p>(QWC - Spelling of technical terms (<i>shown in italics</i>) must be correct and the answer must be organised in a logical sequence)</p> <p>Allow any pair for each of the following</p> <p>Water transport:</p> <ol style="list-style-type: none"> 1. hollow tubes / no living contents / end walls broken down / eq ; 2. idea of allow movement of water e.g. columns of water / vertical movement 3. ref to waterproof material / eq ; 4. idea that keeps water in the vessel e.g. less water lost 5. (pores / eq) ; 6. to allow sideways movement of water /eq ; <p>Support:</p> <ol style="list-style-type: none"> 7. ref. to {lignin / extra cellulose} ; 8. for strength ; 9. ref to {rings / spirals / eq} ; 10. for strength / flexibility ; 	<p>maximum (4)</p>

Question Number	Answer	Mark
5 (b)	<ol style="list-style-type: none"> 1. ref to correct stimulus e.g. chemical ; 2. some genes {switched off / switched on / eq} ; 3. mRNA from {switched on / eq} genes ; 4. mRNA translated / eq ; 5. idea of {protein synthesised / different proteins produced} ; 6. which (permanently) modify cell (to become specialised) /description of a modification / eq ; 	maximum (3)

Question Number	Answer	Mark
5 (c)	<ol style="list-style-type: none"> 1. ref to {sample / explants} from both (tissues) ; 2. ref to aseptic conditions / named example ; 3. grow cells into a callus / eq ; 4. ref to growth regulators / eq ; 5. ref to {cells / tissue} can differentiate / cells can become {whole plants / eq} ; 6. ref to details of procedure e.g. agar / leave for a suitable length of time / suitable controlled variable ; 	maximum (4)