

Question Number	Answer	Mark
4(a)(i)	<p>The only correct answer is B</p> <p><i>A is incorrect because each gene is determining one character</i></p> <p><i>C is incorrect because one gene is determining several characters</i></p> <p><i>D is incorrect because it is impossible</i></p>	(1)

Question Number	Answer	Additional Guidance	Mark
4(a)(ii)	{line / bar} graph to show a bell-shaped curve ;	ACCEPT a skewed distribution	(1)

Question Number	Answer	Additional Guidance	Mark
4(bi)	<ol style="list-style-type: none"> idea that the leaves will look { yellow / white }; because chlorophyll will not be made ; idea that the plant will {be small / not be healthy / eq} ; as photosynthesis will be slow / eq ; 	<ol style="list-style-type: none"> ACCEPT correct reference to chlorosis IGNORE "leaves change colour" / "leaves will not be green" ACCEPT magnesium needed to produce chlorophyll e.g. stunted growth / reduced growth 	(3)

Question Number	Answer	Additional Guidance	Mark
*4(b)(ii)	<ol style="list-style-type: none"> idea of using wheat plants of the same genotype ; idea that a control group of wheat is grown with all mineral ions ; idea that the test group of wheat is grown with all mineral ions but {no / reduced} magnesium ions ; other growth conditions need to be {optimum / not limiting} ; credit two named abiotic factors that need to be controlled; credit how one of these abiotic factors is controlled ; idea that the plants are left several days to grow ; credit an indication of how the dependent variable will be measured ; idea of growing several wheat plants in each group {to calculate mean value / for reproducibility / for reliability} ; 	<p>QWC focus on clarity of expression</p> <ol style="list-style-type: none"> e.g. same age /height /mass /species /variety IGNORE references to using different concentrations of Mg²⁺ and 3. IGNORE nutrients <ol style="list-style-type: none"> e.g. temperature / light intensity /pH / water e.g. use of incubator / light source described / use of buffer solution minimum time should be 7days e.g. measure height / mass /number of leaves /extract pigments and measure light absorbance / starch concentration ACCEPT repeat the investigation {to calculate mean / for reproducibility / for reliability} 	(6)