

Question Number	Answer	Mark
1(a)	<ol style="list-style-type: none"> 1. idea of reflection ; 2. reference. to {incorrect / eq } {wavelength / colour / frequency} ; 3. idea of {not hitting the {chloroplast / chlorophyll}} / it is transmitted ; 4. idea of light being in excess e.g. at max. photosynthesis so more light can be used ; 	max (2)

Question Number	Answer	Mark
1(b)(i)	{joules / energy} per {square metre / metre squared / (unit) area} per {year / unit time} ;	(1)

Question Number	Answer	Mark
1(b)(ii)	Award 2 marks for correct answer (84.8 / 84.84) <ol style="list-style-type: none"> 1. correct subtraction (24.4 - 3.7 / 20.7) ; 2. correct multiplication by 100 ÷ 24.4 ; [consequential errors apply]	(2)

Question Number	Answer	Mark
1(b)(iii)	B ;	(1)

Question Number	Answer	Mark
1(c) [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> <ol style="list-style-type: none"> 1. reference to {<i>thylakoids / thylakoid</i> (membranes)} ; 2. in {<i>granum / grana</i>} ; 3. (light energy) raises energy level of <i>electrons</i> / {<i>chlorophyll / electrons</i>}excited / eq ; 4. <i>electrons</i> released from {<i>chlorophyll</i> /photosystem / eq} / eq ; 5. reference to <i>electron</i> {carrier / eq} ; 6. reference to series of {redox / oxidation & reduction / eq} reactions ; 7. reference to energy level of <i>electrons</i> {falls / eq} ; 8. reference to {synthesise ATP from ADP +P / phosphorylate ADP} ; 9. reference to <i>photophosphorylation</i> ; 10. reference to ATP {<i>synthetase / synthase / ase</i>} ; 11. reference to {<i>chemiosmosis / eq</i>} ; 12. idea of <i>electrons</i> from {<i>photolysis / eq</i>} used to replace those lost ; 13. reference to involvement of {accessory pigments / named example} ; 	max (6)