

Transport in plants (transpiration, translocation, required practical)

Q1. (2019)

A)

03.1	opened and closed the tap (so water enters from reservoir)	allow opened the tap (carefully / gently)	1	AO3 4.2.3.2
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B)

03.2	air bubble moves further (in a given time)	allow air bubble moves faster	1	AO3 4.2.3.2
	(so) resolution is improved	allow it is easier to see a small change (in volume)	1	
		ignore is easier to measure unqualified		
		allow measurements are more accurate		
		ignore to make test more accurate		
		ignore references to precision or validity		

C)

03.3		an answer of 10.56 (mm ³ /min) scores 3 marks		AO2 4.2.3.2
	$\frac{66}{5}$ or 13.2 (mm/min)	allow tolerance of $\pm \frac{1}{2}$ square allow full marks from calculation from other correct pairs of readings	1	
		allow value in range 13 to 13.4 for $\frac{66}{5}$ only		
		ignore $\frac{63}{5}$ or 12.6		
	13.2 $\times$ 0.8	allow their calculated value in the range from 12 to 14 $\times$ 0.8	1	
	10.56 (mm ³ /min)	allow 10.6 or 11	1	

D)

03.4	points plotted correctly	allow $\pm \frac{1}{2}$ a square allow 1 mark for 4/5 correct plots	2	AO2 4.2.3.2
	suitable line of best fit		1	

E)

03.5	straight line starting at 0,0 with a steeper gradient than A		1	AO3 4.2.3.2
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F)

03.6	no photosynthesis	allow plants need light for photosynthesis	1	AO1
	(so) stomata closed (as no carbon dioxide needed)		1	AO2
	(so) no transpiration	allow very little transpiration or little water lost	1	AO2 4.2.3.2 4.4.1.2

Q2. (2021)

06.1	(absorbed from soil) by osmosis through root hair (cells)	allow (absorbed from soil) by diffusion through root hair (cells)	1	AO1 4.1.3.2 4.2.1
	travels through xylem (vessels) to the leaves	ignore travels upwards in the xylem unqualified	1	4.2.3.1 4.2.3.2
	lost through <u>stomata</u> (to atmosphere)		1	
	idea of driven by evaporation / transpiration	ignore evaporation / transpiration unqualified	1	

Q3. (2021)

06.2	translocation		1	AO1 4.2.3.2
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Q4. (2021)

06.4	any one from: (the process): • requires energy • is an active process • uses active transport		1	AO3
	(reason) cells have many mitochondria	allow flow of dissolved sugars / food in sieve tube cell is not impeded (1) (reason) companion cell is flattened (1)	1	AO2 4.1.1.2 4.1.1.3 4.1.3.3 4.2.3.1 4.2.3.2 4.4.2.1

Q5. (2021)

06.5		allow glucose for sugar		
	sugars are made in the leaves by photosynthesis	allow sugars are not made in the root / meristems (by photosynthesis)	1	AO1
	<u>all</u> cells / tissues need sugar for respiration	allow <u>every</u> cell / tissue needs sugar for respiration allow whole plant needs sugar as an energy source	1	AO2
	(sugars) transported to meristems for growth / cell division / mitosis		1	AO2
	or (sugars) transported for storage as starch / fat / oil			4.2.1 4.2.3.1 4.2.3.2 4.4.1.3 4.4.2.3