

Transpiration 2 MS

QUESTION 1

QUESTION	ANSWER	EXTRA INFORMATION	MARKS
a)	guard cells		1
b)i	2.00 / 2.0 / 2		1
b)ii)	0.05 or 1/20		1
b)iii)	(Q has) large(r) surface area / more stomata / thinner cuticle / larger leaves		1
b)iv)	wind 30	extra box ticked cancels the mark	1
c)	wilting	extra ring drawn cancels the mark	1
Total marks			6

QUESTION 2

QUESTION	ANSWER	EXTRA INFORMATION	MARKS
a)	solution in soil is more dilute (than in root cells) so water moves from the dilute to the more concentrated region concentration of ions in soil less (than that in root cells) so energy needed to move ions or ions are moved against concentration gradient	concentration of water higher in the soil (than in root cells) so water moves down (its) concentration gradient or water moves from a high concentration of water to a lower concentration the direction of the concentration gradient must be expressed clearly accept correct reference to water potential or to concentrations of water	1 1 1 1
b)	any three from: <ul style="list-style-type: none"> • movement of water from roots / root hairs (up stem) • via xylem • to the leaves • (water) evaporates • via stomata 		3
c)i)	0.67/0.7	accept 0.66, 0.6666666... or $\frac{2}{3}$ or correct answer gains 2 marks with or without working if answer incorrect allow evidence of 100/150 for 1 mark do not accept 0.6 or 0.70	2

c)ii)	<p>during the first 30 minutes</p> <p>any one from:</p> <ul style="list-style-type: none"> • it was warmer • it was windier • it was less humid • there was more water (vapour) in the leaves <p>so there was more evaporation</p> <p>or</p> <p>stomata open during first 30 minutes or closed after 30 minutes (1)</p> <p>so faster (rate of) evaporation in first 30min or reducing (rate of) evaporation after 30min (1)</p>	ignore 'water loss'	1
Total marks			11

QUESTION 3

QUESTION	ANSWER	EXTRA INFORMATION	MARKS
a)i)	xylem		1
a)ii)	phloem		1
a)iii)	transpiration		1
a)iv)	stomata		1
b)i)	<p>any one from:</p> <ul style="list-style-type: none"> • reduce / prevent evaporation of water from flask • holds plant shoot in place • prevent damage to the plant 		1
b)ii)	<p>same surface area or number of leaves</p> <p>from which (the same amount of) water evaporates</p>	<p>(because if they used larger / smaller size shoots) there would be a larger / smaller surface area or a larger/ smaller number of leaves</p> <p>allow same number of stomata (and therefore) more / less water would escape</p> <p>allow from which water escapes</p>	1 1
b)iii)	4.5	look for answer written in table	1
b)iv)	<p>increasing temperature / heat increases (rate of) water loss / evaporation</p>		1
b)v)	<p>having moving air / a fan increases (rate of) water loss / evaporation</p>		1
c)i)	0.3 g		1

c)ii)	plastic bag reduces air flow across leaves or air is humid around the leaves	allow plastic bag stops water (vapour) leaving allow air (in plastic bag) becomes saturated (with water)	
Total marks			12

QUESTION 3

QUESTION	ANSWER	EXTRA INFORMATION	MARKS
a)i)	guard (cells)	allow phonetic spelling	1
a)ii)	any one from: <ul style="list-style-type: none"> • allow carbon dioxide to enter • allow oxygen to leave. 	ignore reference to cells allow control loss / evaporation of water or control transpiration rate allow 'gaseous exchange'	1
b)i)	200	correct answer gains 2 marks with or without working allow 1 mark for $0.1 \times 0.1 = 0.01$ (mm ²)	2
b)ii)	more / a lot of / increased water loss	allow plant more likely to wilt (in hot / dry conditions)	1
c)i)	0.12		1
c)ii)	the lower surface has most stomata stomata are now covered / blocked (by grease) so water cannot escape / evaporate from the stomata	ignore waterproof to gain credit stomata must be mentioned at least once	1 1
Total marks			9