Your Science Online

Cambridge IGCSE Biology 0610 style

TRANSPORT IN PLANTS – MARK SCHEME

Maximum mark: 45 (Core: 32). ";" separates marking points. Accept correct alternative wording. Apply error carried forward (ecf) where shown.

Question	Answer	Marks	Guidance
1(a)	A: phloem; B: xylem;	2	C is the epidermis; do not allow "vein" for A or B
1(b)	transports water and mineral ions (from roots to leaves) / supports the plant;	1	allow: transports water; allow: minerals / named ion e.g. nitrate
1(c)	sucrose; amino acids;	2	allow: sugar for sucrose; do not allow: glucose; do not allow: water
1(d)(i)	nucleus;	1	
1(d)(ii)	(by) osmosis; (from a) dilute solution in the soil to a more concentrated solution in the cell / from higher to lower water potential; through a partially permeable (cell) membrane;	2	any two
1(d)(iii)	long and thin so it has a large surface area (for absorption);	1	do not allow: "bigger surface" without area
2(a)	xylem;	1	
2(b)	veins;	1	allow: vascular bundles
2(c)	root hair cells > root cortex cells > xylem > mesophyll cells;;	2	all four in correct order = 2; one pair swapped = 1
2(d)	shorter time / dye reaches leaves faster; (because) the rate of transpiration is higher (so water is pulled up faster);	2	allow: more evaporation from the leaves; second mark needs the first
2(e)	any two from: length / type / age of celery stalk; number / size of leaves; concentration / volume of dye; time left in dye (24 hours); light intensity;	2	do not allow: temperature or wind (these are being changed)
3(a)	loss of water vapour; from the leaves (of a plant);	2	allow: evaporation of water from leaves / through stomata
3(b)	some water is used by the plant / in photosynthesis / to keep cells turgid;	1	allow: not all the water taken up is lost
3(c)	5.0;	1	allow 5

Original practice questions © Your Science Online (yourscienceonline.com). This is not an official Cambridge paper.

Question	Answer	Marks	Guidance
3(d)	all 6 points plotted correctly to within half a small square;; smooth curve of best fit through or close to the points;	3	2 marks for all 6 correct, 1 mark for 4–5 correct; ecf from 3(c); do not allow: dot-to-dot lines
3(e)	as temperature increases the rate increases; the increase slows down / levels off at higher temperatures (above 30 °C);	2	allow: quote of data with units for the second mark, e.g. only 0.6 mm per min more from 30 to 35 °C
3(f)	water molecules have more kinetic energy; faster evaporation (from mesophyll cell surfaces); faster diffusion of water vapour out of the stomata;	2	any two
3(g)	cut the shoot under water / make sure there are no air leaks / joints are airtight / dry the leaves;	1	allow: let the shoot settle before taking readings
3(h)	open the tap on the reservoir (to let water in);	1	
4(a)(i)	S;	1	
4(a)(ii)	T;	1	T is the xylem in the vein
4(b)	water evaporates from the surfaces of (spongy) mesophyll cells; into the air spaces; water vapour diffuses out through the stomata;	3	allow: water vapour moves down a concentration gradient (for the diffusion mark)
4(c)	less steep / smaller concentration gradient of water vapour; between the air spaces and the air outside, so slower diffusion;	2	do not allow: “the air is full” without a gradient idea
4(d)	cells lose water / become flaccid / lose turgor (so they no longer support the plant);	1	
5(a)	movement of sucrose and amino acids; in the phloem, from sources to sinks;	2	allow: from where they are made / stored to where they are used
5(b)	source; sink; sink; source;	2	all four correct = 2; two or three correct = 1
5(c)	water evaporates / is lost from the leaves (by transpiration); this creates a pull / tension (transpiration pull); water molecules stick together / cohesion; a continuous column of water is pulled up the xylem;	3	any three

Original practice questions © Your Science Online (yourscienceonline.com). This is not an official Cambridge paper.