

B2.1 Osmosis & Plant Transport ~ ANSWERS

1.	(a) (i)	Cell vacuole/nuclear membrane ;	[1]	
	(ii)	Lets water/some/certain/small substances to pass through;	[1]	
	(b) (i)	Nucleus correct shape and position; Smaller vacuole; Cell membrane away from cell wall;	[3]	
	(ii)	Plasmolysed/plasmolysis;	[1]	6

2.	(a) (i)	air bubble moves up/water level (in beaker) moves down;	[1]	
	(ii)	Any two from: water evaporates from leaves/transpiration; water taken up by/passes through plant; replaced by water from tube;	[2]	
	(b)	Any two from: support; transport; photosynthesis;	[2]	5

3. Indicative content:

- 1 Water has **moved out** of cells;
- 2 Down concentration gradient/described;
- 3 Through selectively/partially permeable membranes;
- 4 Cytoplasm shrank;
- 5 Cell membrane pulls away from cell wall;
- 6 Cells (in concentrated sugar solution) become plasmolysed;
- 7 Cell wall permeable to sugar solution/sugar can pass through cell wall;
- 8 Sugar solution enters inside cell wall;
- 9 Sugar does not enter cell membranes/membrane impermeable to sugar;

AVAILABLE MARKS

Response	Marks
Candidates must use appropriate, specialist terms throughout using AT LEAST FIVE OF the above points . They use good spelling, punctuation and grammar and the form and style are of a high standard .	[5]–[6]
Candidates use some appropriate, specialist terms throughout using at LEAST THREE of the above points . They use satisfactory spelling, punctuation and grammar and the form and style are of a satisfactory standard.	[3]–[4]
Candidates make little use of specialist terms throughout USING SOME OR ALL of the above points . The spelling, punctuation and grammar, form and style are of a limited standard.	[1]–[2]
Response not worthy of credit.	[0]

[6]

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4. (a) $8 \div 5$; [1]
1.6; [1] [2]
- (b) Any **two** from:
wind [speed];
Temperature;
Humidity/light;
Size of plant; [2]
- (c) B – highest water loss of 2g per day; [1]
B – largest number of stomata – 74; [1]
(More) water transpires/diffuses [1]
through the stomata; [1]
Accept: converse for C [4]

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5. (a) Any **four** from:
Water enters into/absorbed by cell/cell swells/fills;
by diffusion;
Down concentration gradient/described;
By osmosis/through selectively permeable membrane;
Causes **lysis**; [4]
- (b) Any **three** from:
Cell wall;
Resists outwards force (movement) of cell membrane/vacuole;
Causes pressure increase/cell becomes **turgid/turgor**;
Stops water entering/limits water uptake; [3]
- (c) **Indicative content:**
1. Water level in dish falls because water moves from dish into potato tissue/cells;
 2. Water level in hollow of potato rises/sugar solution rises because water moves from the potato tissue;
 3. Osmosis;
 4. Sugar solution becomes more dilute;
 5. Correct description of one of the concentration gradients involved:
From water to dilute/weak/low concentration solution in the potato tissue/cells/vacuole **or**
From dilute/weak/low concentration solution in the potato tissue/cells/
vacuole to concentrated/strong/high concentration of sugar [solution];
 6. Boiled potato damages membranes/loses selective permeability;
(**Accept:** bullet points which start with capital letter, contain a verb and end in full stop as sentences.)

AVAILABLE
MARKS

Band	Response	Mark
A	Candidates must use appropriate, specialist terms throughout using five of the above points . They use good spelling, punctuation and grammar and the form and style are of a high standard.	[5]–[6]
B	Candidates use some appropriate, specialist terms throughout using three of the above points . They use satisfactory spelling, punctuation and grammar and the form and style are of a satisfactory standard.	[3]–[4]
C	Candidates make little use of specialist terms throughout using some or all of the above points . The spelling, punctuation and grammar, form and style are of a limited standard.	[1]–[2]
D	Response not worthy of credit.	[0]

[6]

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6. (a) (i) Any **two** from:
 Evaporates (from mesophyll cell);
 diffuses out;
 through stomata;
 transpiration; [2]
- (ii) Temperature; light; wind; humidity;
 (Any **two**) [2]

- (b) (i) $(2.0 - 1.6) \div 2.0 \times 100$; 20%; [2]
- (ii) Leaves different masses at start; [1]
- (iii) Leaf 1 is a control/for comparison; [1]
- (iv) More **stomata** on lower surface/vaseline blocks **stomata**; [1]

AVAILABLE
 MARKS

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