Transport Across Cell Membranes Mark Scheme

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| 2. | D | |

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| 2. | (a) | | Osmosis | 1 | |
| | (b) | | Water moves into the (model) cell/bag/salt solution 1<br><br>From a high water concentration to a low water concentration/down a concentration gradient 1<br><br>**OR** alternative answer for 2 marks:<br>Water moves from a high water concentration outside to a low water concentration inside the (model) cell/bag/ salt solution | 2 | Direction = 1 mark<br><br>Explanation = 1 mark<br><br>Not Acceptable - '.....along a concentration gradient'<br>**OR**<br>HWC / LWC |
| | (c) | | 0.9 | 1 | |
| | (d) | | Description of concentration change - must be a smaller concentration gradient than shown/<br>lower temperature/<br>wider capillary tube/<br>seal not tight/<br>less water in the beaker/bag not fully submerged | 1 | |

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| 1. | D | |

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| **2.** | (a) | (i) | +25 | **1** | + symbol must be included. Accept answer not written in table (don't need % sign). |
| | | (ii) | To remove excess/surface water/liquid/solution<br>**OR**<br>So water/liquid/solution doesn't affect the results or alter the mass/weight | **1** | To remove excess <u>vinegar</u> is not acceptable, but answer must refer to water/liquid/ solution. |
| | | (iii) | <u>Beaker A</u><br>Water entered (the egg) from a high **water** concentration (outside) to a low **water** concentration (inside)/down a concentration gradient<br><br>**OR**<br><br><u>Beaker B</u><br>Water left/leaves (the egg) from a high **water** concentration (inside) to a low **water** concentration (outside)/down a concentration gradient | **2**<br><br>**OR**<br><br>**2** | Referring to 'egg' as 'cell' anywhere does not negate.<br><br>Must have direction (1)<br>and<br>down concentration gradient/high water concentration to low water concentration (1).<br><br>**Along** a concentration gradient alone is insufficient but would not negate a correct response.<br><br>HWC to LWC is not acceptable.<br><br>Must have direction (1)<br><br>and<br><br>down concentration gradient/high water concentration to low water concentration (1).<br><br>**Along** a concentration gradient alone is insufficient but would not negate a correct response.<br><br>HWC to LWC is not acceptable. |
| | (b) | | Passive transport doesn't require energy/ATP, but active transport does<br>**OR**<br>Passive transport moves down a concentration gradient/from high to low, but active transport goes up/against a concentration gradient/from low to high | **1** | Accept reference to diffusion or osmosis in place of passive transport.<br><br>Comparison required.<br><br>Along a concentration gradient is not acceptable. |

| 2 | A |
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| **1.** | (a) | | Selectively permeable/ semi-permeable/ (contains) proteins/ (phospho)lipids/protein channels/ protein carriers | **1** | Not acceptable: porous/pores /protein gates. |
| | (b) | (i) | Leaf cell:<br>• cell swells/becomes turgid (or suitable description of turgid)<br><br>Red blood cell:<br>• cell swells/bursts /may burst | **1** | Not acceptable:<br>description of process of osmosis alone. |
| | | (ii) | 1.Diffusion/active transport<br><br>2. Definition:<br>Diffusion – Movement of molecules/particles from a high to a low concentration.<br>**OR**<br>down the concentration gradient.<br><br>Active Transport – Movement of molecules/ions from a low to a high concentration.<br>**OR**<br>against/up the concentration gradient. | **1**<br><br>**1** | To gain this mark the definition must relate to process chosen in part 1.<br><br>...across /through a selectively permeable membrane does not negate.<br><br>Abbreviations of concentration eg conc. only acceptable if the full word is written at least once.<br><br>Not acceptable:<br>• movement of 'substances'<br>• 'with' the concentration gradient<br>• 'along' the concentration gradient (but this would not negate a correct response).<br><br>Extra wrong information negates. |

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| 1. | (a) | (i) | Cytoplasm - site of (chemical) reactions<br>**OR**<br>Cell membrane - controls/allows/lets entry and/or exit/passage of materials/substances/molecules<br>**or**<br>Controls what enters/exits<br>**OR**<br>Nucleus - controls (all) cell activity/activities | 1 | Not acceptable - things/particles<br><br>Not acceptable - contains genetic material; but not negating |
| | | (ii) | Osmosis | 1 | |
| | (b) | | Cell wall | 1 | |

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| 1. | B |
| 2. | C |
| 3. | D |

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| 2 | (a) | | Does not require energy/ATP. | 1 | Acceptable:<br>additional correct information. |
| | (b) | | 2 | 1 | |
| | (c) | | Plasmolysed | 1 | Not acceptable: flaccid |
| | (d) | | Plant cells/cell 4 have a cell wall<br>**or**<br>animal cells/cell 3 do not have a cell wall. **(1)**<br><br>Cell wall prevents cells from bursting/no cell wall so cell bursts. **(1)** | 2 | Not acceptable:<br>cell wall protects it, but would not negate an otherwise correct answer. |