3. Movement into and out of cells

3.3 Active transport

Paper 3 and 4

Marking Scheme

Q1.

(a)(i)	amino acids circled ; sucrose circled ;	**2**	**R** each additional circle
(a)(ii)	root hair (cell) ; correct label line ;	**2**	
(b)(i)	movement of particles through a cell membrane ; from a (region of) low concentration to a (region of) high concentration / against a concentration gradient ; using energy from respiration ;	**3**	
(b)(ii)	support (described) ;	**1**	

Q2.

(b) *one mark per row:* **4**

feature	diffusion	osmosis	active transport
involves movement of water only		✓	
always involves movement across a partially permeable membrane		✓	(✓)
movement is from a higher solute concentration to a lower solute concentration	✓		
requires energy from respiration			✓
involves the movement of both gases and solutes	✓		

;;;;

Q3.

(d)(i)	*ref. to* (protein) carriers (in membranes) ; movement of, molecules / ions, from low to high concentration / using energy ;	**2**	

(d)(ii)	amino acids ;	**1**	

Q4.

(b)	*any three from:* uses energy (from respiration / mitochondria) ; (transport / movement is) against a concentration gradient / AW ; involves movement of, sugars / ions / substance(s) other than water / AW ; involves protein carriers ;	**3**	
(c)	root hair (cells) ;	**1**	

Q5.

(b)(i)	*any three from:* ref. to membrane for active transport ; uses (chemical) energy ; energy from, the cell / respiration / mitochondria ; (substances move) against concentration gradient / low to high concentration ; using / AW, proteins / carriers (in membranes) ;	**3**	

Q6.

(b)	involves, proteins / carriers / pumps (in neurone membrane) ; (named) ion(s) bind to, proteins / carriers / pumps, to move ions / AW ; move ions, against concentration gradient / from low to high concentration ; using energy ; AVP ; e.g. change in shape of carrier (protein)	**3**	