3. Movement into and out of cells

3.1 Diffusion

Paper 3 and 4

Marking Scheme

Q1.

(a)	kinetic ; surface area / temperature / distance ;; partially ; respiration ; active transport ;	**6**	any two for MP2 and MP3

Q2.

(a)(i)	82 ;;	**2**	MP1 correct calculation to any number of decimal places MP2 correct rounding to a whole number ecf for MP2 from incorrect MP1
(a)(ii)	*any one from:* increasing the surface area increases the, speed / rate, of diffusion ; ora increasing the surface area decreases the time taken to turn yellow ; ora	**1**	
(a)(iii)	*any one from:* temperature ; concentration of acid ; AVP ;	**1**	e.g. diffusion distance / shape of the block
(a)(iv)	agar / block ; concentration ; kinetic ;	**3**	

Q3.

(a)(i)	palisade mesophyll cell labelled correctly ; vacuole labelled correctly ;	**2**	
(a)(ii)	high(er) (concentration to a) low(er) ; (concentration by) random (movement.) ;	**2**	
(a)(iii)	oxygen ;	**1**	
(a)(iv)	(cell) membrane / (cell) wall ;	**1**	

Q4.

(a)	cell membrane ;	1
(b)	*one mark per row:* feature / diffusion / osmosis / active transport involves movement of water only – ✓ osmosis always involves movement across a partially permeable membrane – ✓ osmosis, (✓) active transport movement is from a higher solute concentration to a lower solute concentration – ✓ diffusion requires energy from respiration – ✓ active transport involves the movement of both gases and solutes – ✓ diffusion ;;;;	4

Q5.

(c)	is the movement of substances from high to low concentration ; occurs due to the random movement of particles ;	2	

Q6.

(b)(i)	(net) movement of particles, from a region of their higher concentration to a region of their lower concentration / down a concentration gradient ; as a result of their <u>random</u> movement ;	2	
(b)(ii)	*any one from:* large surface (area) / AW ; thin ;	1	

Q7.

(a)(i)	*any three from:* blue at time 0 indicates no glucose present ; ensures that no glucose on outer surface of dialysis tubing / in water, as a result of an error ; green / yellow / red, indicates presence of glucose ; glucose, diffuses / moves, out of dialysis tubing / into water ; (movement is) <u>down the concentration gradient</u> / high to low concentration ; dialysis tubing is permeable to glucose ; AVP ;	3
(a)(ii)	*idea that* (Benedict's solution) changes colour quicker / gives more intense colour / AW ;	1