

# Diffusion Osmosis and Active Transport MS

## QUESTION 1

QUESTION	ANSWER	EXTRA INFORMATION	MARKS
a)	any two from: <input type="checkbox"/> transport up / against concentration gradient / low to high concentration <input type="checkbox"/> uses energy <input type="checkbox"/> use of protein / carrier		2
b)	microvilli – large(r) surface area mitochondria – release energy or make ATP	accept have carriers do not accept 'makes energy'	2
Total marks			4

## QUESTION 2

QUESTION	ANSWER	EXTRA INFORMATION	MARKS
a)i)	glucose and galactose		1
a)ii)	any three from: Evidence: <input type="checkbox"/> absorption reduced by cyanide <input type="checkbox"/> absorb faster (than other sugars) Explanation: <input type="checkbox"/> active transport needs energy <input type="checkbox"/> less / no energy available / Released if cyanide is there or less / no energy if no / less respiration	allow converse  allow energy produced ignore cyanide prevents respiration	3
b)	all / the sugars / they can be absorbed when gut poisoned / with cyanide or when no respiration  (diffusion) does not need an energy supply		1
Total marks			6

### QUESTION 3

QUESTION	ANSWER	EXTRA INFORMATION	MARKS
	active transport needs energy or diffusion is not energy-dependent any three from: ☑ (energy from) aerobic respiration ☑ more respiration with O <sub>2</sub> or more energy release O <sub>2</sub> with ☑ (aerobic) respiration / energy release occurs in mitochondria ☑ xylose / other sugars absorbed by diffusion / not by active transport		1  3
Total marks			4

### QUESTION 4

QUESTION	ANSWER	EXTRA INFORMATION	MARKS
a)	No  diffusion is down the concentration gradient  to enter must go up / against the concentration gradient or concentration higher in the root or concentration lower in the soil	no mark if yes max 1 for correct statement accept by diffusion ions would leave the root	1  1
b)i)	0.9 or 3.25	for correct answer with or without working if answer incorrect 1.3 or their rate – 0.4 gains 1 mark or 130 – 40 or 90 gains 1 mark	2
b)ii)	(uptake) by active transport requires energy more energy from aerobic respiration or more energy when oxygen is present		1 1 1
Total marks			7

### QUESTION 5

QUESTION	ANSWER	EXTRA INFORMATION	MARKS
a)i)	movement of atoms / molecules / ions  (substance) moves from high to low concentration	accept particles allow dissolved substances ignore reference to membranes allow down the gradient ignore across / along / with a gradient	1  1
a)ii)	any two from: ☒movement of molecules / ions  ☒from low to high concentration  ☒requires energy / respiration	accept particles allow dissolved substances this point once only in (a)(i) and(a)(ii)allow up / against the gradient ignore across / along / with a gradient accept requires ATP	2
Total marks			4

### QUESTION 6

QUESTION	ANSWER	EXTRA INFORMATION	MARKS
a)	solution in soil is more dilute (than in root cells)  so water moves from the dilute to the more concentrated region  concentration of ions in soil less (than that in root cells) so energy needed to move ions or ions are moved against concentration gradient	concentration of water higher in the soil (than in root cells) so water moves down (its) concentration gradient or water moves from a high concentration of water to a lower concentration     the direction of the concentration gradient must be expressed clearly accept correct reference to water potential or to concentrations of water	1  1  1  1
Total marks			4

### QUESTION 7

QUESTION	ANSWER	EXTRA INFORMATION	MARKS
a)	osmosis  partially permeable		1  1

b)i)	any two from: <ul style="list-style-type: none"> <li>• vacuole is small(er)</li> <li>• cytoplasm has shrunk</li> <li>• gap between cytoplasm and cell wall</li> <li>• cell wall curves inwards</li> <li>• the (cell) membrane has moved away from the wall</li> </ul>	allow correct answers in terms of A allow cytoplasm is smaller  allow cell B is flaccid or cell A is turgid	2
b)ii)	any one from: <ul style="list-style-type: none"> <li>• water will move / diffuse in</li> <li>• (cells) will swell</li> <li>• (cells) will burst</li> </ul>	ignore turgid	1
c)	villi give the small intestines a large surface area  villi have many blood capillaries		1  1
Total marks			7

### QUESTION 8

QUESTION	ANSWER	EXTRA INFORMATION	MARKS
	any three from: <ul style="list-style-type: none"> <li>• (water through a) partially permeable</li> <li>• membrane</li> <li>• from dilute to (more) concentrated solution</li> <li>• (it's a) passive (process)</li> </ul>		3
Total marks			3