WJEC (Eduqas) Biology GCSE Topic 2.1 Transport in Cells Questions by Topic - Mark Scheme

1.

Question Number								
FT	HT	Sub-section			Mark	Answer	Accept	Neutral answer	Do not accept
		(a)			1	Movement of {molecules/ particles} from a high concentration to a low concentration/down a concentration gradient;			Semi permeable membrane
		(b)	(i)		1	starch molecules are too big to pass through the (pores) in the {Visking tubing/ membrane}/ {holes/ pores} in the {visking tubing/ membrane} are too small for the starch molecules to pass through;	Reverse argument		
		(c)			1	35 ° C;			

2.

Question Number								
FT	HT	Sub-section			Mark	Answer	Accept	Neutral answer	Do not accept
		(a)	(i)		1	Loses {water/ volume} when placed in salt solution;			
			(ii)		1	Does not gain or lose {water/ volume} in this range/ stays the same in these concentration/ no net movement of water;			
		(b)			2	Any two from: • pH; • Temperature; • Volume of solution;			Ph/ ph Heat
		(c)			4	• Water passes out; • by osmosis; • from the cell where water is in higher concentration to sea water where it is in lower concentration; • Via semi-permeable membrane;			
		Total Mark			8				

3.

Question Number								
FT	HT	Sub-section			Mark	Answer	Accept	Neutral answer	Do not accept
	(b)		ii		2	walls are thin; so allow for diffusion;	walls one cell thick		

4.

Question			Marking details	Marks available					
				AO1	AO2	AO3	Total	Maths	Prac
(a)			It allows {smaller/ small} molecules to pass through	1			1		
(b)	(i)		Diffusion (through the pores) Accept osmosis	1			1		
	(ii)		(Molecule) B (1) it can {pass/ fit through} through pores/ A is too big to fit through pores/ pores are too small for A to fit through(1)		2		2		

5.

Question			Marking details	Marks available					
				AO1	AO2	AO3	Total	Maths	Prac
	(a)		movement of {substances/ gas/ molecules/ particles} {down a concentration gradient/ or description of} NOT concentrations move from high to low/ ref to SPM	1			1		

6.

Sub-section	Mark	Answer	Accept	Neutral answer	Do not accept
(a)	1	Active {transport/ uptake};			
(b)	2	Oxygen is needed; For respiration/ release of energy/ to make ATP; 2nd mark is linked to 1st			
(c)	3	Water passes from where it is in high concentration to where it is in low concentration / Water passes from where solute concentration is low to where solute concentration is high ; Via a semi permeable membrane (or other correct description of membrane i.e. semi/ partially) ; Indication of where the higher concentration of water/ solute is;		SPM	
Total Mark	6				

7.

Question			Marking details	Marks Available
(b)	(i)	I	Into the cell ✓;	3
		II	Into the cell ✓;	
		III	Cell B ✓;	
	(ii)		Diffusion;	1

8.

Question			Marking details	Marks Available
8	*(a)*		To keep the volumes the same/ so volume of $1cm^3$ cubes is the same as the $8cm^3$ cube;	1
	(b)	(i)	Osmosis;	1
		(ii)	Water passed in; From where it was in high concentration to low concentration/ down a gradient; Via a semi/ selectively/ partially permeable membrane;	3
		(iii)	{% increase in mass was faster/ more water was taken in} in cubes of side 1cm; Because there is a greater surface area; Root hairs increase surface area/ have a large surface area;	3
	(c)		Active transport;	1
			Question 8 total	**[9]**

9.

Question				Marking details	Marks available					
					AO1	AO2	AO3	Total	Maths	Prac
	(a)			Water would pass out of the eel (1) from where it is in high concentration (in the eel) to where it is in low concentration (in the sea) (1) Through the semi permeable membrane(1) movement of salt/ solution will negate the spm mark	1 1	1		3		
	(b)	(i)		Active transport (1) Oxygen (1) Glucose/ ATP (1)	2	1		1		
				Question total	**4**	**2**	**0**	**6**	**0**	**0**

10.

Question			Marking details	Marks Available
10	*(a)*		• Osmosis; • Movement of water into potato; • From where water is in high concentration to low concentration/ down concentration gradient; • Via semi permeable membrane; *3rd marking point linked to 2nd marking point*	4
	(b)		Water {molecules/ particles} {move faster at higher temperature/ have more energy};	1
	(c)		{Rate of/ volume} water passing in equals {Rate of/volume} of water passing out/no net {movement/flow} of water; NOT concentration of water is the same inside and outside the potato/dynamic equilibrium	1
			Question 10 Total	**[6]**

11.

Question			Marking details	Marks Available
11	(a)	(i)	(Rate of) uptake of iodine decreased; to zero; No effect on uptake of water;	3
		(ii)	(Process of) {active transport/ active uptake}; Requires energy; Energy release from respiration is stopped (by chemical);	3
	(b)		Osmosis;	1
			Question 11 total	**[7]**

12.

Question	Marking details	Marks Available
12	Indicative content	6

Correct explanation for concentrations e.g.

- 0.0% - water passes in from where it is in high concentration/ water potential to where it is in low concentration/ water potential via Semi Permeable Membrane
- 0.9% - water passes in and out at the same rate.
- 3.0% - correct explanation for decrease in size i.e. opposite to explanation for 0.0%.
- A correct comment on bursting or shrivelling i.e. at extremes of concentration range - membrane is affected.

Top band must have correct explanation for the three concentrations.

5 – 6 marks
The candidate constructs an articulate, integrated account correctly linking relevant points, such as those in the indicative content, which shows sequential reasoning. The answer fully addresses the question with no irrelevant inclusions or significant omissions. The candidate uses appropriate scientific terminology and accurate spelling, punctuation and grammar.

3 – 4 marks
The candidate constructs an account correctly linking some relevant points, such as those in the indicative content, showing some reasoning. The answer addresses the question with some omissions. The candidate uses mainly appropriate scientific terminology and some accurate spelling, punctuation and grammar.

1 – 2 marks
The candidate makes some relevant points, such as those in the indicative content, showing limited reasoning. The answer addresses the question with significant omissions. The candidate uses limited scientific terminology and inaccuracies in spelling, punctuation and grammar.

0 marks
The candidate does not make any attempt or give a relevant answer worthy of credit.

13.

Question		Marking details	Marks Available
13	*(a)*	Osmosis; Movement (of water) {from where it is in high concentration to low concentration/ down a concentration gradient} into the micro-organism; Via a semi permeable membrane;	3

14.

Question Number									
FT	HT	Sub-section			Mark	Answer	Accept	Neutral answer	Do not accept
		(a)	(i)		1	90			90%
			(ii)		3	Active transport; Molecules/salts move into cells against a concentration gradient/from low to high concentration; using energy/respiration;			

15.

Sub-section	Mark	Answer	Accept	Neutral answer	Do not accept
(a)	2	Any two (x1) from: Active {transport/ uptake} takes place; Against concentration gradient/ OWTTE; using {energy/respiration/ATP};			

16.

Question	Marking details	Marks available					
		AO1	AO2	AO3	Total	Maths	Prac
(b) (i)	Diffusion (in correct context) (1)	1			3		
(ii)	**Any two (x1) from:** large surface area (1) Thin wall / wall is one cell thick (1) NOT thin cell wall Close to {blood vessel/ blood supply/ capillary}/ {rich/ good} blood supply / surrounded by capillary(1) Layer of {moisture/ water} (1)	2					
(c) (i)	Increase in {cases/ cancer} with increase in age.			1	1		
(ii)	{Highest proportion of / highest number of / most} smokers are the 20 – 29 year olds but {the highest incidence of/ most} cancer is in {older people/ 80 year olds} (1)			1	1		
(iii)	Extend investigation to other {cities/ towns/ areas} (1) Include women in the investigation (1)			2	2		2