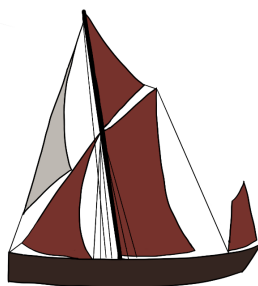

AQA

TRANSPORT ACROSS THE MEMBRANE

MARK SCHEME

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2021

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AQA Transport Across the Membrane Mark Scheme

1. Carbon dioxide moves out of an epithelial cell by diffusion.

What is diffusion?

Movement of particles / molecules	(1)
Allow movement of ions / atoms.	
Ignore carbon dioxide or other named substance.	
from high to low concentration / down a concentration gradient	(1)
	Total: 2 marks

AQA 2017 Higher Paper 2 Q1 c

2. Some of the uptake of glucose in the small intestine occurs by active transport.

Describe the process of active transport.

Against the concentration gradient.	(1)
Allow from a low concentration to a high concentration or up the concentration gradient	
Requires energy.	(1)
Allow using ATP.	
Allow correct use of terms, carrier or transport proteins.	
	Total: 2 marks

AQA 2017 Higher Paper 3 Q8 b

3. The table below shows information about four skin cells of an earthworm.

Cell	Percentage of oxygen	
	Outside cell	Inside cell
A	9	8
B	12	8
C	12	10
D	8	12

- a. Which cell has the smallest difference in percentage of oxygen between the outside and the inside of the cell? Tick one box.

A – is the only correct answer.	(1)
	Total: 1 mark

AQA Transport Across the Membrane Mark Scheme

b. Which cell will oxygen move into the fastest?

Tick one box.

B – is the only correct answer.	(1)
	Total: 1 mark

AQA 2018 Foundation Paper 1 Q6 (ii)

4. Plants move mineral ions:

- from a low concentration in the soil
- to a high concentration in the root cells.

What process do plants use to move these minerals ions into root cells?

Active transport.	(1)
	Total: 1 mark

AQA 2018 Specimen Higher Paper 1 Q1 (i)

5. After a meal rich in carbohydrates, the concentration of glucose in the small intestine changes.

The table below shows the concentration of glucose at different distances along the small intestine.

Distance along the small intestine in cm	Concentration of glucose in mol/dm ⁻³
100	50
300	500
500	250
700	0

a. At what distance along the small intestine is the glucose concentration highest?

300	(1)
	Total: 1 mark

b. Use the data in the table above to plot a bar chart on the figure below.

Label the y-axis.

Choose a suitable scale.

AQA Transport Across the Membrane Mark Scheme

suitable scale on y-axis	(1)
label y-axis	(1)
4 bars drawn correctly	(2)
	Total: 4 marks

- c. Describe how the concentration of glucose changes as distance increases along the small intestine.

Increases from 50 to 500	(1)
then decreases from 500 to 0.	(1)
	Total: 2 marks

- d. Explain why the concentration of glucose in the small intestine changes between 100 cm and 300 cm.

Carbohydrates broken down / digested into sugars.	(1)
Broken down by carbohydrase or amylase.	(1)
	Total: 2 marks

- e. Explain why the concentration of glucose in the small intestine changes between 300 cm and 700 cm.

Absorption of glucose	(1)
into blood	(1)
by active transport.	(1)
	Total: 3 marks

AQA 2018 Specimen Foundation Paper 1 Q7

AQA Transport Across the Membrane Mark Scheme

6. Cells, tissues and organs are adapted to take in different substances and get rid of different substances.

The table below shows the concentration of four ions outside cells and inside cells.

Ion	Concentration outside cells in mmol per dm ³	Concentration inside cells in mmol per dm ³
Sodium	140	9
Potassium	7	138
Calcium	2	27
Chloride	118	3

- a. Use information from the table above to complete the following sentences.

Sodium ions will move into cells by the process of diffusion .	(1)
Potassium ions will move into cells by the process of active transport .	(1)
	Total: 2 marks

Some students investigated the effect of the different concentrations of sugar in four drinks, A, B, C and D, on the movement of water across a partially permeable membrane.

- b. The bag in drink A got heavier after 20 minutes.

Explain why.

Concentration (of sugar) in the bag was higher (than in the drink) or Higher concentration of water outside the bag or in the drink / boiling tube.	(1)
(so) water moved in (to the tubing)	(1)
by osmosis.	(1)
	Total: 3 marks

- c. In which drink, A, B, C or D, would you expect the bag to show the smallest change in mass? Tick one box.

B – is the only correct answer.	
	Total: 1 mark

AQA Transport Across the Membrane Mark Scheme

- d. Explain why you think the bag you chose in part (c) would show the smallest change.

Close(st) to the concentration in the bag or to 5%	(1)
(so, rate of) diffusion / osmosis is slow.	(1)
	Total: 2 marks

AQA 2016 Higher Paper 3 Q1

7. During breathing, oxygen moves into the blood.

- a. Explain how oxygen moves into the blood.

So, it moves by) diffusion	(1)
From a high concentration (of oxygen) to a low concentration.	(1)
	Total: 2 marks

- b. The figure below shows a fish head and gill.

Fish absorb oxygen from the water. Oxygen is absorbed through the gills of the fish.

Explain one way in which the gills are adapted for rapid absorption of oxygen.

Many gill filaments	(1)
(give a) large surface / area.	(1)
Or	
thin	(1)
(so) short diffusion pathway	(1)
Or	
good blood supply	(1)
(to) maintain the concentration gradient.	(1)
Or	
water continually flows over them / continually ventilated	(1)
(to) maintain the concentration gradient.	(1)
	Total: 2 marks

AQA 2015 Higher Paper 3 Q6 b (i) & (ii)

AQA Transport Across the Membrane Mark Scheme

8. Plant roots absorb water from the soil by osmosis.

What is osmosis?

Any three from:	
Movement of water through a partially permeable	(1)
Accept 'semi permeable' / selectively permeable.	
membrane	(1)
from an area of low to more concentrated solution.	(1)
	Total: 3 marks

AQA 2014 Higher Paper 3 Q3 a