Name: .....

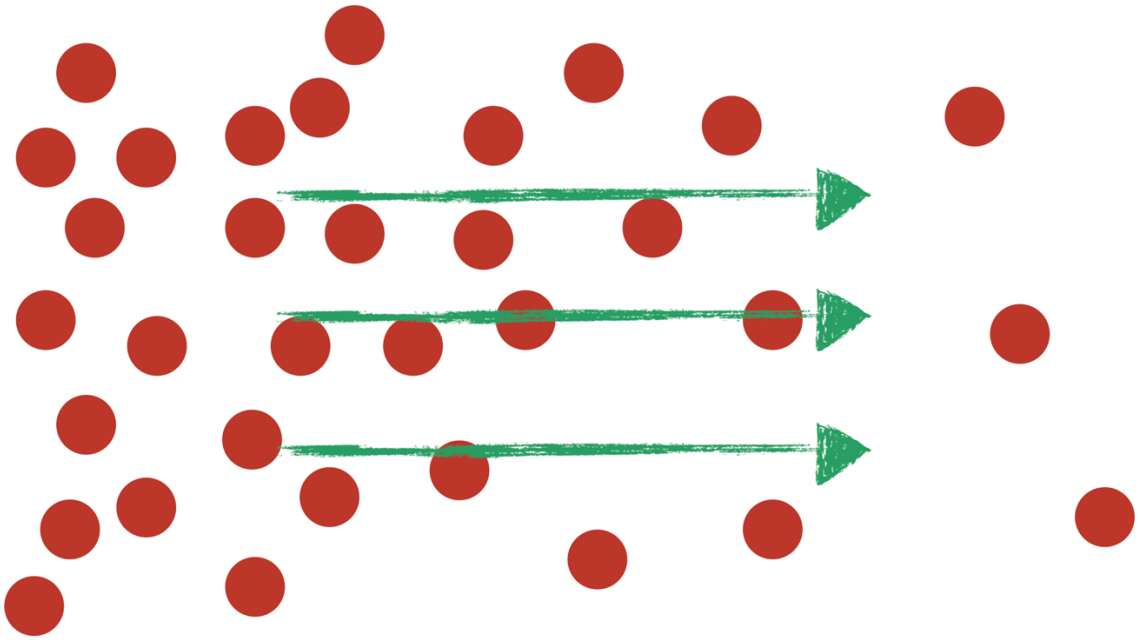
Date: .....

Class: .....

IGCSE BIOLOGY EDEXCEL 9-1

CHAPTER WORKBOOK

Movement of Substances



Diffusion

1. Define diffusion.

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2. For each diagram below state the net direction of diffusion. Use the phrase, "into cell", "out of cell" or "not net movement".

A: Direction of movement:

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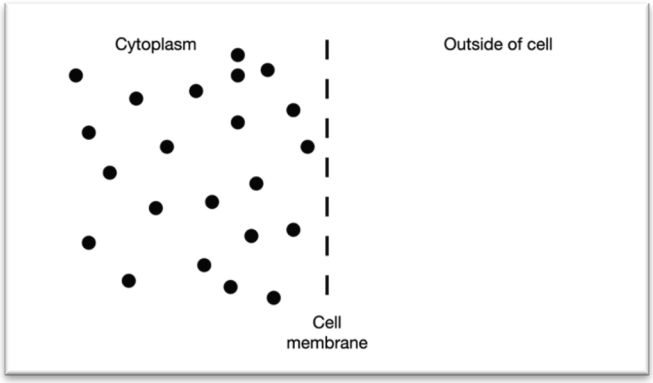

B: Direction of movement:

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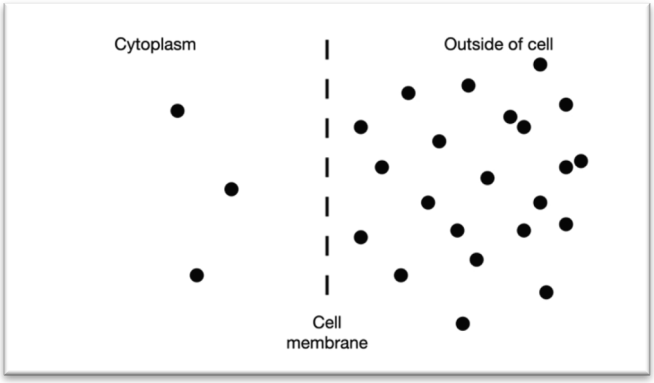

C: Direction of movement:

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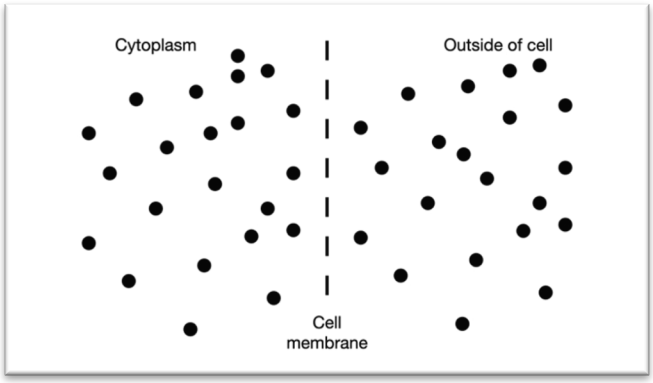

3. Complete the table to describe the factors that affect the rate of diffusion.

Factor	Effect on rate of diffusion
Temperature	....
Concentration gradient	....
Distance	....
Surface area to volume ratio	....

Osmosis

1. Define osmosis.

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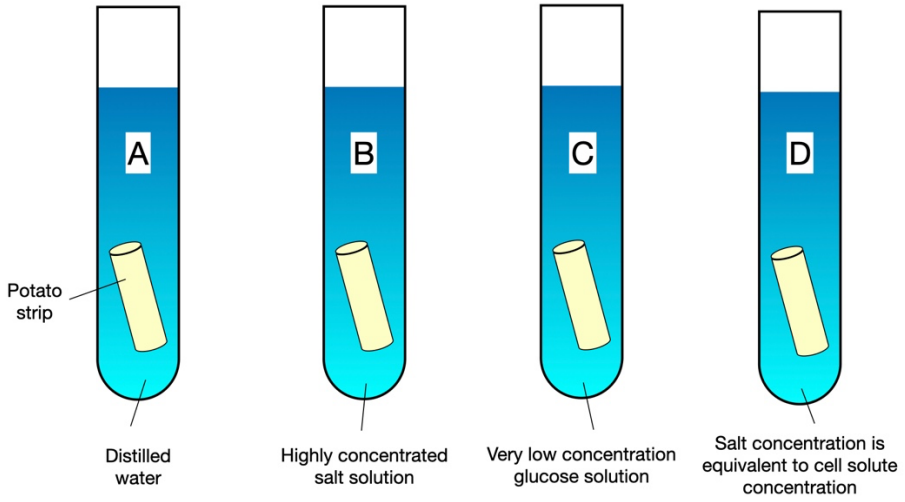
2. Potatoes are made of plant cells. When placed in solution, water can move across the cell membranes of the potato cells.

Potato strips are placed in different solutions. State and explain how the **mass** of the potato strips changes for each scenario. The first one has been done for you as an example.



A	Mass change	*Mass of potato strip increases*
	Explanation	*What enters the potato cells via osmosis*
B	Mass change	
	Explanation	
C	Mass change	
	Explanation	
D	Mass change	
	Explanation	

Active Transport

1. Define "active transport".

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2. Decide which of the following are required for active transport to take place. Put a tick (✓) in the box next to those things that are required and a cross (✗) next to those things that are not always required.

- ☐ Transport proteins on cell membranes
- ☐ A high temperature
- ☐ A steep concentration gradient
- ☐ ATP
- ☐ Osmotic pressure

3. Below are several examples of the movement of substances. Put a tick (✓) in the box next to those things that are examples of active transport and a cross (✗) next to those things that are not.

- ☐ Mineral ions are present in low concentrations in the soil and move into the root hair cells of plants.
- ☐ Oxygen is present in a high concentration in the alveoli and moves into the surrounding cells.
- ☐ Water moves passively into the roots of plants.
- ☐ Glucose moves against the concentration gradient from the lumen of the small intestine into the cells of the villi.