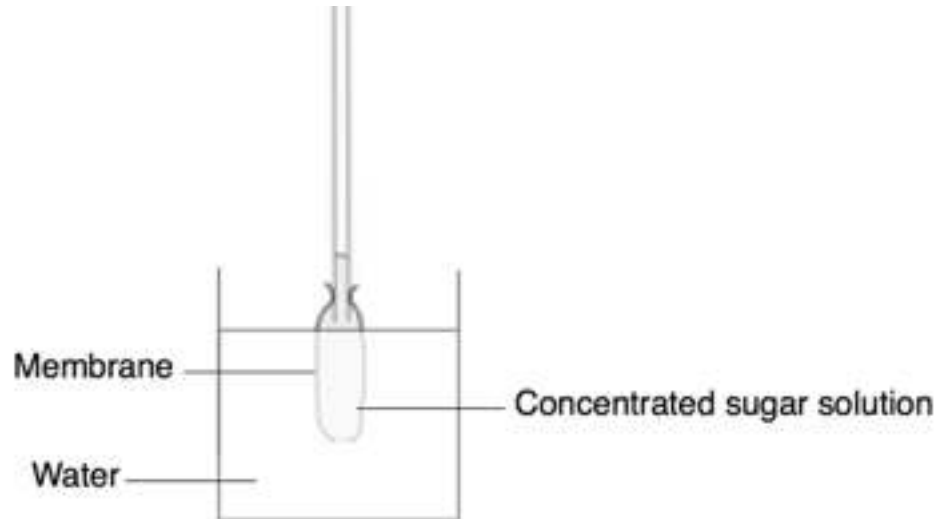


0	1
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A student set up an investigation to look at the movement of substances through a membrane, filled with concentrated sugar solution and tied around a capillary tube

The diagram shows this apparatus



0	1	.	1
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After a period of time the level of concentrated sugar solution up the capillary tube changes. Explain as fully as you can why the level changes

[3 marks]

Water enters through the membrane, or into the sugar solution, or water diffuses in (to the membrane) [1]

membrane is partially/selectively/semi-permeable [1]

water moves in by osmosis [1]

because the concentration (of sugar) is greater inside the membrane than outside/than the water in the beaker [1]

0	1	.	2
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The student repeated the experiment with a more dilute sugar solution. The results were different. In what way were they different?

Give a reason for your answer

[2 marks]

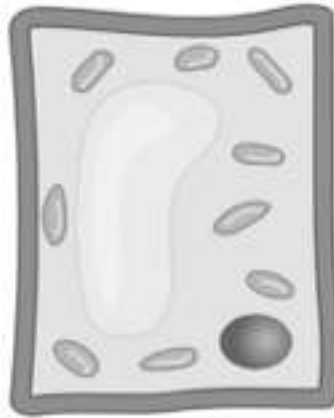
(level/it) rises more slowly or levels out earlier or does not rise as much [1]

due to less difference in concentration (between inside and outside of the membrane) [1]

TOP TIP : You can also say that there is less or slower osmosis or less water enters the membrane. There are lots of ways to describe osmosis and the movement of water. Be sure to use the correct terminology though!

0	1	.	3
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The diagrams below show what happens to a plant cell when placed in distilled water.



before



after

Explain why the cell swells as shown

[2 marks]

water molecules or water enters the cell/through the (semi-permeable) cell membrane [1]

by osmosis or because the concentration of water is greater outside (the cell) [1]

0	1	.	4
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A piece of peeled potato is placed in concentrated sugar solution. Describe the change which will occur and explain why this change occurs.

[3 marks]

(the piece of) potato shrinks or becomes flaccid or plasmolysis occurs or cytoplasm pulls away from the cell walls in the cells [1]

as water is drawn out of the cell [1]

as the concentration of sugar is higher outside the cell/there is less water on the outside[1]

TOP TIP : For the last mark here, you can say it the other way round i.e. concentration of sugar is lower on the inside or it is more dilute inside the cell

