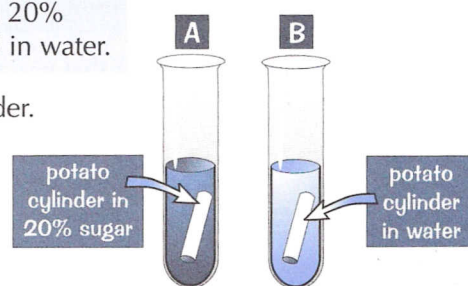


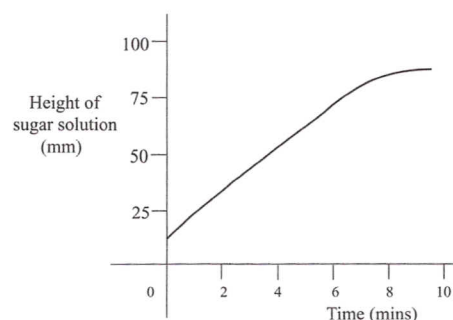
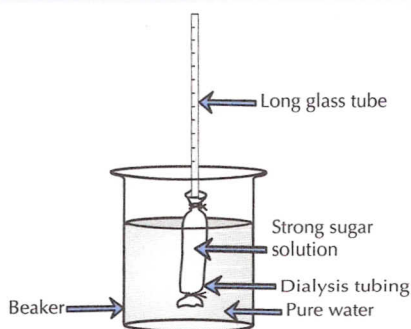
Transport Across Cell Membranes

Q1 Two identical cylinders of potato were obtained by pushing a cork-borer into a cut potato. One cylinder is placed in a 20% sugar solution (a strong solution), and the other is placed in water.

- Explain** what happens to the **length** of each potato cylinder.
- In another experiment a range of solutions of different concentrations were made, ranging from pure water to 20% sugar. It was noticed that the cylinder in one of the middle test tubes **did not change** length. Explain this result.



Q2 An experiment was set up as shown below. The level of the solution in the glass tube was then measured every minute. The results are shown in the graph.



- Why** did the solution rise in the glass tube?
 - What was the **level** of the solution at 5 minutes?
 - How much longer** did it take for the solution to reach its maximum height in the glass tube (88 mm)?
 - Would the solution take longer to reach a given height in the glass tube if the sugar solution inside the dialysis tubing was weaker? **Explain** your answer.
- Q3** Livadia is a Mediterranean village by the sea. In spring there is flooding and the sea water rises and covers some of the nearby farmland owned by farmer Antonis. Antonis has noticed that when this happens, his crops begin to shrivel and die. Explain **why** this happens.
- Q4** Luke carved a boat out of a potato, and played with it in the kitchen sink. He placed salt inside the boat as his cargo and then left it sitting on the water for an hour while he had lunch. When he returned to his boat, he found that it had water inside. The water was not there before lunch and nobody interfered with his boat.

Explain how the water got into the boat.

