

Activity 5 – Biology

Paper 1B, Q4a

The sucrose solution will pass through the partially permeable membrane and disperse into the water of lower concentration through osmosis.

It will rise. This is because the sucrose solution⁽³⁾ has a lower water potential (w.p) than the surrounding water in the beaker. The water goes into the solution via osmosis and so increases the volume of the solution, making the level rise.

The sucrose solution ~~will~~ will become more dilute because the water has osmosed down a concentration gradient along a partially permeable membrane into the glass tube. The fact it is partially permeable means it allows water in but will not allow the sucrose out.

do this with multiple temperatures and compare the rate in which it diffuses across, see how fast it takes for the concentration to even out between the sucrose solution and water

The beaker could be replaced by a water bath, with a thermometer to control the temperature. The time taken for the meniscus level to rise under a range of temperatures could be recorded. We could measure how long it takes for the solution to reach a certain height, which can be measured using a ruler. We would also need a stop watch to record the time.

- add a scale or ruler next to the glass tube so you can compare the rate of osmosis
- put in a water bath so you can change the temperature, have a thermometer
- use a stop clock to measure the time

Add Benedict's solution to the 4 different juices, then ^{Repeat the experiment but for these solutions} heat in a water bath at 70°C for 3 minutes. The more orange the solution is, the more concentrated it is. Then once the ~~tests~~ ^{colours} are identified, ~~match~~ ^{compare} and match the colours to the colours in the table. Whichever ^{is the} has the same colours, that concentration ~~is the same as~~ of the fruit juice.

The student ^{concentration of sugar in the four fruit juices.}

(3)

He could do the glucose test on each concentration by adding Benedict's solution and put in a water bath at 70°C . Then the student would evaluate the colours, and match them to the four fruit juices. The corresponding colours would have similar sugar concentrations, so if fruit juice A matched the colour of the 1% glucose tested, then fruit juice A ~~is composed~~ would be comprised of 1% glucose.

By repeating his method of 5cm^3 of these sugar solutions, added to 5cm^3 of Benedict's solution and He 3 minutes at 70°C ,

He student can then record the colours of these substances.

They then should match roughly and he can estimate how much sugar was in each fruit juice.