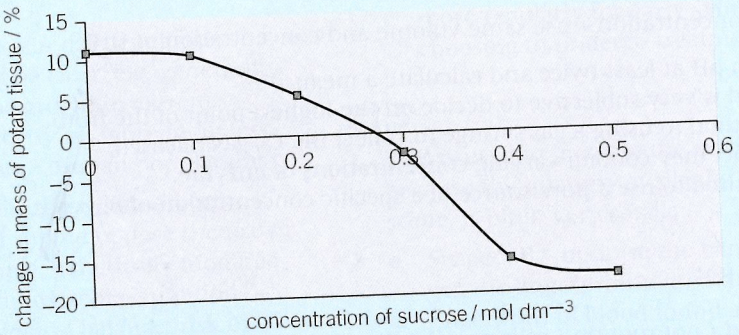
(b) There are different starting and finishing masses.
The mass change is very small; therefore a % change is easier to compare real differences.

3 (a) Correctly labelled axes with units;
uniform axes;
plots taking up over $\frac{1}{2}$ space of graph;
accurate plots;
smooth line of best fit.

(b) Use this graph to find the concentration of sucrose (where curve crosses x-axis). Between 0.25 and 0.3 mol dm^{-3}



(c) Use a data resource with listed sucrose concentrations and water potentials to find the water potential for the sucrose solution read off the graph.

Practical 4

1 (a) The red pigment is water soluble and held in the vacuole;
The cell-surface membrane is selectively permeable and some pigment diffuses out.

(b) As temperature increases from 20 to 40°C, there is a small increase in absorbance reflecting a small increase in the permeability of the cell-surface membrane.
Above 50°C there is a steep increase in the permeability of the cell-surface membrane.

(c) The proteins embedded in the cell-surface membrane become denatured.
The structure of the cell-surface membrane has been permanently disrupted so is now fully permeable and most of the pigment diffuses out.

Practical 5

1 (a) Spiracles.

(b) Control water vapour loss by closing spiracles if need to conserve water.

(c) High temperature environment causes more water to evaporate;
hairs trap water vapour and this reduces water potential gradient and therefore water vapour loss.

2 (a) Penetrate deep into muscle tissues;
delivers more air / oxygen to muscles.

(b) Chitin

(c) Smaller diameters are more permeable to gases and get closer to body cells for gaseous exchange by diffusion.

Practical 6

1 (a) To sterilise the equipment/ to kill any microbes on the equipment.

(b) 1 Washing hands / cleaning work surface with disinfectant
2 Flame sterilising the inoculating loop
3 Flaming the neck of the culture tube containing the bacteria
4 Streaking the plate with the inoculating loop **quickly**
5 Only lifting the lid of the petri dish a small amount

(c) To kill any harmful / pathogenic bacteria so they don't harm anyone.