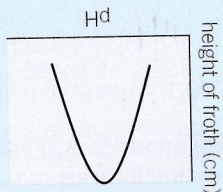


Practical questions – answers

Practical 1

- 1 (a) Sketch a graph of your expected results. Remember to label your axes.



- (b) List all variables that need to be controlled and how you would control them.
 Temperature – Keep celery extract and H_2O_2 in a thermostatically controlled water bath at $30^\circ C$
 Enzyme concentration – use the same source of celery extract which has been mixed evenly
 Substrate concentration – use same volume and concentration of H_2O_2

- 2 (a) Repeat each pH at least twice and calculate a mean.
 (b) This method is very subjective to decide on the highest point of the froth. Change method to using a gas syringe to collect the O_2 gas released.
 Celery extract may contain varying concentrations of enzyme.
 Change method to use a pure source of a specific concentration of enzyme.

Practical 2

1 (a) $\frac{12}{150} \times 100 = 8\%$

- (b) No stain used / not root tip / cells not dividing in this small sample / more than one layer of cells as not squashed firmly enough.

- 2 (a) As distance increases from the root tip, the mitotic index decreases.
 Above 1 mm an increase in distance from root tip has little effect on the mitotic index / plateaus.

- (b) Meristem tissue only nearest the tip has the ability to divide and there is less meristem tissue as the distance increases from the tip.
 Nearest the tip gets more damage, therefore needs to do more cell division to repair the tissue.

Practical 3

Concentration of sucrose [mol dm ⁻³]	Volume of distilled water [cm ³]	Volume of 0.5 mol dm ⁻³ stock solution sucrose [cm ³]
0.0	20	0
0.1	16	4
0.2	12	8
0.3	8	12
0.4	4	16
0.5	0	20

- 2 (a) Calculate the % change in mass of potato tissue.

Concentration of sucrose [mol dm ⁻³]	Mass before submerging in solution [g]	Mass after submerging in solution [g]	Mass change [g]	Percentage change in mass of potato tissue (%)
0.0	4.5	5.0	+0.5	+11.1
0.1	3.9	4.3	+0.4	+10.3
0.2	4.3	4.5	+0.2	+4.7
0.3	4.1	4.2	-0.1	-2.4
0.4	4.4	3.7	-0.7	-15.9
0.5	4.4	3.6	-0.8	-18.2