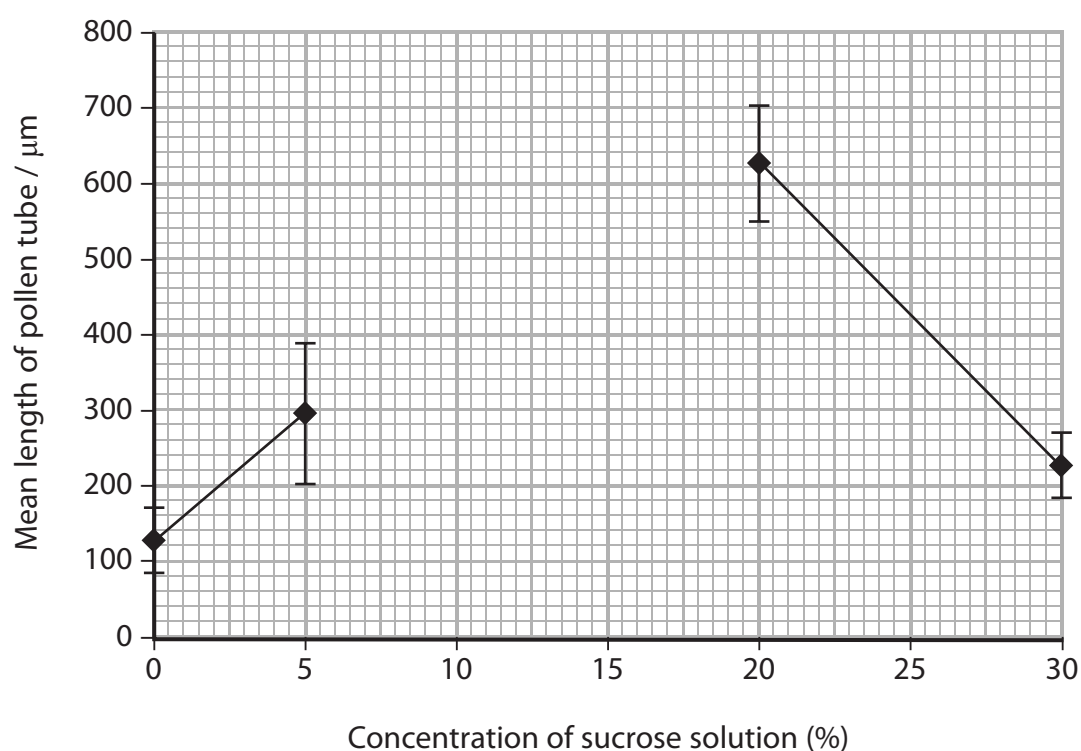


- 4 A student investigated the effect of sucrose concentration on the growth of pollen tubes.

Four pollen grains were placed in a small dish containing water. The pollen grains were left for two hours and the lengths of the pollen tubes produced were measured. The mean length was then calculated.

This procedure was repeated using dishes containing sucrose solutions at concentrations of 5%, 10%, 20% and 30%.

The graph below shows the mean lengths of the pollen tubes from four of the five sets of results. Error bars showing the range are also shown.



- (a) The table below shows the results for the pollen grains placed in the 10% sucrose solution.

Grain number	Length of pollen tube / $\mu\text{m}$
1	690
2	680
3	720
4	710
Mean	700



- (i) Using the information in the table, plot the mean length of pollen tubes and the error bar showing the range of data for the 10% sucrose solution and complete the graph.

(3)

- (ii) Using the completed graph, describe the effect of increasing sucrose concentration on the mean length of pollen tubes over the two-hour period.

(3)

.....

.....

.....

.....

.....

.....

.....

.....

.....

.....

.....

- (b) Explain the function of the pollen tube in fertilisation in flowering plants.

(3)

.....

.....

.....

.....

.....

.....

.....

.....

.....

.....

**(Total for Question 4 = 9 marks)**

