1: Determine the concentration of a glucose solution

Time: 1.5 h

Evaluated criteria: OPD and CE

Objective: To find the concentration of a glucose solution using a graph plotted by you.

Background information: Glucose is a reducing sugar which converters the purple colour of potassium permanganate to a colourless solution of manganese ions. Different concentrations of glucose will take different times to decolour a certain potassium permanganate solution.

Materials:
Glucose solution of 10%
Beakers of 50 mL
Sulfuric acid 1M
Potassium permanganate solution 0.4 g/L
Chronometer
2 unknown solutions

Method:
1. Prepare 5 solution (of 30 mL each) from a 10% glucose solution.
2. Add 10 mL of each to a small beaker and write its sollution on it.
3. Add 5 mL of 1M sulfuric acid to each beaker and move it gently.
4. Add 1 mL of potassium permanganate to the first beaker and move it gently. Time how long it takes for the colour to disappear. Repeat with the other concentrations.
5. Repeat step 2-4 twice for each concentration.
6. Collect all data in a table.
7. Calculate the average and the SD for each solution
8. Draw a graph with a line of best fit and error bars.

9. Using the line of best fit, find the concentration of the two unknown solutions. Perform step 2-4 to do so.

Data process:
Present the raw data and the processed data in a table.
Draw a graph with the uncertainties, units, SD and lines of best fit.

Conclusion and evaluation:
Use your data process to conclude and explain which concentration the unknown solutions had. Evaluate the method and analise the strengths and weaknesses of the experiment. Propose some improvements.