

AQA Chemistry A-level

Required Practical 9

Investigate how pH changes when a weak acid reacts with a strong base and when a strong acid reacts with weak base



pH probe calibration:

Method	Accuracy	Explanation
1. Rinse the pH probe thoroughly with deionised (distilled) water and shake gently to remove excess water.		
2. Place the probe in the standard pH 7.00 buffer solution provided. Record the pH reading.	<ul style="list-style-type: none"> • Ensure the bulb is fully immersed. 	
3. Repeat this process using the standard pH 4.00 and pH 9.20 buffer solutions. Record the pH readings.	<ul style="list-style-type: none"> • Rinse the pH probe thoroughly with deionised water before taking each reading. 	
4. Plot a graph of your recorded pH reading (x-axis) against the pH of the buffer solution (y-axis).		This calibration graph can be used to convert pH readings into more accurate pH values.

Measuring pH: acid-alkali mixture

Method	Accuracy	Explanation
1. Rinse a burette with 0.100 mol dm ⁻³ solution of ethanoic acid and then fill the burette with this solution. Label this burette.	Ensure the jet of the burette is filled without any air bubbles.	



2. Use the burette to transfer exactly 20.0 cm ³ of ethanoic acid to a clean 100 cm ³ beaker.		
3. Rinse a second burette with 0.100 mol dm ⁻³ NaOH solution and then fill this second burette with this solution. Label this burette.	Ensure the jet of the burette is filled without any air bubbles.	
4. Rinse the pH probe with distilled (deionised) water and clamp it so that its bulb is fully immersed in the ethanoic acid solution in the beaker.		
5. Use a rod to stir the solution gently and record the pH reading in a suitable table		
6. Add 2.0 cm ³ of NaOH solution from the burette at a time. Stir the solution and record the pH alongside the volume of NaOH added.		
7. When the end-point is being reached, add 0.20 cm ³ of NaOH each time. Stir the solution and record the pH alongside the volume of NaOH added.		
8. After this, continue adding 2.0 cm ³ NaOH until it is in excess. Stir the solution and record the pH alongside the volume of NaOH added.		These results allow a pH curve to be plotted.

Analysing the data:

- Use the pH probe calibration graph to adjust the pH readings obtained in the experiment. These corrected pH values should be entered into a new column in the table of results.
- Plot a graph of the corrected pH values (y-axis) against volume of sodium hydroxide solution added.
- Join the points in the most appropriate way (should be a curve).



Diagram:

