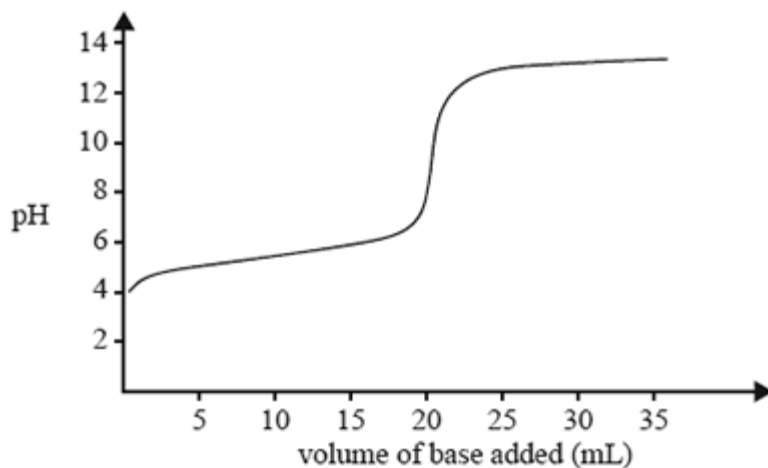


Friday Worksheet

Name:

Volumetric 3

1) The change in pH as a 0.10 M solution of a NaOH is added to 20.0 mL of a 0.10 M solution of a ethanoic acid is shown below.



Refer to the acid-base indicator data provided in the data book and identify the indicator that would be least suitable to detect the end point of this neutralisation. Explain why.

2) A 30.00 mL aliquot of 0.200 M CH_3COOH (ethanoic acid) is titrated with 0.160 M $\text{Ca}(\text{OH})_2$ solution.

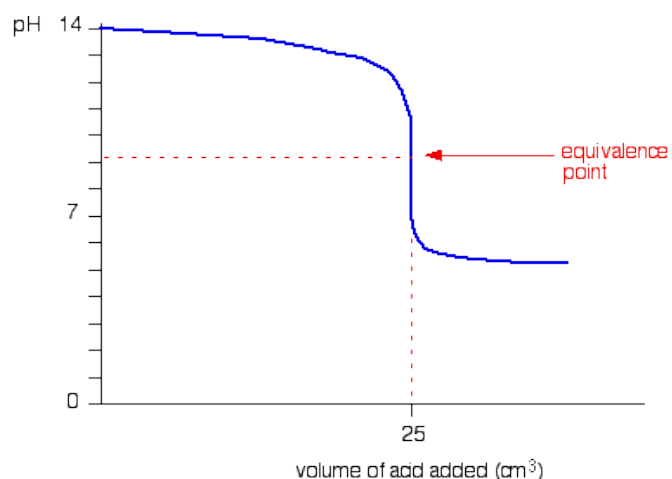
a) Give the equation for the reaction between the ethanoic acid and $\text{Ca}(\text{OH})_2$

b) What volume of the $\text{Ca}(\text{OH})_2$ solution is required to completely react with the ethanoic acid?

3) Consider the titration curve on the right.

a) What is the likely acid being used from the list below? Explain

- i) HCl
- ii) H₂SO₄
- iii) NH₄⁺



b) Explain, using your chosen acid as an example, why the equivalence point is at a pH significantly above 7.

Acid-base indicators

Name	pH range	Colour change		K_a
		Acid	Base	
Thymol blue	1.2–2.8	red	yellow	2×10^{-2}
Methyl orange	3.1–4.4	red	yellow	2×10^{-4}
Bromophenol blue	3.0–4.6	yellow	blue	6×10^{-5}
Methyl red	4.2–6.3	red	yellow	8×10^{-6}
Bromothymol blue	6.0–7.6	yellow	blue	1×10^{-7}
Phenol red	6.8–8.4	yellow	red	1×10^{-8}
Phenolphthalein	8.3–10.0	colourless	red	5×10^{-10}