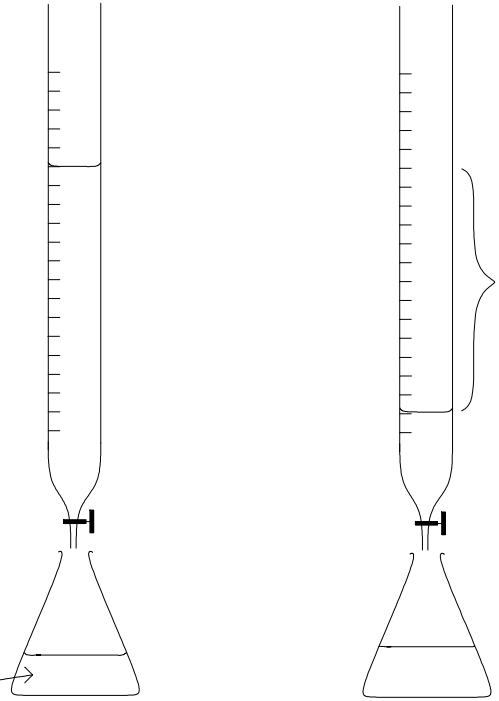
Titration of Iron(II) with Potassium Permanganate

Find the concentration of an iron(II) sulphate solution, given that 25.0cm^3 of the solution, when acidified, required 19.8cm^3 of 0.0200moldm^{-3} potassium manganate(VII) for oxidation.



19.8cm^3 0.02M $KMnO_4$(aq)

= 19.8 x 0.02 / 1000

= 3.96 x 10^{-4} moles

Equation	MnO_4^- + 5 Fe^{2+} + 8 H^+ ⟶	Mn^{2+} + 5 Fe^{3+} + 4 H_2O
Ratio	1 : 5	1 : 5
Moles	3.96 x 10^{-4} : 5 x 3.96 x 10^{-4}	= 1.98 x 10^{-3}

25cm^3 Fe(II)SO_4 (aq)

unknown concentration

1.98 x 10^{-3} moles in 25cm^3

concentration = moles / volume

$$= \frac{1.98 \times 10^{-3}}{(25/1000)}$$

= 7.92 x 10^{-2} moldm^{-3}