

AQA Chemistry GCSE

Required Practical 2 - Neutralisation
Higher Tier
Mark Scheme

M1.(a) (sulfuric acid is) completely / fully ionised 1

In aqueous solution **or** when dissolved in water 1

(b) $H^+(aq) + OH^-(aq) \rightarrow H_2O(l)$
allow multiples
1 mark for equation
1 mark for state symbols 2

(c) adds indicator, eg phenolphthalein / methyl orange / litmus added to the sodium hydroxide (in the conical flask)
do not accept universal indicator 1

(adds the acid from a) burette 1

with swirling **or** dropwise towards the end point **or** until the indicator just changes colour 1

until the indicator changes from pink to colourless (for phenolphthalein) or yellow to red (for methyl orange) or blue to red (for litmus) 1

(d) titrations 3, 4 and 5
or

$$\frac{27.05 + 27.15 + 27.15}{3}$$

1

$$27.12 \text{ cm}^3$$

accept 27.12 with no working shown for 2 marks

1

allow 27.1166 with no working shown for 2 marks

(e) Moles $\text{H}_2\text{SO}_4 = \text{conc} \times \text{vol} = 0.00271$

allow ecf from 8.4

1

Ratio $\text{H}_2\text{SO}_4:\text{NaOH}$ is 1:2

or

$$\text{Moles NaOH} = \text{Moles H}_2\text{SO}_4 \times 2 = 0.00542$$

1

$$\text{Concentration NaOH} = \text{mol} / \text{vol} = 0.00542 / 0.025 = 0.2168$$

1

$$0.217 \text{ (mol / dm}^3\text{)}$$

accept 0.217 with no working for 4 marks

1

accept 0.2168 with no working for 3 marks

(f) $\frac{20}{1000} \times 0.18 = \text{no of moles}$

or

$$0.15 \times 40 \text{ g}$$

1

0.144 (g)

1

accept 0.144g with no working for 2 marks

[16]