



Mark Scheme

Q1.

Question Number	Answer	Mark
	C (1.81×10^{23})	(1)

Q2.

Question Number	Answer	Mark
	<p>The only correct answer is C (31.2 dm^3)</p> <p><i>A is not correct because the answer assumes a 1:1 ratio of butane to oxygen</i></p> <p><i>B is not correct because the answer assumes a 1:2 ratio of butane to oxygen</i></p> <p><i>D is not correct because the answer assumes a 1:13 ratio of butane to oxygen</i></p>	(1)

Q3.

Question Number	Acceptable Answer	Mark
	<p>The only correct answer is C</p> <p><i>A is not correct because this is the appearance of the solution before the potassium hydroxide is added</i></p> <p><i>B is not correct because this is the colour that methyl orange would be in neutral solution</i></p> <p><i>D is not correct because this is a colour sometimes given for the end-point which is incorrect, and it is the colour of phenolphthalein in acidic solution</i></p>	(1)



Q4.

Question Number	Answer	Mark
	<p>The only correct answer is B (41.4%)</p> <p><i>A is not correct because this uses the atomic number in the calculation instead of the relative atomic mass</i></p> <p><i>C is not correct because this assumes the formula of strontium nitrate is $SrNO_3$</i></p> <p><i>D is not correct because this assumes the formula of strontium nitrate is $SrNO$</i></p>	(1)

Q5.

Question Number	Answer	Mark
	<p>The only correct answer is B (2.15×10^{22})</p> <p><i>A is not correct because the molar mass of carbon dioxide has been used in the calculation instead of that of carbon monoxide</i></p> <p><i>C is not correct because this is the number of molecules that are in one mole and not one gram of carbon monoxide</i></p> <p><i>D is not correct because this is the result of incorrectly using the molar mass of carbon monoxide rather than the number of moles of carbon monoxide</i></p>	(1)

Q6.

Question Number	Answer	Mark
	<p>The only correct answer is C</p> <p><i>A is not correct because this is the reverse of the correct colour change</i></p> <p><i>B is not correct because this is doing the reverse titration (acid in flask and carbonate in burette)</i></p> <p><i>D is not correct because this is going beyond the endpoint to an acidic solution</i></p>	(1)



Q7.

Question Number	Answer	Mark
	<p>The only correct answer is D (9.03×10^{24})</p> <p><i>A is not correct because this is the answer for 1 mol of aluminium oxide as molecules</i></p> <p><i>B is not correct because this is the answer for 3 mol of aluminium oxide as molecules</i></p> <p><i>C is not correct because this is the answer for the ions in 1 mol of aluminium oxide</i></p>	(1)

Q8.

Question Number	Answer	Mark
	<p>The only correct answer is A (66.67 / 11.11 / 22.22)</p> <p><i>B is not correct because this calculation uses atomic number not mass</i></p> <p><i>C is not correct because this calculation ignores the number of each type of atom present</i></p> <p><i>D is not correct because this calculation ignores the mass of each atom and only uses the number</i></p>	(1)

Q9.

Question Number	Answer	Mark
	<p>The only correct answer is C (36.7%)</p> <p><i>A is not correct because 21.3% is calculated using the atomic number of iron</i></p> <p><i>B is not correct because 35.1% is calculated using all atomic numbers</i></p> <p><i>D is not correct because 53.8% is calculated using the atomic numbers of sulfur and oxygen</i></p>	(1)



Q10.

Question Number	Acceptable Answer	Mark
	<p>The only correct answer is C</p> <p><i>A is not correct because a burette is used to measure varied volumes</i></p> <p><i>B is not correct because a measuring cylinder is less precise</i></p> <p><i>D is not correct because a volumetric flask is less precise</i></p>	(1)

Q11.

Question Number	Answer	Mark
	<p>The only correct answer is A (392.0)</p> <p><i>B is not correct because 312.0 is calculated from only 6 multiples of the H_2 of the 6-water</i></p> <p><i>C is not correct because 302.0 is calculated by not multiplying the water by 6</i></p> <p><i>D is not correct because 284.0 is calculated by ignoring the 6-water completely</i></p>	(1)

Q12.

Question Number	Answer	Mark
	<p>The only correct answer is C (57.5%)</p> <p><i>A is not correct because 40.3 % would be the % for $CuCO_3(OH)_2$</i></p> <p><i>B is not correct because 51.4 % would be the % for $CuCO_3$</i></p> <p><i>D is not correct because 67.9 % would be the % for Cu_2CO_3</i></p>	(1)



Q13.

Question Number	Answer	Mark
	<p>The only correct answer is D (3.6×10^{23})</p> <p><i>A is not correct because the number of moles of $(\text{NH}_4)_2\text{SO}_4$ has been divided by 3, rather than multiplied by 3</i></p> <p><i>B is not correct because it is the number of SO_4^{2-} ions</i></p> <p><i>C is not correct because it is the number of NH_4^+ ions</i></p>	(1)