

Question		Answer	Marks	AO element	Guidance
22	(a)	The oxidising agent is oxygen and the reducing agent is magnesium (1)	1	1.2	
	(b)	24.3 / 6.022 x 10 ²³ (1) 4.04 x 10 ⁻²³ (1)	2	2.1	1 mark for 4.03520425 x 10 ⁻²³ or correctly rounded up but not to 3 sig. fig.
23	(a)	electrolysis needs to run for longer than 30 seconds (1) otherwise insufficient change at electrodes (1) after electrolysis anode and cathode need to be washed (1) and then dried (1) before measuring the mass	4	2 x 3.2a 2 x 3.2b	
	(b)	copper is deposited at the cathode (1) copper anode dissolves / copper ions produced at anode (1)	2	1.2	ALLOW higher level answers in terms of half equations e.g. at cathode $\text{Cu}^{2+} + 2\text{e}^- \rightarrow \text{Cu}$ (1) e.g. at anode $\text{Cu} \rightarrow \text{Cu}^{2+} + 2\text{e}^-$ / $\text{Cu} - 2\text{e}^- \rightarrow \text{Cu}^{2+}$ (1)

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