

Question 1

1(g)	M1 $(0.0150 \times 20.0/1000 =) 0.0003(00) / 3.00 \times 10^{-4}$ (mol) M2 $(M1 \times 2 = 3.00 \times 10^{-4} \times 2 =) 0.0006(00) / 6.00 \times 10^{-4}$ (mol) M3 $(M2 \times 1000/25.0 = 6.00 \times 10^{-4} \times 1000 / 25.0 =) 0.0240$ (mol / dm ³) M4 63 (g / mol) M5 $(M3 \times M4 = 0.0240 \times 63 =) 1.51(2)$ (g / dm ³)	5
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Question 2

2(e)(i)	basic	1
2(e)(ii)	the oxidation number of copper is +2	1
2(e)(iii)	M1 M_r of $\text{Cu}(\text{NO}_3)_2 = 188$ (1) M2 $= 0.0200 \times M1 = 0.0200 \times 188 = 3.76$ g (1)	2
2(e)(iv)	M1 moles of gas formed = $0.0200 \times 5 / 2 = 0.05(00)$ (1) M2 volume = $M1 \times 24.0 = 0.05(00) \times 24.0 = 1.2(0)$ (1)	2
2(e)(v)	$2\text{Al} + 3\text{CuO} \rightarrow \text{Al}_2\text{O}_3 + 3\text{Cu}$ M1 correct products (1) M2 rest of equation correct (1)	2

Question 3

3(d)	M1 $(50.0 \times 0.200 + 1000 =) 0.01(1)$ M2 0.005(1) M3 0.16(0)(1)	3
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Question 4

4(c)(iv)	$0.005 / 5 \times 10^{-3}$ (1) $0.0025 / 2.5 \times 10^{-3}$ (1) 0.125 (1)	3
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Question 5

5(c)(iv)	M1 mol of K = $2.34 / 39 = 0.06(00)$ (1) M2 mol of $\text{H}_2 = 0.06 / 2 = 0.03(00)$ (1) M3 volume of $\text{H}_2 = 0.03 \times 24\,000 = 720$ cm ³ (1)	3
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Question 6

6(e)(ii)	M1 M_r $\text{Ca}(\text{NO}_3)_2 = 164$ (1) M2 mol $\text{Ca}(\text{NO}_3)_2 = 2.46 / 164 = 0.015(00)$ (1) M3 $0.015(00) / 0.015(00) = 1$ $0.0600 / 0.015(00) = 4$ and $x = 4$ (1)	3
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