

Question 1

1(c)	anode: bromine (1) cathode: silver (1)	2
1(d)(i)	cathode labelled 'silver deposited'	1
1(d)(ii)	to improve their appearance / to improve resistance to corrosion	1

Question 2

2(b)(i)	positive electrode: iodine (1) negative electrode: potassium (1)	2
2(b)(ii)	anode	1

Question 3

3(d)(i)	right hand electrode labelled cathode (1) electrolyte labelled (1)	2
3(d)(ii)	product at positive electrode: oxygen (1) observations at positive electrode: bubbles (1) product at negative electrode: hydrogen (1) observations at negative electrode: bubbles (1)	4

Question 4

4(d)	negative electrode: lithium (1) positive electrode: bromine (1) observations: red-brown vapour (1)	3
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Question 5

5(e)	<i>the anode</i> : bromine / Br ₂	1
	<i>the cathode</i> : potassium / K	1

Question 6

6(c)(i)	carbon / graphite	1
6(c)(ii)	inert / unreactive	1
6(c)(iii)	negative electrode: lithium (1) positive electrode: chlorine (1)	2

Question 7

7(c)(i)	wires leading from each side of power pack or battery to the electrodes (1) positive electrode labelled anode (1)	2
7(c)(ii)	positive electrode: chlorine (1) negative electrode: zinc (1)	2

Question 8

8(b)(i)	anode	1
8(b)(ii)	pure nickel rod gets smaller (1) spoon gets silvery / shiny / shinier(1)	2
8(b)(iii)	makes object more attractive / makes object more resistant to corrosion / makes object (surface) harder	1

Question 9

9(a)(i)	M1 breakdown by (the passage of) electricity (1) M2 of an ionic compound in molten or aqueous (state) (1)	2
9(a)(ii)	graphite is inert AND graphite conducts electricity	1
9(a)(iii)	$2\text{H}^+ + 2\text{e}^- \rightarrow \text{H}_2$ M1 $\text{H}^+ + \text{e}$ as only species on LHS(1) M2 equation correct(1)	2
9(a)(iv)	electrons	1
9(a)(v)	ions	1
9(a)(vi)	M1 oxygen(1) M2 hydrogen(1)	2

Question 10

10(a)(i)	arrow going from Zn to Fe	1
10(a)(ii)	$\text{Zn} \rightarrow \text{Zn}^{2+} + 2\text{e}^-$ Zn as only reactant and Zn^{2+} as only product correct equation	2
10(b)(i)	any metal above zinc in reactivity series	1
10(b)(ii)	any metal below iron in reactivity series	1
10(c)(i)	hydrogen and oxygen	1
10(c)(ii)	water	1
10(d)(i)	electrolysis	1
10(d)(ii)	mobile ions	1
10(e)(i)	hydrogen chlorine sodium hydroxide	3
10(e)(ii)	sodium	1