

Basics of Electrolysis and Electrodes

Q1. (2018) – 5e

A)

5(e)(i)	so that the ions can move	allow the solid does not conduct allow conducts when {in solution/liquid} ignore conducts when molten allow so cations / anions can move ignore so particles can move reject electrons move	(1) AO 2 2
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B)

5(e)(ii)	OH ⁻ and Cl ⁻ <u>only</u> circled		(1) AO 1 1
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C)

5(e)(iii)	An explanation linking one of the following pairs of points • use a crucible/metal container (instead of a beaker) (1) • which will not break/melt (when heated strongly) (1) OR • add a Bunsen burner (under the container) (1) • because heat needed to melt the lead bromide / to make the lead bromide a liquid (1)	allow blow torch ignore hot water bath	(2) AO 3 3b
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Q2. (2018) – 7c

A)

7(c)(i)	dc (supply) / direct current / battery	allow power pack allow electrical supply allow power supply allow power source ignore electricity	(1) AO 2 1
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B)

7(c)(ii)	nickel sulfate/nickel chloride/nickel nitrate/soluble nickel salt		(1) AO 3 3a
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Q3. (2019)

9(a)(i)	(squeaky) pop / gas burns / water forms	allow explosion / bang / flame / fire / energy released ignore: reaction occurs / ignites / set alight ignore references to splints (glowing or lighted)	(1)
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Q4. (2019) – 9b

9(b)	C lead and bromine is the only correct answer A is incorrect because lead is produced at the cathode B is incorrect because lead and bromine are produced D is incorrect because bromine is produced at the anode	(1)
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Q5. (2019) – 9c

9(c)	An explanation linking: (calcium) nitrate {is soluble/ dissolves}/ (calcium) carbonate {is insoluble/ does not dissolve} (1) - so ions {free to move in solution / not free in solid} (1)	calcium nitrate dissolves so ions can move (2) or reverse argument for calcium carbonate	(2)
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Q6. (2020)

A)

8(a)(i)	A description including - apply lighted splint (1) - gas burns / (squeaky) pop (1)	allow flame / ignite gas ignore 'squeaky pop test' / glowing splint second mark is dependent on first	(2)
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B)

8(a)(ii)	B oxygen The only correct answer is B A, C & D these gases are not produced in the electrolysis of sodium sulfate solution	(1)
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C)

8(a)(iii)	- electrical energy / electricity (1) {decomposes / breaks down / splits} {electrolytes / (ionic) compounds / substances} (1)	allow electric current allow <u>separates</u> ions reject decomposing elements for MP2	(2)
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Q7. (2020) – 8d

A)

8(d)(i)	measuring cylinder(s)	allow alternative apparatus eg graduated test-tube, burette, Hofmann voltmeter, gas syringe	(1)
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B)

8(d)(ii)	light bulb / lamp / ammeter	allow alternative equipment eg buzzer ignore voltmeter / data-logger alone	(1)
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Q8. (2021) – 6b

A)

6(b)(i)	test tube/ boiling tube	(1) AO1
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B)

6(b)(ii)	A electrode is the only correct answer. B, C and D are incorrect because they are not electrodes.	(1) AO2
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Q9. (2022) – 6c

A)

6(c)(i)	H^+ and Na^+ only circled	(1) AO1-1
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B)

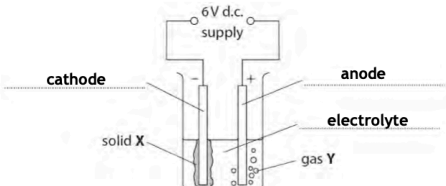
6(c)(ii)	so that they do not react (with the electrolyte/sodium sulfate solution / products formed)	allow graphite is unreactive allow so they do not corrode	(1) AO1-1
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Q10. (2023)

A)

3(a)	B the decomposition of ionic compounds is the only correct answer A, C and D are incorrect statements	AO1-1 (1)
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B)

3(b)(i)		All 3 correct scores 2 marks 1 or 2 correct scores 1 mark allow copper chloride solution to replace electrolyte	AO1-2 (2)
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C)

3(b)(ii)	<table><tr><th>product</th><th>name</th></tr><tr><td>solid X</td><td>carbon</td></tr><tr><td></td><td>chlorine</td></tr><tr><td></td><td>copper</td></tr><tr><td>gas Y</td><td>hydrogen</td></tr></table>	product	name	solid X	carbon		chlorine		copper	gas Y	hydrogen	one mark for each line do not award mark if more than one line is drawn from each box on the left	AO1-2 (2)
	product	name											
	solid X	carbon											
		chlorine											
		copper											
gas Y	hydrogen												

D)

3(b)(iii) Group B	An explanation linking the following - no current will flow / solid ionic compounds do not conduct electricity (1) (because) ions can't move / ions in a lattice (1)	Allow reverse arguments allow no electricity flows do not accept 'nothing happens' ignore charged particles reject electrons/atoms/molecules can't move if no other mark awarded allow 1 mark for 'copper chloride isn't dissolved' / 'it will only work if ions are in solution'	AO1-1 (2)
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Q11. (2024) – 6c

A)

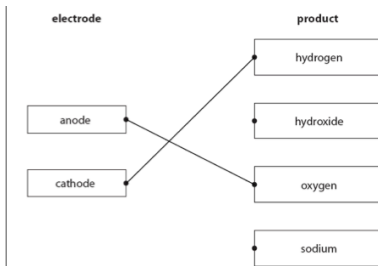
6(c)(i)	does not react / chemically stable (1) conducts (electricity) / a conductor (1)	allow inert (1) ignore cheap / not soluble	(2) AO1-1
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B)

6(c)(ii)	D SO_4^{2-} and OH^- ions is the only correct answer A is not correct as H^+ would be attracted to the negative electrode B is not correct as SO_4^{2-} and OH^- ions would be attracted to the positive electrode C is not correct as H^+ and Na^+ would be attracted to the negative electrode	(1) AO1-1
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C)

6(c)(iii)



do not award answers with more than one line from any of the boxes on the left

(2)
AO1-1