

## Questions

Q1.

Answer the question with a cross in the box you think is correct ☐. If you change your mind about an answer, put a line through the box ☐ and then mark your new answer with a cross ☐.

This question is about electrolysis.

A sample of molten potassium bromide is electrolysed.

What are the two products formed?

- ☐ A hydrogen and oxygen
- ☐ B hydrogen and bromine
- ☐ C potassium and oxygen
- ☐ D potassium and bromine

(1)

(Total for question = 1 mark)

Q2.

Molten lead bromide is electrolysed.

The products of this electrolysis are

- ☐ A hydrogen and bromine
- ☐ B hydrogen and oxygen
- ☐ C lead and bromine
- ☐ D lead and oxygen

(1)

(Total for question = 1 mark)

Q3.

Molten zinc chloride is an electrolyte.

(i) Which row shows the products formed at the anode and at the cathode when molten zinc chloride is electrolysed?

(1)

	product at anode	product at cathode
<input type="checkbox"/> A	oxygen	zinc
<input type="checkbox"/> B	chlorine	hydrogen
<input type="checkbox"/> C	chlorine	zinc
<input type="checkbox"/> D	oxygen	hydrogen

(ii) Which of the following is the reason why molten zinc chloride is an electrolyte?

(1)

- ☐ A it contains molecules that can move
- ☐ B it has a giant structure
- ☐ C it contains delocalised electrons
- ☐ D it contains ions that can move

(Total for question = 2 marks)

Q4.

Objects made from transition metals are sometimes coated with a thin layer of another transition metal to improve their appearance and to protect against corrosion.

Figure 10 shows equipment that can be used to electroplate an iron spoon with silver.

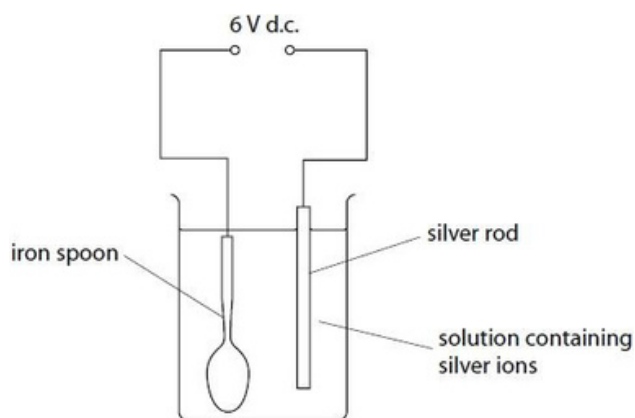


Figure 10

(i) Which row of the table correctly shows the charge on the silver rod electrode and the type of reaction occurring at this electrode?

(1)

	charge	type of reaction
<input type="checkbox"/> A	negative	oxidation
<input type="checkbox"/> B	negative	reduction
<input type="checkbox"/> C	positive	oxidation
<input type="checkbox"/> D	positive	reduction

(ii) Silver metal is deposited on the spoon.

Which half-equation represents this reaction?

(1)

- ☐ A  $\text{Ag} + \text{e}^- \rightarrow \text{Ag}^+$
- ☐ B  $\text{Ag} \rightarrow \text{Ag}^+ + \text{e}^-$
- ☐ C  $\text{Ag}^+ + \text{e}^- \rightarrow \text{Ag}$
- ☐ D  $\text{Ag}^+ \rightarrow \text{Ag} + \text{e}^-$

(Total for question = 2 marks)

Q5.

Ammonia solution is alkaline.

Which of the following could be used to show that ammonia solution is alkaline?

(1)

- ☐ A conical flask
- ☐ B pH meter
- ☐ C pipette
- ☐ D thermometer

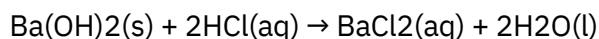
(Total for question = 1 mark)

Q6.

Some questions must be answered with a cross in a box ☒. If you change your mind about an answer, put a line through the box ☒ and then mark your new answer with a cross ☒.

Barium hydroxide reacts with dilute hydrochloric acid to form barium chloride and water.

The equation for the reaction is



Which row of the table shows the correct state of each of the substances in the equation for the reaction?

(1)

	barium hydroxide	hydrochloric acid	barium chloride	water
<input checked="" type="checkbox"/> A	solid	aqueous	aqueous	liquid
<input checked="" type="checkbox"/> B	solid	liquid	solid	aqueous
<input checked="" type="checkbox"/> C	aqueous	aqueous	solid	liquid
<input checked="" type="checkbox"/> D	aqueous	liquid	aqueous	aqueous

(Total for question = 1 mark)

Mark Scheme

Q1.

Question number	Answer	Mark
	<p><b>D potassium and bromine D is the only correct answer.</b></p> <p><b>A is incorrect since neither hydrogen nor oxygen are products of this electrolysis.</b></p> <p><b>B is incorrect because only bromine is a product and hydrogen is not a product of this electrolysis.</b></p> <p><b>C is incorrect since only potassium is a product and oxygen is not a product of this electrolysis.</b></p>	<p><b>(1)</b></p> <p><b>AO1</b></p>

Q2.

Question number	Answer	Mark
	<p><b>C lead and bromine is the only correct answer</b></p> <p><b>A is incorrect because lead is produced at the cathode</b></p> <p><b>B is incorrect because lead and bromine are produced</b></p> <p><b>D is incorrect because bromine is produced at the anode</b></p>	<p><b>(1)</b></p>

Q3.

Question Number	Answer	Mark
<b>(i)</b>	<p><b>C chlorine zinc</b></p> <p><b>The only correct answer is C</b></p> <p><b>A is not correct because oxygen cannot be produced by the electrolysis of this molten salt</b></p> <p><b>B is not correct because hydrogen cannot be produced by the electrolysis of this molten salt</b></p> <p><b>D is not correct because hydrogen and oxygen cannot be produced by the electrolysis of this molten salt</b></p>	<p><b>(1)</b></p> <p><b>AO 2 1</b></p>

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Question Number	Answer	Mark
(ii)	<p><b>D</b> it contains ions that can move</p> <p><b>The only correct answer is D</b></p> <p><i>A is not correct because molten zinc chloride does not contain molecules</i></p> <p><i>B is not correct because molten zinc chloride does not have a giant structure</i></p> <p><i>C is not correct because delocalised electrons are not present</i></p>	<p><b>(1)</b></p> <p>AO 1 1</p>

Q4.

Question number	Answer	Mark
(i)	C	<b>(1)</b>

Question number	Answer	Mark
(ii)	C	<b>(1)</b>

Q5.

Question number	Answer	Mark
	B	<b>(1)</b>

Q6.

Question number	Answer	Mark
	<p><b>A</b> solid    aqueous    aqueous    liquid    is the only correct answer</p> <p><b>B</b> is incorrect because hydrochloric acid is aqueous</p> <p><b>C</b> and <b>D</b> are incorrect as barium hydroxide is a solid</p>	<p><b>(1)</b></p> <p>A01-1</p>