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CANDIDATE NAME			
CLASS		DATE	

CHEMISTRY

0620 STYLE

Electrolysis: Topic Practice Paper

Core and Extended

40 minutes

You must answer on the question paper.
No additional materials are needed.

INSTRUCTIONS

- Answer **all** questions.
- Use a black or dark blue pen. You may use an HB pencil for any diagrams or graphs.
- Write your name, class and date in the boxes at the top of the page.
- Write your answer to each question in the space provided.
- Do **not** use an erasable pen or correction fluid.
- You may use a calculator.

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INFORMATION

- The total mark for this paper is 36.
- The number of marks for each question or part question is shown in brackets [ ].
- Questions marked **(Extended)** are for Extended students. Core students may leave them out.

For teacher's use

Question	1	2	3	4	Total
Marks					
Out of	10	12	8	6	36

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1 This question is about electrolysis.

(a) Define the term *electrolysis*.

.....

..... **[2]**

(b) Fig. 1.1 shows the apparatus used to electrolyse molten lead(II) bromide.

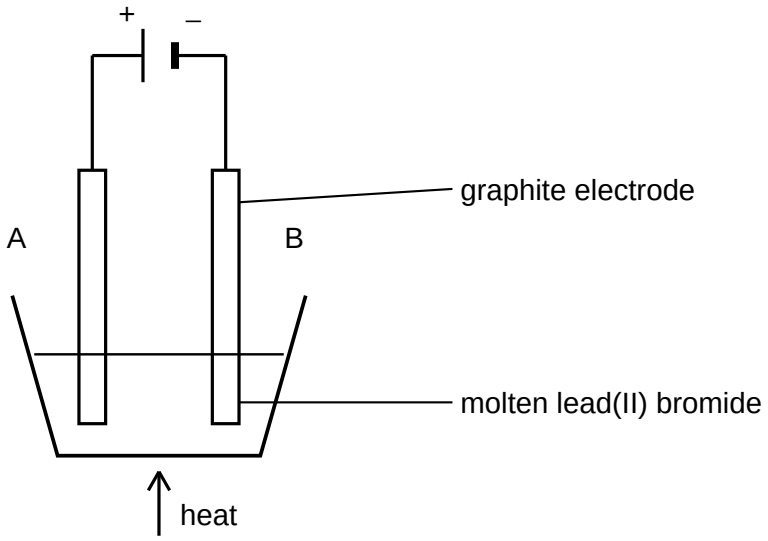


Fig. 1.1

(i) Which electrode, **A** or **B**, is the anode?

..... **[1]**

(ii) Explain why the lead(II) bromide must be molten for electrolysis to happen.

.....

..... **[2]**

(iii) Name the product formed at each electrode.

anode .....

cathode .....

[2]

(iv) State what is **seen** at the anode.

..... **[1]**

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(c) Graphite is used for the electrodes. Give **two** properties of graphite that make it suitable.

.....

..... **[2]**

[Total: 10]

2 Aqueous solutions can be electrolysed using inert electrodes.

(a) Complete Table 2.1 to show the product at each electrode.

Table 2.1

electrolyte	product at cathode	product at anode
concentrated aqueous sodium chloride		
dilute sulfuric acid		
aqueous copper(II) sulfate		

[6]

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(b) **(Extended)** Explain why hydrogen, and not sodium, is formed at the cathode when concentrated aqueous sodium chloride is electrolysed.

.....

.....

..... **[2]**

(c) **(Extended)** Write ionic half-equations for the reactions at each electrode during the electrolysis of concentrated aqueous sodium chloride.

cathode .....

anode .....

[2]

(d) Describe a test for chlorine. Give the result.

test .....

result .....

[2]

[Total: 12]

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3 A student electroplates an iron key with copper. Fig. 3.1 shows the apparatus.

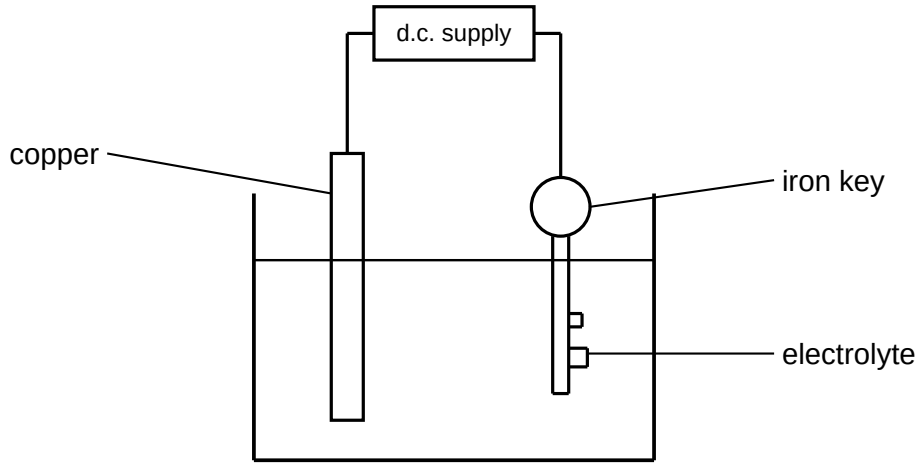


Fig. 3.1

(a) State whether the iron key should be the anode or the cathode.

..... **[1]**

(b) Name a suitable electrolyte.

..... **[1]**

(c) Give **two** reasons why metals are electroplated.

1 .....

2 .....

[2]

(d) **(Extended)** Write ionic half-equations for the reactions at each electrode.

at the key .....

at the copper electrode .....

[2]

(e) **(Extended)** The colour of the electrolyte does not change during the experiment. Explain why.

.....

.....

..... **[2]**

[Total: 8]

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4 Aluminium is extracted by the electrolysis of aluminium oxide dissolved in molten cryolite. The electrodes are made of carbon.

(a) Explain why the aluminium oxide is dissolved in molten cryolite.

.....

..... **[2]**

(b) The carbon anodes must be replaced regularly. Explain why.

.....

.....

..... **[2]**

(c) **(Extended)** Write the ionic half-equation for the reaction at the cathode.

..... **[1]**

(d) **(Extended)** Explain why the reaction at the cathode is a reduction.

..... **[1]**

[Total: 6]

END OF PAPER

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