

SMART EXAM RESOURCES
SUBJECT: CHEMISTRY
TOPIC: ELECTROCHEMISTRY
SET-3-QP-MS

ELECTROLYSIS OF MOLTEN COMPOUNDS

1 Molten potassium chloride undergoes electrolysis.

(i) State what is meant by the term *electrolysis*.

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

(ii) Name the products formed at the positive electrode (anode) and negative electrode (cathode) when molten potassium chloride undergoes electrolysis.

anode

cathode

[2]

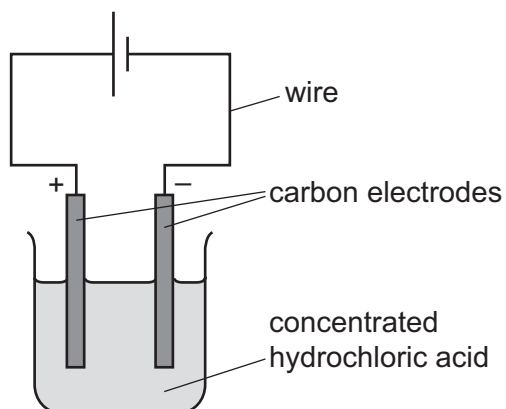
MARK SCHEME:

(i)	breakdown by (the passage of) electricity (1) of an ionic compound in molten or aqueous (state) (1)	2
(ii)	(anode) chlorine (cathode)potassium	1

2

This question is about electrolysis.

Concentrated hydrochloric acid is electrolysed using the apparatus shown.



The electrolysis is repeated using molten lead(II) bromide.

Describe what is seen at the:

- cathode
- anode.

[2]

MARK SCHEME:

M1 cathode: silver / grey solid (1)	2
M2 anode: bubbles of orange / brown gas (1)	

3

The student carries out an electrolysis experiment on molten lead(II) chloride using the apparatus shown in Fig. 4.1. Chlorine gas forms at the anode and escapes from the apparatus.

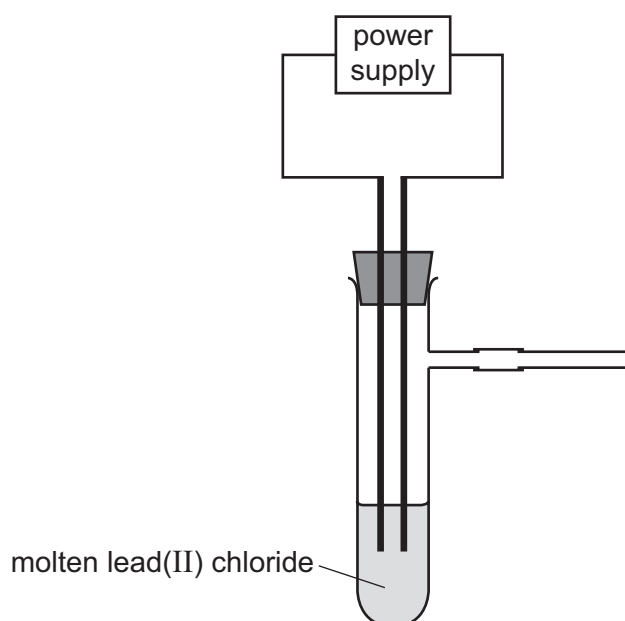


Fig. 4.1

- (i) Explain why lead(II) chloride needs to be molten before it will conduct electricity.

.....
 [1]

- (ii) Write the ionic half-equation for the reaction occurring at the anode.

..... [2]

- (iii) State the test for chlorine gas.

test
 observations [2]

- (iv) Describe what is observed at the cathode.

..... [1]

MARK SCHEME

(i)	mobile ions	1
(ii)	$2\text{Cl}^- \rightarrow \text{Cl}_2 + 2\text{e}^-$ M1 any negative Cl species losing electron(s) (1) M2 correct ionic half equation (1)	2
(iii)	M1 (damp) litmus (paper) (1) M2 is bleached / goes white (1)	2
iv	(shiny) grey AND solid	1