

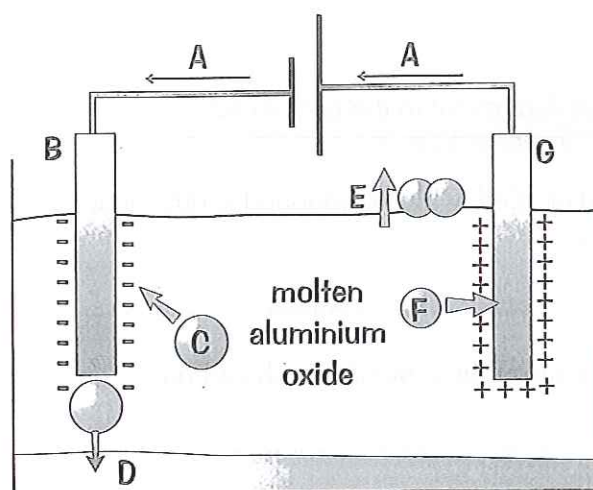
# Electrolysis

Q1 Complete the passage about **electrolysis** using words from the box below.

dissolved	molecules	electric	given to	electrolyte
decompose	external circuit	taken from	molten	

During the electrolysis of an ionic compound, an ..... current is passed through a ..... or ..... ionic substance, causing it to ..... This liquid is called the ..... Electrons are ..... ions at the positive electrode and are passed through the ..... to the negative electrode, where they are ..... other ions in the solution. Atoms or ..... are formed.

Q2 The diagram below shows the electrolysis of **molten aluminium oxide**.



Write the labels that should go at points A–G:

A .....

E .....

B .....

F .....

C .....

G .....

D .....

Q3 Explain why the **electrolyte** needs to be either a **solution** or **molten** for electrolysis to work.

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## Electrolysis

- Q4 a) Tick the correct boxes to show whether the following statements are true or false.
- |   | True                     | False                    |
|---|--------------------------|--------------------------|
| i) Ionic substances can only be electrolysed if molten or in solution.        | <input type="checkbox"/> | <input type="checkbox"/> |
| ii) When an ionic solid melts the ions are free to move and carry charge.     | <input type="checkbox"/> | <input type="checkbox"/> |
| iii) During electrolysis, non-metals are attracted to the negative electrode. | <input type="checkbox"/> | <input type="checkbox"/> |
| iv) In the extraction of aluminium the electrolyte is molten aluminium metal. | <input type="checkbox"/> | <input type="checkbox"/> |
| v) The aluminium metal produced is molten.                                    | <input type="checkbox"/> | <input type="checkbox"/> |
| vi) Aluminium ions gain electrons in electrolysis.                            | <input type="checkbox"/> | <input type="checkbox"/> |
- b) Write out a correct version of each false statement.

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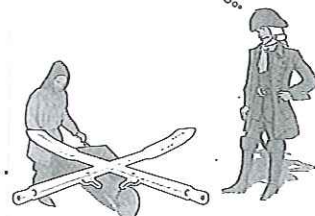
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- Q5 **Aluminium** is the most abundant metal in the Earth's crust.  
The most common aluminium ore is bauxite.

Goodness, how awfully common... ooo

- a) When this ore is mined and purified, which compound is obtained?  
Give its name and formula.

Name ..... Formula .....



- b) Why can't aluminium be extracted by reduction with carbon?

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- Q6 **Aluminium** is extracted from its ore by electrolysis.

- a) State whether the pure aluminium is formed at the positive or the negative electrode.

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- b) Write balanced half-equations for the reactions at the electrodes.

Negative electrode: .....

Positive electrode: .....

**Top Tips:** Usually, things that are common are cheap to buy — like potatoes. But, even though aluminium is as common a metal as you're going to get, it's not actually that cheap because it costs a lot to extract. (Potatoes, on the other hand, are easy to extract — just get digging.)