

Edexcel Chemistry A-level

Practical 10

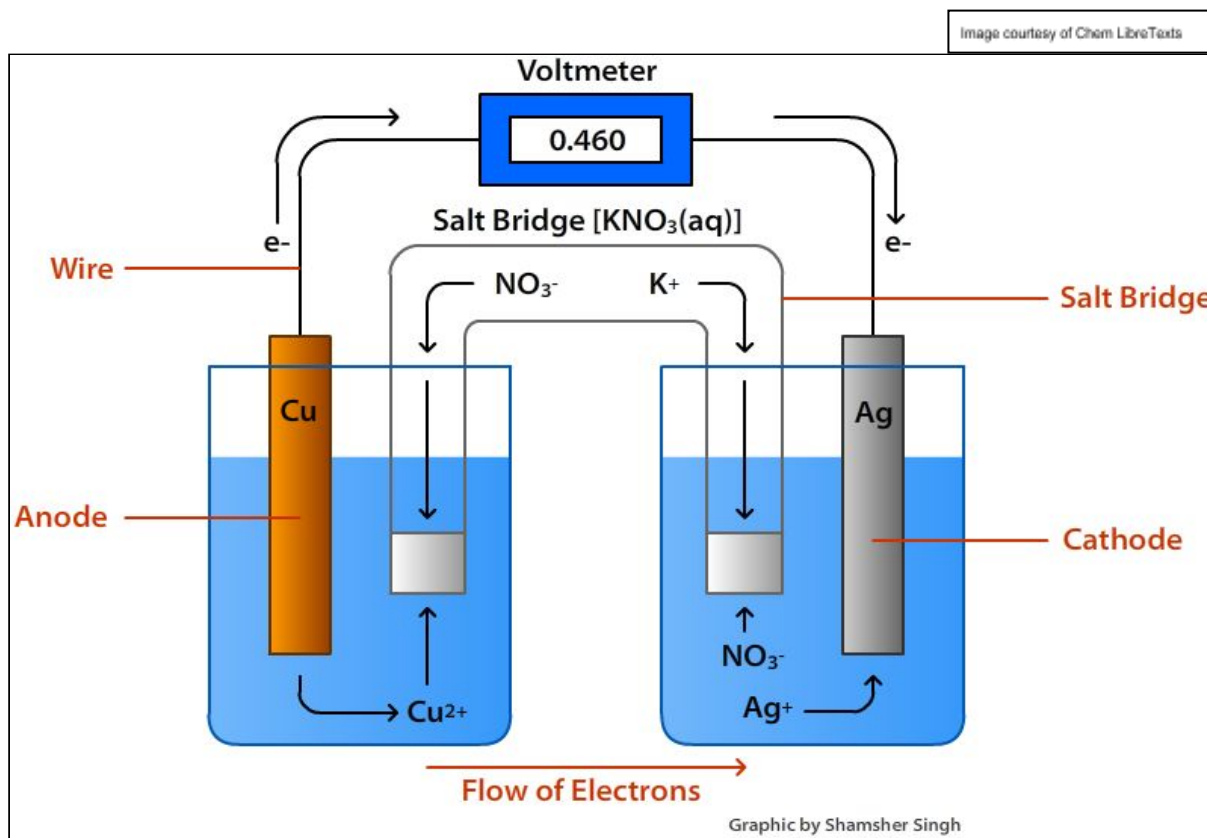
Constructing electrochemical cells.



Method

- For each half cell, clean the strips of either metal or graphite (if you have an ion/ion half cell) with sandpaper so there is surface area exposed for the reactions to occur.
- To create a salt bridge soak a strip of filter paper in KNO_3 .
 [Used to complete the circuit by allowing movement of ions and balancing charges. Use of K^+ and NO_3^- minimises the chance of precipitates forming (soluble salts).]
- Use a high resistance voltmeter to find the value of the E_{cell} .

Diagram



Key Points

- Standard conditions: **1 mol dm⁻³** solutions, gases at **100 kPa**, **298 K**.
- If the value is -ve, the electrodes are the wrong way round.
- Remember, for a thermodynamically feasible process, EMF has to be **positive**.
- EMF = $E_{\text{R}} - E_{\text{L}}$** , where R - right hand cell, where the reduction occurs, and E_{L} - left hand cell, where oxidation occurs.



Safety

- Some solutions are **too dangerous** to use at 1 mol dm^{-3} (e.g. silver nitrate which is highly oxidising).
- Zinc sulphate and iron (II) sulphate are **harmful to the environment** therefore have to be disposed of safely.
- Electrodes must be made from an **inert** substance and cannot be made from a metal that reacts with water (e.g. Mg).
- Differences between experimental values and theoretical values usually stem from the **conditions** not being standard.

