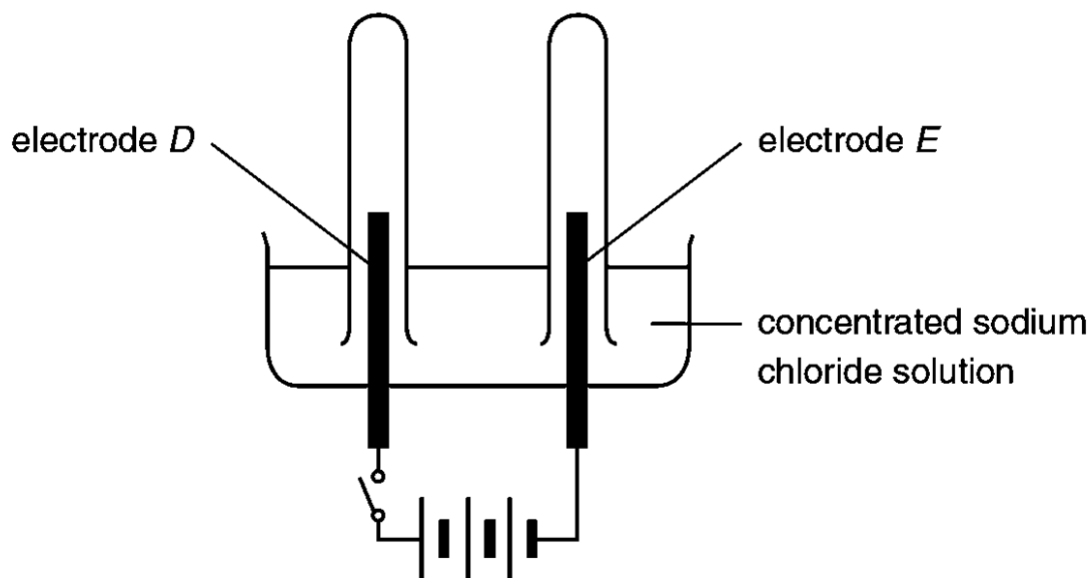


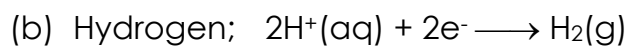
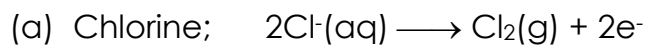
Quiz (Effect of Concentration on Electrolysis)

The following set-up shows the electrolysis of concentrated sodium chloride solution using graphite electrodes.



When the circuit is closed, gases are collected at both electrodes.

- What is the gas collected at electrode *D*? Write a half equation for the reaction involved.
- What is the gas collected at electrode *E*? Write a half equation for the reaction involved.
- Write an overall equation for the reaction taking place during electrolysis.
- If a few drops of litmus solution are added to the concentrated sodium chloride solution, the solution near electrode *D* turns red and then colourless. Explain this observation.
- What would be the gas(es) collected at each electrode if concentrated sodium chloride solution is replaced by very dilute sodium chloride solution?

Suggested Answer

(d) The Cl_2 formed at electrode D dissolves in water to form $\text{HCl}(\text{aq})$ and $\text{HOCl}(\text{aq})$.

$\text{HCl}(\text{aq})$ turns the litmus solution red because it is acidic.

$\text{OCl}^-(\text{aq})$ ions ionized from $\text{HOCl}(\text{aq})$ turns the litmus solution colourless because of its bleaching action.

(e) Oxygen would be collected at electrode D and hydrogen would be collected at electrode E.