

Question 12 (Answer: **D**)

- A fuel cell is the *opposite* of electrolysis: it produces electricity from a reaction rather than driving one.
- Water is the product, not the reactant, so it is not being broken down.
- Hydrogen is oxidised and oxygen reduced, and water is the only product.

Question 15 (Answer: **B**)

- In a fuel cell the fuel is the substance oxidised, so it must be the hydrogen.
- The oxidising agent is what gains the electrons – the oxygen.
- Nitrogen is unreactive and water is the product, not a reagent.

Question 12 (Answer: **A**)

- A hydrogen–oxygen fuel cell combines hydrogen and oxygen electrochemically.
- The only product is water: $2\text{H}_2 + \text{O}_2 \rightarrow 2\text{H}_2\text{O}$.
- The reverse equation is electrolysis, and hydrogen peroxide is never formed.

Question 12 (Answer: **C**)

- The overall reaction is $2\text{H}_2 + \text{O}_2 \rightarrow 2\text{H}_2\text{O}$, so hydrogen peroxide is never formed.
- Water is the only chemical product – there is no carbon anywhere, so no carbon dioxide.
- The cell converts chemical energy directly into electrical energy, without combustion.

Question 15 (Answer: **C**)

- A fuel cell converts chemical energy straight into electrical energy – statement 1 is right.
- Hydrogen *loses* electrons, so it is oxidised, not reduced – statement 2 is wrong.
- The only product is water, so there are no atmospheric pollutants – statement 3 is right.