

Travelling
KS4
Monday - Science

Much of the world relies on fossil fuels. However, they are non renewable and they cause pollution. Hydrogen is one alternative fuel. It can be burned in combustion engines or used in fuel cells to power vehicles. Hydrogen gas is oxidised and provides a source of electrons in the hydrogen fuel cell, in which the only waste product is water.

You can read more about fuel and fuel cells here.

<https://www.bbc.co.uk/bitesize/guides/zg3qb82/revision/1>

Research this and then answer the following questions on fuel cells.

1. In the hydrogen fuel cell:
 - a. Which gases are pumped into the fuel cell? [1 mark]
 - b. What is the waste product of the fuel cell? [1 mark]
 - c. Write a word equation for the overall reaction in the fuel cell. [1 mark]
2. Write 2 half equations to show what happens to the hydrogen and oxygen gases in a hydrogen fuel cell. [4 marks]
3. Imagine that your family decides to buy an electric car that uses batteries that need regular recharging by plugging into an electrical socket in your garage. Why would this not necessarily mean that you had found a way to get around without adding to the carbon dioxide in the air? How could the electric car run without contributing to global warming? [5 marks]
4. Another type of fuel cell uses methane gas, CH_4 , (the main gas in 'natural gas') instead of hydrogen in a fuel cell. Write the balanced symbol equation, including state symbols, for the overall reaction that takes place in a methane cell. [1 mark]
5. State two advantages a hydrogen fuel cell has compared with a methane fuel cell. [3 marks]