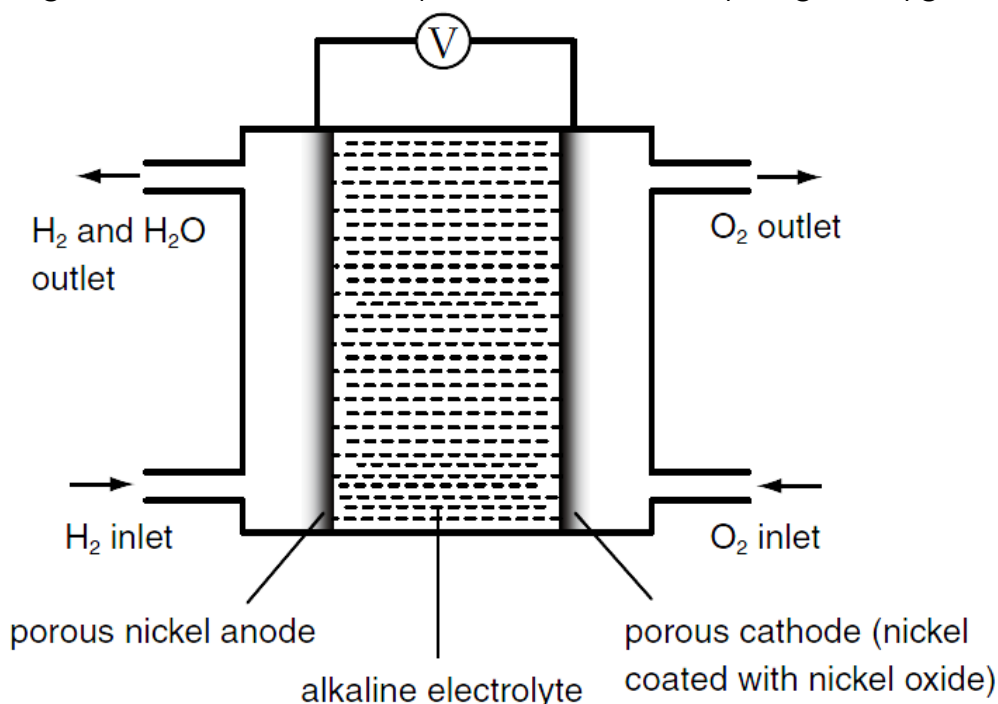


Quiz (Hydrogen-Oxygen Fuel Cell)

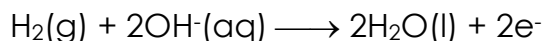
- Hydrogen-oxygen fuel cell can be used in toy cars.
 - Write half equations for the reactions at the anode and the cathode respectively.
 - Write the overall equation for the reaction in the fuel cell.
 - State ONE advantage of using fuel cells over using zinc-carbon cells.
 - Suggest ONE application of hydrogen-oxygen fuel cells in daily life.
- The diagram below shows a simplified structure of hydrogen-oxygen fuel cell.



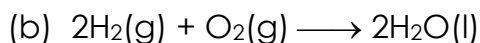
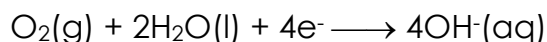
- Suggest a suitable chemical for use as the electrolyte in this cell.
- Write a half equation for the reaction taking place at the anode in the left half cell.
- Is the reaction in the left half cell an oxidation or a reduction? Explain your answer.
- Write a half equation for the reaction taking place at the cathode in the right half cell.
- Write an overall equation for the reaction taking place in this fuel cell.
- Predict the direction of electron flow in the external circuit when the cell operates.

Suggested Answer

1. (a) At the anode:



At the cathode:



- (c) Any ONE:

Fuel cells cause less environmental problems. OR

Fuel cells have a higher efficiency of energy conversion.

- (d) Any ONE:

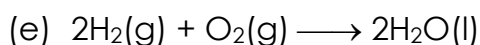
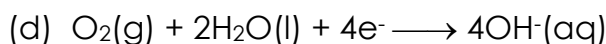
They are used to provide electricity for electric vehicles / MP3 players / mobile phones / notebook computers, etc. OR

They are used as backup power sources for hotels, hospitals, residential and office buildings.

2. (a) Hot concentrated potassium hydroxide solution.



- (c) The reaction in the left half cell is an oxidation because the oxidation number of hydrogen increases from 0 to +1.



- (f) The electrons flow from the left compartment to the right compartment in the external circuit.