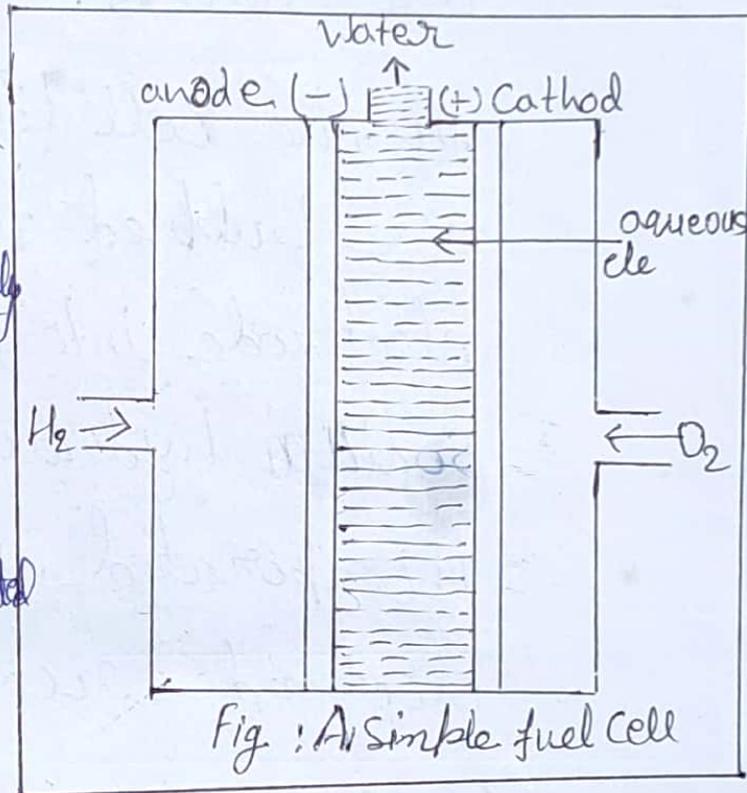


□ FUEL CELLS

It is possible to make batteries in which the reactants are fed continuously to the electrodes.

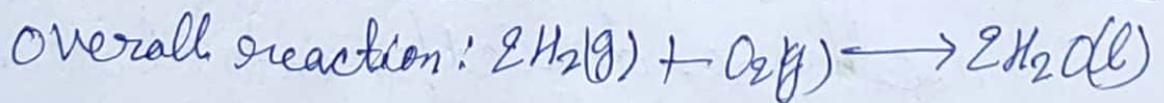
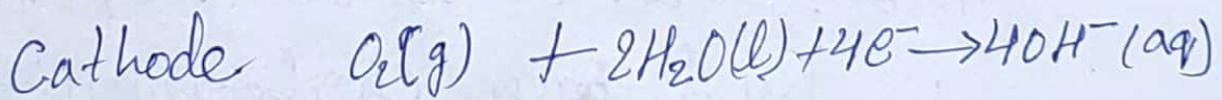
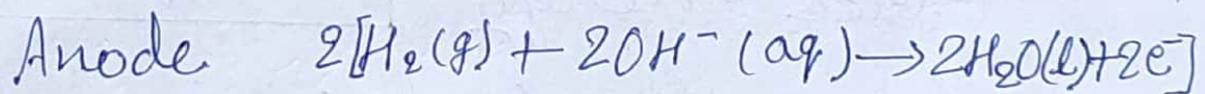
Electrical cells that are designed to convert the free energy

from the combustion of fuels such as hydrogen, carbon monoxide or methane directly into electrical energy are called FUEL CELLS. one of the most successful fuel cells uses the reaction of hydrogen with oxygen to form water (fig.). This cell has been used



for electric power in the Apollo space programme. The water vapour produced was condensed and added to the drinking water supply for the astronauts.

In the cell (fig.), hydrogen and oxygen are bubbled through a porous carbon electrode into concentrated aqueous sodium hydroxide. Catalysts are incorporated in the electrode. The electrode reactions are:



This cell runs continuously as long as the reactants are supplied.

■ CORROSION

Corrosion is basically an electrochemical Phenomenon. The rusting of iron, the tarnishing of silver, development of a green coating on Copper and bronze are some of the examples of Corrosion. Corrosion cause enormous damage to building, bridges, ships and to many other articles made of iron. we spend ~~crores~~ crores of rupees every year on this account.

In Corrosion, a metal is oxidised by loss of electrons to oxygen and forms metal oxide. Corrosion of iron (which is commonly known as rusting) occurs in presence of water and oxygen (air).

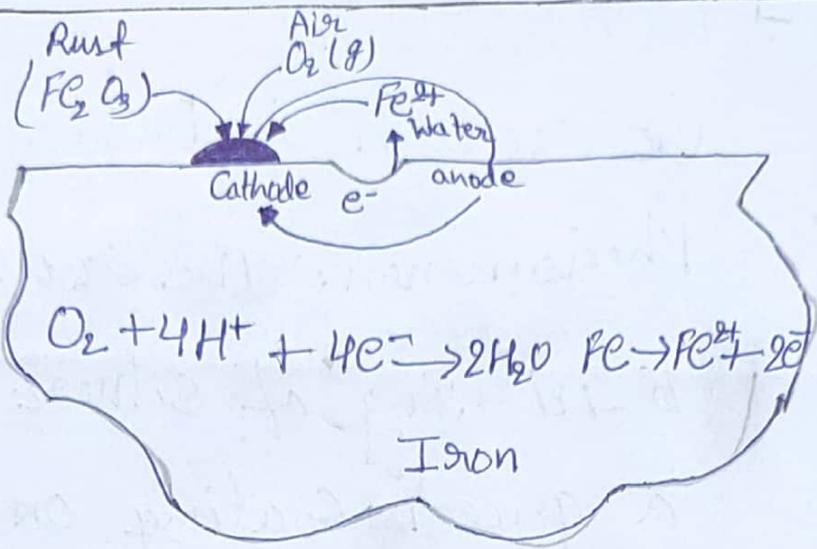
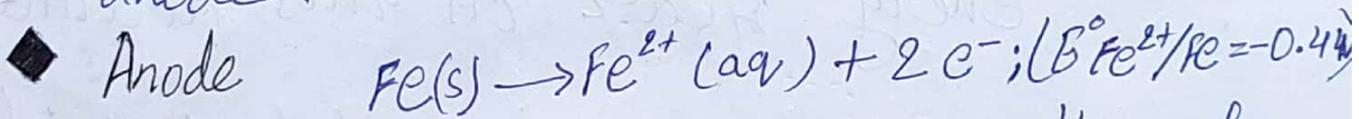


Fig 1: The rusting of Iron (Iron in contact with water forms the anode and in contact with air forms the cathode. At the anode iron is oxidised to Fe^{2+} and at the cathode oxygen is reduced to water.)

Although the chemistry of corrosion is complex but it is understood that at one spot of an iron object oxidation occurs and the spot behaves as an anode.



Electrons released at anode move through the metal and go to another spot on the metal and reduce the oxygen in presence of H^+ ions (which is believed to be available from H_2CO_3 formed due to dissolution of CO_2 in water). This spot works as a Cathode: