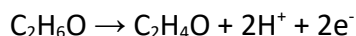
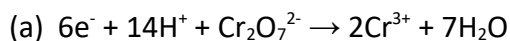
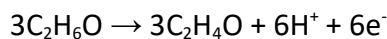
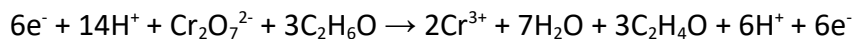
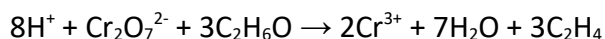


Test: Redox Reactions

1.

(b) *First, multiply second equation x3 to get same number of electrons in both half-equations:**Now combine:**Lastly, cancel 6H+ from each side:*

(c) +6

(d) From -2 to -1

(e) Reduction

(f) C_2H_6O (g) Acidic because in the final equation H^+ is a reactant.

2.

(a) 0

(b) Coke is causing the iron ions gain electrons, and gaining electrons is reduction.

(c) Zinc is higher in the activity series so carbon is not a strong enough reducing agent to reduce zinc ions to zinc.

3.

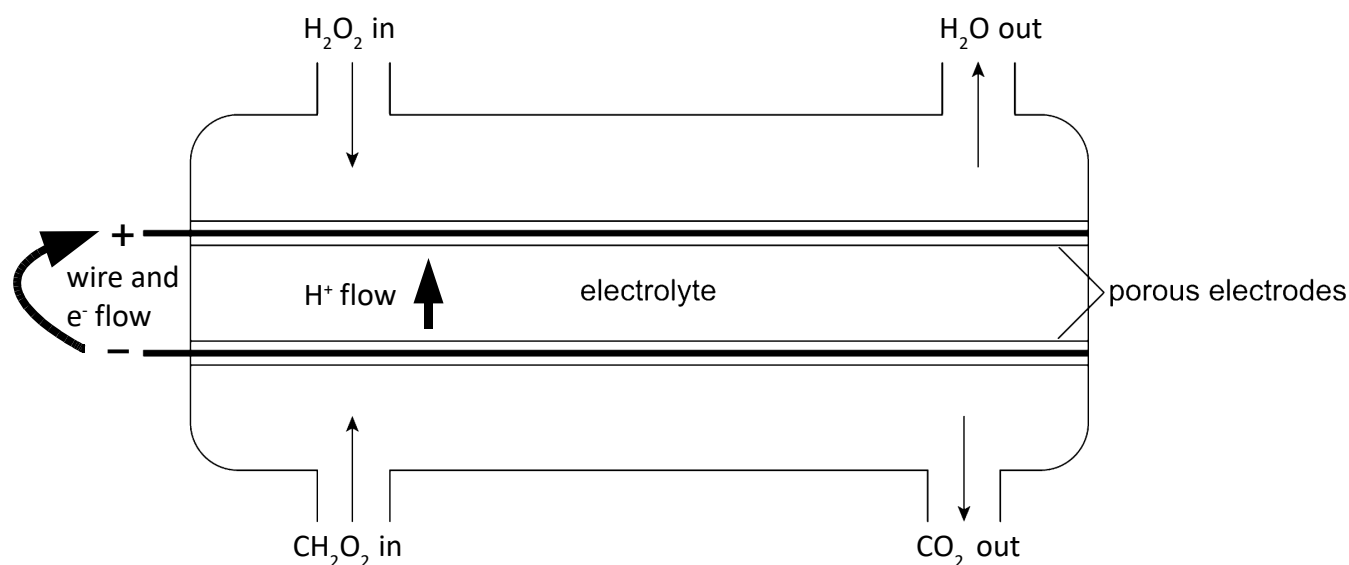
(a) Mg is more active.

(b) Cu^{2+} is more readily reduced to metal form.(c) Mg can displace Cu^{2+} from solution because it is able to give electrons to become Mg^{2+} . Mg^{2+} is not able to displace Cu^{2+} from solution because it cannot give any electrons.

(d) The Mg powder will dissolve and a solid will precipitate.

(e) A reaction will not occur if Ag powder is used instead of Mg powder.

4. (answers for *g* and *h* shown on diagram below)



(a) So the reactants do not instantly react with each other and get used up.

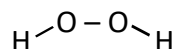
(b) To balance the charge gained or lost in each half-cell.

(c) $2e^- + 2H^+ + H_2O_2 \rightarrow 2H_2O$

$CH_2O_2 \rightarrow CO_2 + 2H^+ + 2e^-$

(d) $H_2O_2 + CH_2O_2 \rightarrow 2H_2O + CO_2$

(e) Each hydrogen can share one electron which means the oxygen atoms gain one each from sharing.



(f) The - electrode is the anode because oxidation (loss of electrons) is occurring there.

(g) See diagram

(h) See diagram

(i) Possible answers (there may be others):

No need to recharge, could just keep adding more fuel and the cell keeps running.

Fuel cell runs at a constant power whereas battery gets weaker over time.