

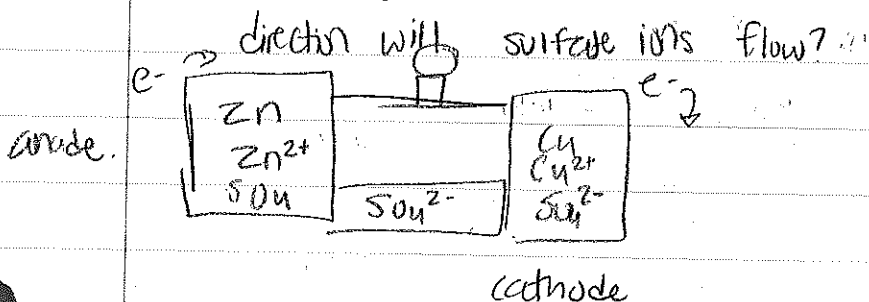
Voltage - electromotive force.

Push to get electrons going & pull to get electrons coming.
Reduction potential determines if its easier or harder to pull.

4/18/13

Quiz

- 1.) The following is a sketch of a voltaic cell. In which



anion \rightarrow anode

- 2.) Is it possible for the "counter ions" to flow through the external wire to balance the charge?

NO

ions do not flow through wires.

ions pass through salt bridge.

- 3.) Potato / Clock / electrochemical cell / Battery

A. Convert Chemical to energy to electrical

B. Measurable voltage \leftarrow difference in energy.

C. Capable of going "dead"

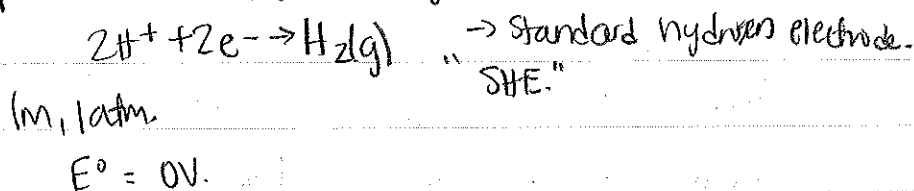
D. All of the above.

Standard conditions.

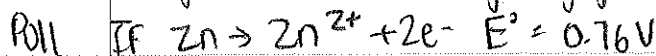
1M Zn^{2+} & 1M Cu^{2+} / 1M, 1atm.

$Zn | Zn^{2+} \rightarrow$ higher in energy
 when voltage is positive - change is spontaneous.

zero potential for electrochemistry.



You couple it to anything you are interested.

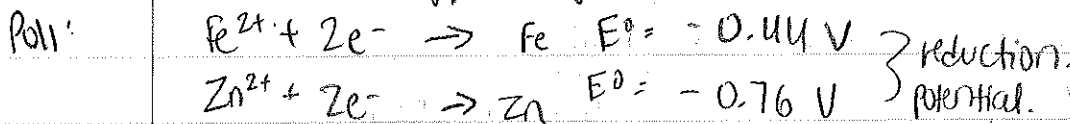


Then



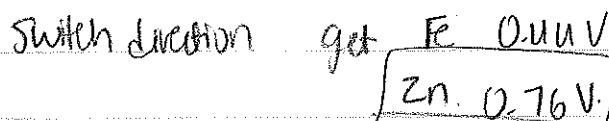
When you have a potential in reverse order the potential is neg.

- Fluorine has biggest positive reduction so used as oxidizing agent. Wants to undergo reduction half.
- Lithium has biggest neg. oxidize so used as reducing agent.



Which is easier to oxidize?

Oxidize \rightarrow loss electrons.



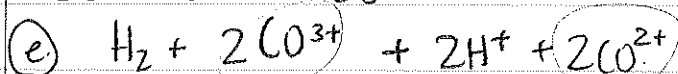
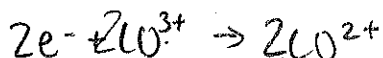
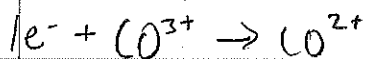
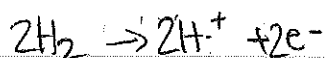
Standard potential of cell.

$E^0(\text{cell}) = E^0(\text{cathode}) - E^0(\text{anode})$
 \uparrow reduction potential \uparrow reduction potential

the # of electrons does not matter!!!

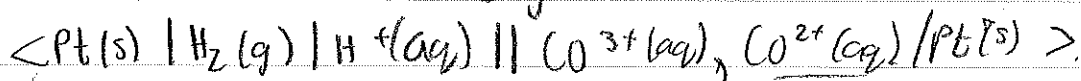
Pol1

Write a cell reaction for a cell diagram?



Pol1

Write a cell reaction for a cell diagram?



comma because phase is same.

calculate standard cell potential E° .

Cobalt is in cathode so for that it stays same.

Two kinds of electrochemical cells.

• Galvanic (voltage): reaction is spontaneous we can use these to make a battery.

• Electrolytic: reaction is not spontaneous we have to input work to get these reactions to proceed.

Use electricity to generate chemistry