REXOX Problem Set #1 ANSWERS

Write the ½ Oxidation reaction: $Mg° \rightarrow Mg^{+2} + 2e^{-1}$

Write the ½ Reduction reaction: $Ni^{+2} + 2e^{-} \rightarrow Ni°$

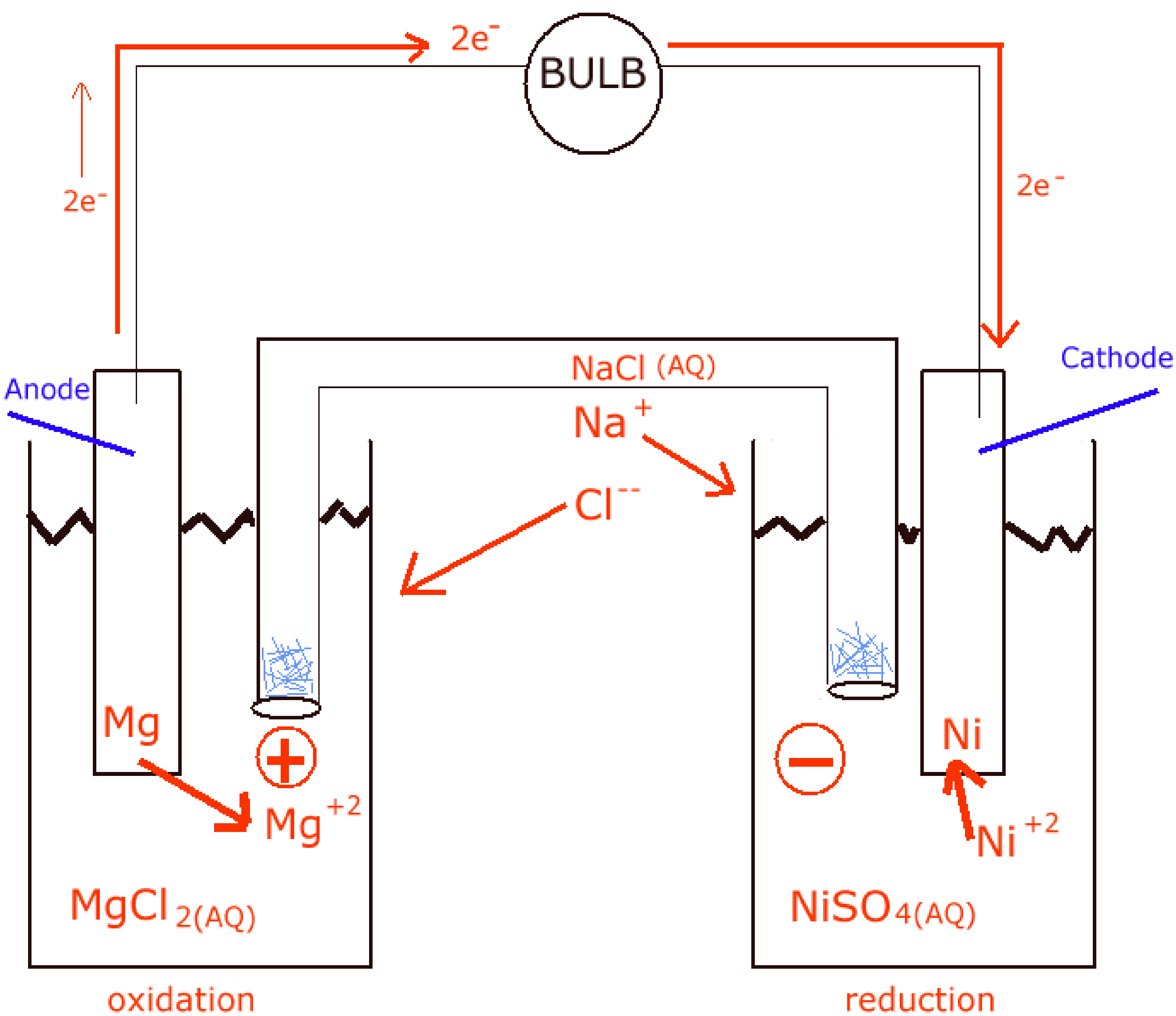
Net Ionic Equation: $Mg° + Ni^{+2} \rightarrow Mg^{+2} + Ni°$

Give three CHEMICAL reasons that this voltaic cell would stop:

run out of salt bridge ions

run out of anode metal

run out of ions in cathode side beaker

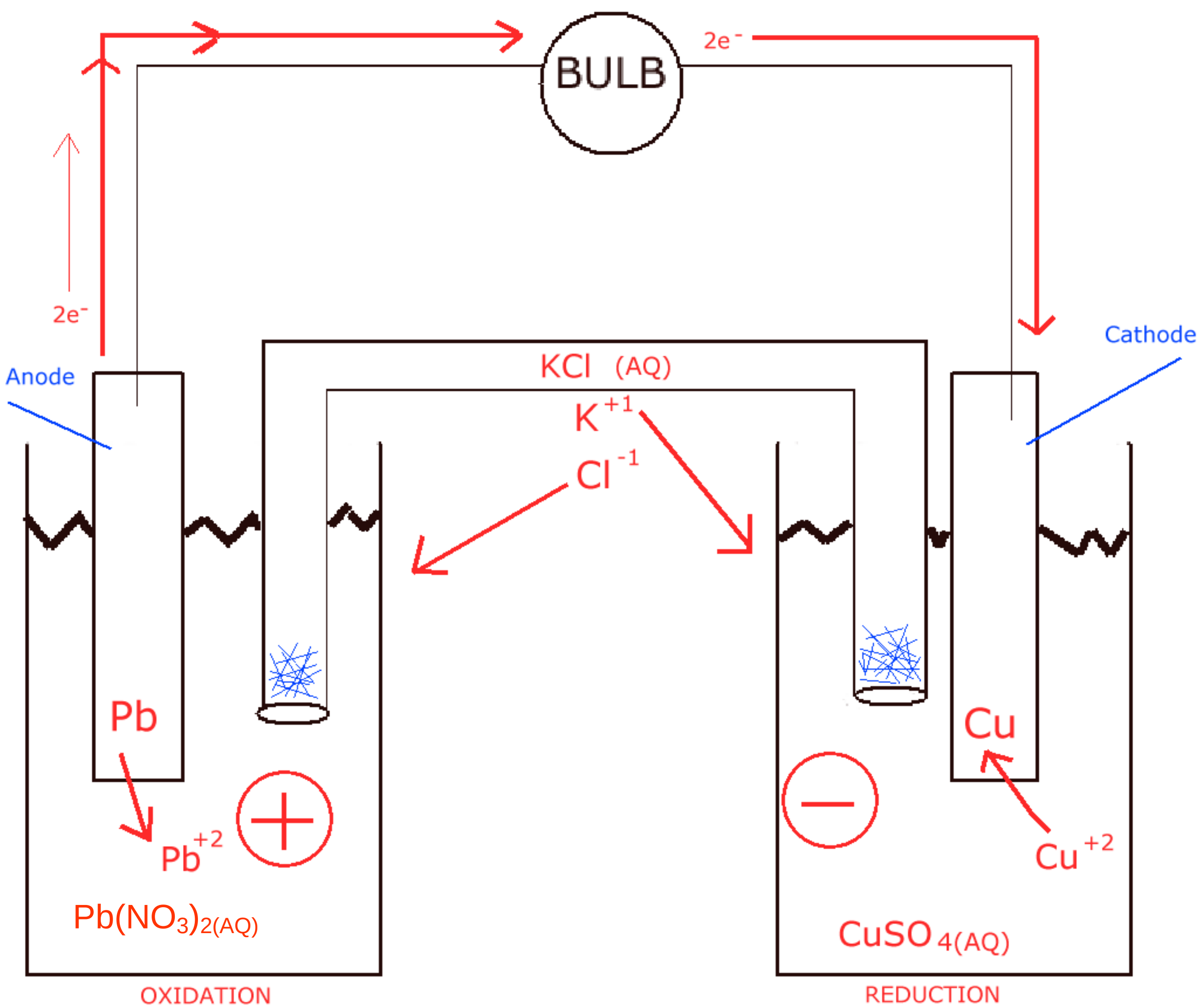


Write the ½ Oxidation reaction: $Pb° \to Pb^{+2} + 2e^{-}$

Write the ½ Reduction reaction: $Cu^{+2} + 2e^{-} \to Cu°$

Net IONIC EQUATION: $Pb° + Cu^{+2} \to Pb^{+2} + Cu°$

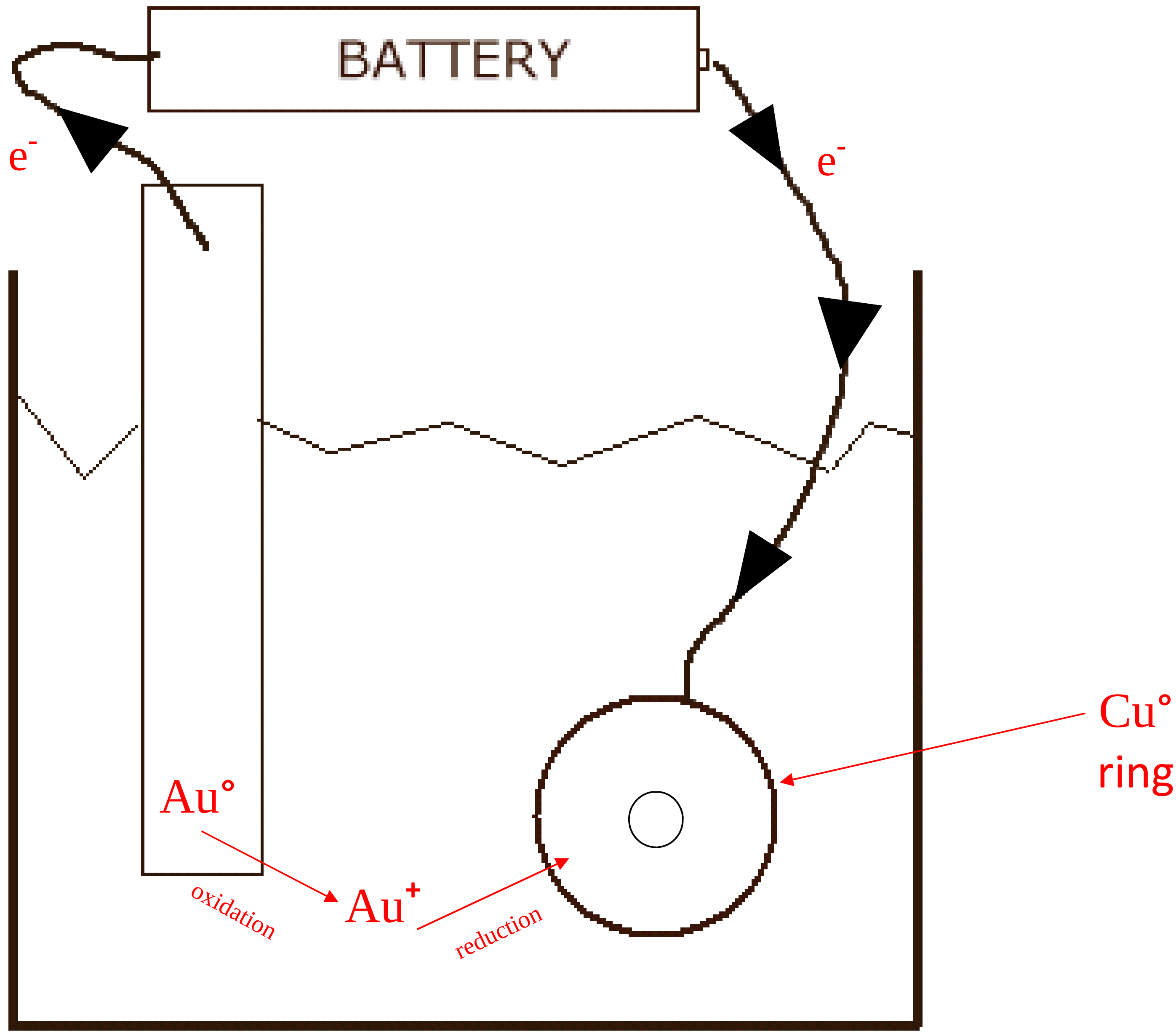
DEFINE REDCAT: "short cut" for **reduction happens at the cathode**



Redox Problem Set #2 (two pages long) ANSWERS

Directions: draw an electrolytic cell that will plate gold onto a copper ring. Show:

1. electron flow, oxidation + reduction arrows in the beaker, show ions, & solution
2. write the ½ reactions for oxidation and reduction below.
3. Explain in 1 good sentence, the difference between an electrolytic and voltaic cell.

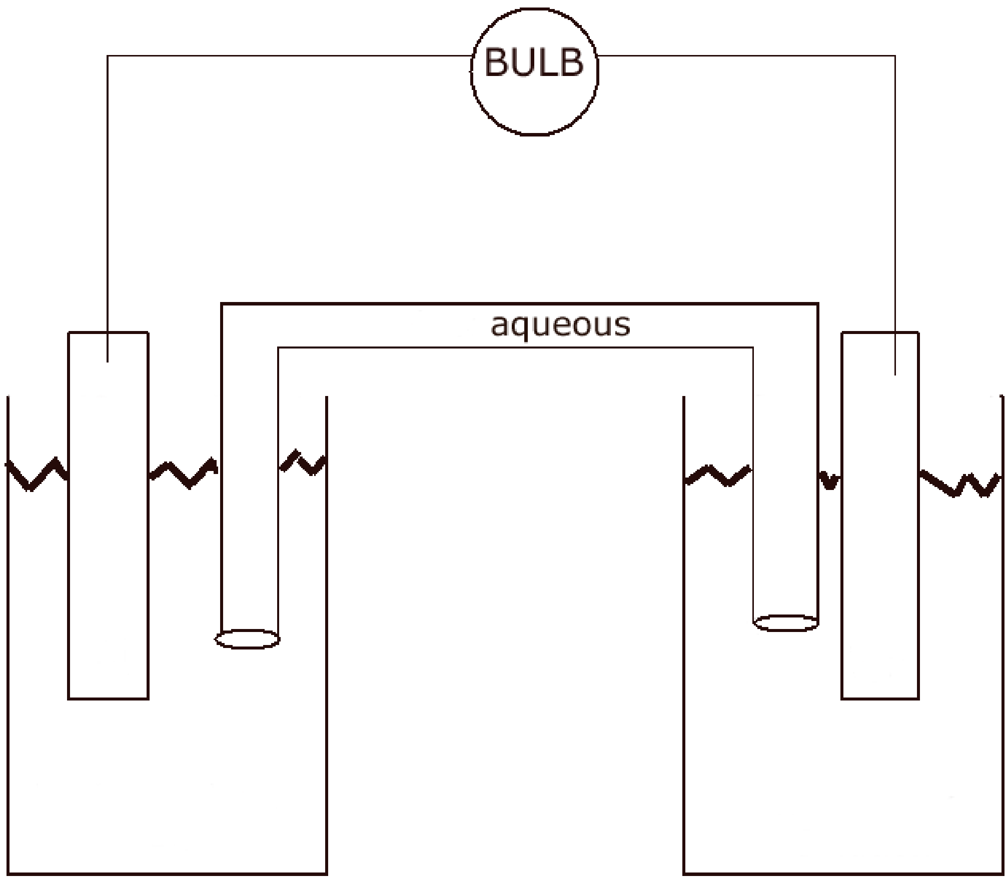


½ OX: $Au° \rightarrow Au^{+1} + e^-$

½ RED: $Au^{+1} + e^- \rightarrow Au°$

Tell the difference between this electrolytic and a voltaic cell: Electrolytic cells require electricity to FORCE a non-spontaneous redox reaction. A voltaic cell spontaneously creates electricity from chemistry (redox reactions)

Directions: draw a voltaic cell with cobalt in cobalt (III) chloride solution on the left half cell. In the right hand half cell put tin into tin (IV) acetate solution. The salt bridge has KCl solution.
SHOW:
1. OX and RED below the beakers
2. Cations in each solution
3. arrows that show oxidation and reduction in the beakers
4. electron flow
5. ion flow in bridge
6. label the cathode, then the anode
7. Write the oxidation and reduction half reactions
8. Write the balanced oxidation and reduction half reactions
9. Write the NET IONIC equation for this redox.



Half reactions | Balanced Half reactions

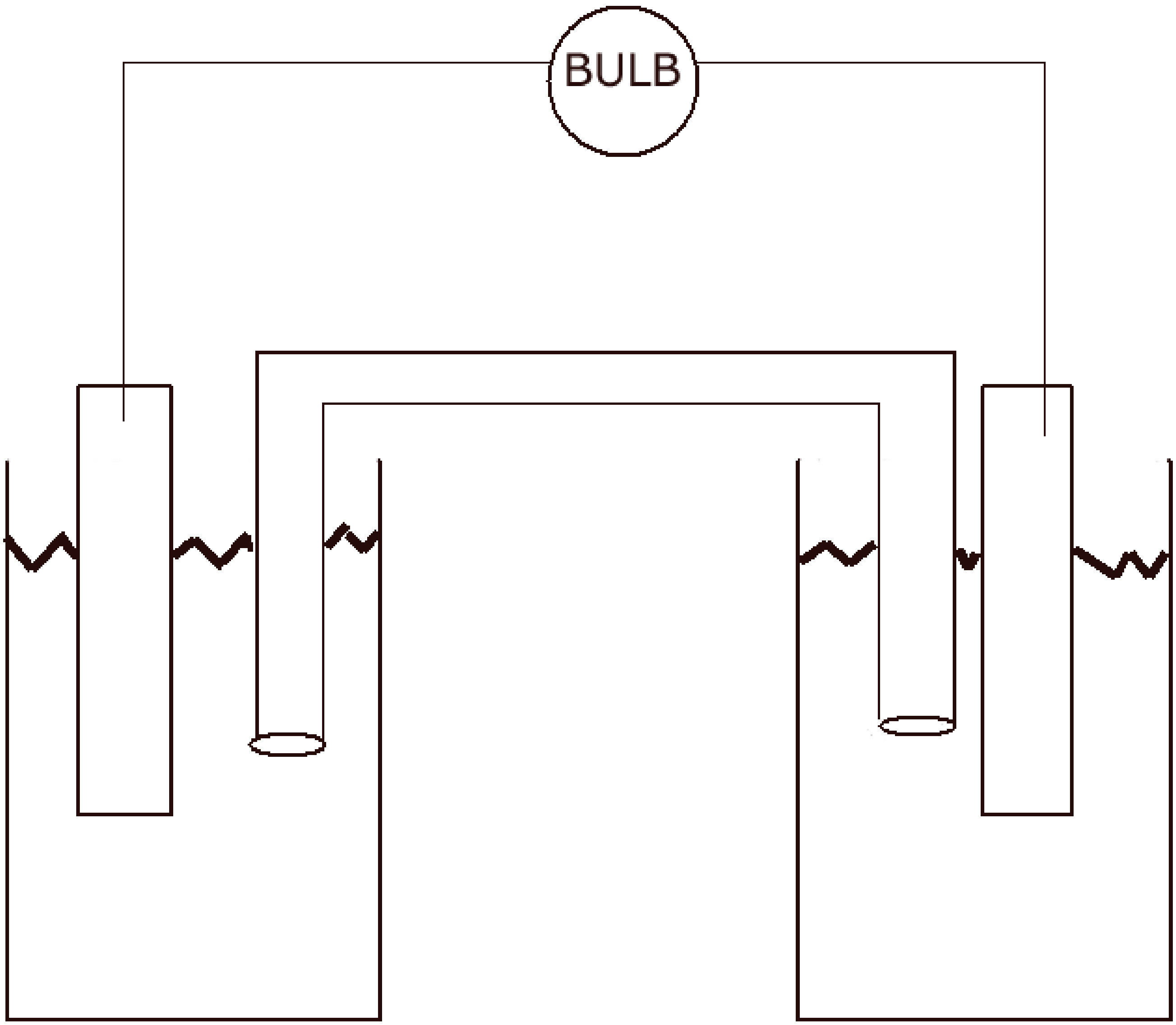
½ OX ______________________________ ______________________________

½ RED______________________________ ______________________________

Net Ionic Equation: ____

Redox Problem Set 3 (two pages) For Celebration Practice name: ___________________________________

Label this voltaic cell completely. Put a bar of copper in copper solution at left, and a zinc metal into a zinc solution on the right, and choose a salt for the salt bridge. Show flow of electrons, flow of ions, label the anode, cathode, show half reactions in the beakers, show how the solutions get charged, and then write the 2 half reactions, the net ionic equation, and state specifically the 3 reasons this cell will die.



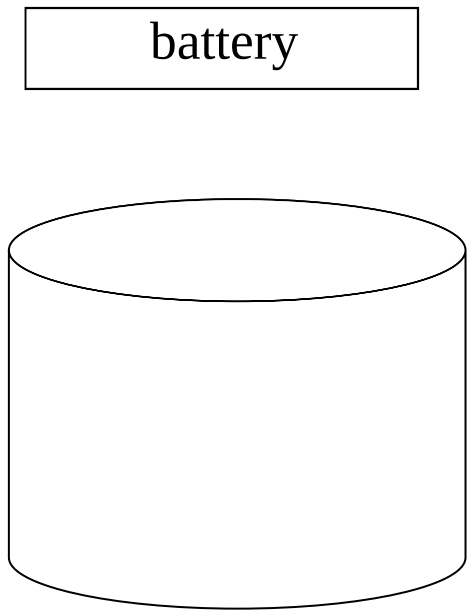
½OX: ____

½RED: ____

NET: ____

State 3 reasons why this voltaic cell will die:

I want you to plate SILVER onto an iron ring. Connect the battery properly, draw in a ring and anything else you need to make this happen. Write the two half reactions, the net ionic equation, and label the anode and cathode.



½OX: ____

½RED: ____

NET: ____

When Aluminum and chlorine form into aluminum chloride, what type of reaction is this (besides redox)? Write a balanced chemical reaction for it, then the half reactions and the net ionic equation for this reaction as well. Is there a spectator ion?

BALANCED: ____

½OX: ____

½RED: ____

NET: ____

Redox Problem Set #4 ANSWERS

For these 8 reactions, tell what type of reaction it is, then tell if it is ALSO REDOX.

6 of these reactions ARE also redox. For those: write the ½ reactions and the net ionic equations below.

#	Reactions	Type	Is it also Redox?
1	$HCl + NaOH \rightarrow NaCl_{(AQ)} + HOH_{(L)}$	acid base neutralization	no
2	$2Mg_{(S)} + O_{2(G)} \rightarrow 2MgO_{(S)}$	synthesis	yes
3	$2C_{(S)} + O_{2(G)} \rightarrow 2CO_{(G)}$	synthesis	yes
4	$2Li_{(S)} + NiCl_{2(AQ)} \rightarrow 2LiCl_{(AQ)} + 2Ni_{(S)}$	single replacement	yes
5	$2K_{(S)} + S_{(S)} \rightarrow K_2S_{(S)}$	synthesis	yes
6	$ZnCl_{2(S)} \rightarrow Zn_{(S)} + Cl_{2(G)}$	decomposition	yes
7	$Pb(NO_3)_{2(AQ)} + 2KCl_{(AQ)} \rightarrow 2KNO_{3(AQ)} + PbCl_{2(S)}$	double replacement	no
8	$2H_{2(G)} + O_{2(G)} \rightarrow 2H_2O_{(G)}$	synthesis	yes

½ OX: $2Mg^{\circ} \rightarrow 2Mg^{+2} + 4e^-$ ½ RED: $O_2^{\circ} + 4e^- \rightarrow 2O^{-2}$ NET: $2Mg^{\circ} + O_2^{\circ} \rightarrow 2Mg^{+2} + 2O^{-2}$	½ OX: $2K^{\circ} \rightarrow 2K^{+1} + 2e^-$ ½ RED: $S^{\circ} + 2e^- \rightarrow S^{-2}$ NET: $2K^{\circ} + S^{\circ} \rightarrow 2K^{+1} + S^{-2}$
½ OX: $2C^{\circ} \rightarrow 2C^{+2} + 4e^-$ ½ RED: $O_2^{\circ} + 4e^- \rightarrow 2O^{-2}$ NET: $2C^{\circ} + O_2^{\circ} \rightarrow 2C^{+2} + 2O^{-2}$	½ OX: $2Cl^{-1} \rightarrow Cl_2^{\circ} + 2e^-$ ½ RED: $Zn^{+2} + 2e^- \rightarrow Zn^{\circ}$ NET: $2Cl^{-1} + Zn^{+2} \rightarrow Cl_2^{\circ} + Zn^{\circ}$
½ OX: $2Li^{\circ} \rightarrow 2Li^{+1} + 2e^-$ ½ RED: $Ni^{+2} \rightarrow Ni^{\circ} + 2e^-$ NET: $2Li^{\circ} + Ni^{+2} \rightarrow 2Li^{+1} + Ni^{\circ}$	½ OX: $2H_2^{\circ} \rightarrow 2H_2^{+1} + 4e^-$ ½ RED: $O_2^{\circ} + 4e^- \rightarrow 2O^{-2}$ NET: $2H_2^{\circ} + O_2^{\circ} \rightarrow 2H_2^{+1} + 2O^{-2}$