Name
Date **Period**

Grade:

EXPERIMENT 41
OXIDATION-REDUCTION REACTIONS

PRELAB QUESTIONS: 1. Define: oxidizing agent
reducing agent
hydrogen half-cell
redox
standard electrode potential
oxidation
reduction

2. What is meant by the phrase Aa conservation of both charge and masses?

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OBSERVATIONS AND DATA: Relative activity of some metals

1. $Cu(s) + Ag(NO)_3(aq)$

   $Ag(s) + Cu(NO)_3(aq)$

2. $Zn(s) + Cu(NO)_3(aq)$

   $Pb(s) + Cu(NO)_3(aq)$

3. $Cu(s) + Pb(NO)_3(aq)$

   $Zn(s) + Pb(NO)_3(aq)$

4. $Cu(s) + Zn(NO)_3(aq)$

   $Pb(s) + Zn(NO)_3(aq)$

Write balanced chemical equations for each reaction in this experiment. Write equations for the half-reactions, identifying each as an oxidation or reduction.

CONCLUSIONS AND QUESTIONS:

1. List the order of activity of the metals Ag, Cu, Pb, and Zn from the most to the least active as determined by your experimental results. Do these results agree with the positions of these metals on table N?

2. Which metal listed on Table N will replace Mn^{2+} but will not replace Mg^{2+}? Explain.

3. Study the chemical combinations listed below. Using the Table N, predict which combinations will produce a spontaneous redox reaction. For those redox reactions that will occur:

a) Complete the balanced equation for the reaction.

b) Write the half-reactions for each reaction and identify them as oxidation or reduction.

c) Name the oxidizing and reducing agents.

$Fe + CuCl_2 \rightarrow$

$Ag + H_2SO_2 \rightarrow$

$Al + NaOH \rightarrow$

$F_2 + CaCl_2 \rightarrow$

Discussion

Conclusion