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AP WORKSHEET 04GHI: REDOX, Acid-Base and Precipitation

1. For each of the following reactions write two separate half-reactions, one showing oxidation and one showing reduction, and then use the half-reactions to balance the full REDOX equation. (16)

(a) $Na + Cl_2 \rightarrow NaCl$

OXIDATION:

REDUCTION:

BALANCED REDOX:

(b) $Mg + O_2 \rightarrow MgO$

OXIDATION:

REDUCTION:

BALANCED REDOX:

(c) $BrO^- \rightarrow BrO_3^- + Br^-$

OXIDATION:

REDUCTION:

BALANCED REDOX:

(d) $Zn + FeSO_4 \rightarrow ZnSO_4 + Fe$

OXIDATION:

REDUCTION:

BALANCED REDOX:

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2. For the reaction of aqueous hydrochloric acid with the hypothetical aqueous hydroxide, $M(OH)_2$, write three separate equations; one showing the full reaction with full formula, one showing all the ions present in solution, and one showing the net ionic equation. In each case balance the equations that you write and be sure to show state symbols clearly. (Assume that the salt produced is soluble). (6)

   FULL:

   IONS:

   NET IONIC:

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3. Consider the following reactants being brought together in aqueous solution. For each pair, decide the following, and then fill in the table accordingly. (25)

- Is there are reaction? Write **Y** for yes or **N** for no.
- If there is a reaction, write a full equation, if there is no reaction, write **NR**.
- If there is a reaction classify in two ways by choosing two types from the following list that apply. If there is no reaction write **NR.**
  Precipitation, acid-base, REDOX, single displacement, double displacement, combination, decomposition, combustion.
- If there is no reaction briefly explain why. If there is a reaction write **R**.

Reactants	Is there a reaction?	Full equation	Two applicable reaction types	Why no reaction?
Copper metal + Hydrochloric acid				
Potassium hydroxide + Sulfuric acid		**(assume H_2SO_4 donates BOTH H's)**		
Zinc metal + Silver nitrate				
Copper(II) sulfate + Sodium hydroxide				
Sodium metal + Chlorine				
Lead(II) nitrate + Potassium chloride				

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