Advanced Chemistry Name _____
Redox Reactions

Mock Test

Part 1: Determining Oxidation Numbers

Instructions: Determine the oxidation number of each bolded element in the following substances.

1. Co in $CoCl_2$ _____
2. C in $COCl_2$ _____
3. Mn in MnO_4^{-1} _____
4. O in K_2O_2 _____
5. Br in HBrO _____
6. As in As_4 _____
7. P in H_3PO_3 _____
8. Ca in Ca^{2+}_____
9. O in RbO_2_____
10. Br in $MgBr_2$_____
11. Fe in $Fe_3(PO_4)_2$_____
12. Cr in $Cr_2O_7^{-2}$_____
13. O in OF_2_____
14. Cl in ClO_4^{-1}_____
15. H in CaH_2_____

Part 2: Identifying Redox Reactions

Instructions: Determine which of the following equations represent redox reactions. MUST SHOW OXIDATION NUMBERS for full credit! If it is a redox reaction, determine which element is oxidized and which is reduced.

1) $NaI + 3HOCl \rightarrow NaIO_3 + 3HCl$

2) $2KClO_3 \rightarrow 2KCl + 3O_2$

3) $2NH_4Cl + Ca(OH)_2 \rightarrow 2NH_3 + 2H_2O + CaCl_2$

Part 3: Writing Half Reactions & Balancing Redox Reactions

Instructions: Write the half reactions for each of the following equations. Identify which reaction is oxidation and which is reduction. Next balance it under acidic conditions. Finally, balance it under basic conditions.

1) $CrO_4^{-1} + S^{2-} \rightarrow Cr^{3+} + SO_4^{2-}$
   a) Half Reactions

b) Which reaction oxidized? Which reaction is reduced?

c) Balanced Redox in Acidic Conditions

d) Balanced Redox in Basic Conditions

2) $Zn + NO_3^{-1} \rightarrow Zn^{2+} + NH_4^{+1}$

a) Half Reactions

b) Which reaction oxidized? Which reaction is reduced?

c) Balanced Redox in Acidic Conditions

d) Balanced Redox in Basic Conditions