Workshop #4: Reactions

Predict products and balance the following reactions (write total-ionic and net-ionic where requested). If no reaction takes place, write NR for no reaction. Be sure to include phases.

- 1. Synthesis (Combination or Composition) Reactions: $A + B \rightarrow AB$
 - A. $Ca(s) + N_2(g) \rightarrow$
 - B. $SrO(s) + H_2O(l) \rightarrow$
 - C. $N_2O_5(s) + H_2O(1) \rightarrow$
 - D. $CaO(s) + CO_2(g) \rightarrow$
- 2. Decomposition Reactions: $AB \rightarrow A + B$
 - A. $HgO(s) \rightarrow$
 - B. $MgSO_4 \cdot 7H_2O(s) \rightarrow$
 - C. $KClO_3(s) \rightarrow$
 - D. BaCO₃(s) \rightarrow
- 3. Combustion Reactions: nonmetals + $O_2 \rightarrow nonmetal \ oxides$: H_2O , CO_2 , SO_2 , NO_2
 - A. $CH_3CH_2OH(1) + O_2(g) \rightarrow$
 - B. $B_2H_6(g) + O_2(g) \rightarrow$
 - C. $NH_3(g) + O_2(g) \rightarrow$
 - $D. \qquad C_{10}H_{22}(g) \ + \qquad O_2(g) \ \rightarrow$

4. Single Replacement (Displacement) Reactions: $C + AB \rightarrow AC + B \ OR \ CB + A$

A. molecular: $Al(s) + CuCl_2(aq) \rightarrow$

total-ionic:

net-ionic:

B. molecular: $H_2(g) + Fe_2O_3(s) \rightarrow$

total-ionic:

net-ionic:

C. molecular: $Cl_2(g) + NaBr(aq) \rightarrow$

total-ionic:

net-ionic:

D. molecular: Na(s) + H₂O(l) \rightarrow

total-ionic:

net-ionic:

5. Double Replacement (Displacement) Reactions: $AB + CD \rightarrow AD + CB$

A. molecular: Ba(OH)₂(aq) + Fe₂(SO₄)₃(aq) \rightarrow

total-ionic:

net-ionic:

B. molecular: $HCl(aq) + Hg_2(NO_3)_2(aq) \rightarrow$

total-ionic:

net-ionic:

Name:

Section:

C. molecular:

$$CaCO_3(s) +$$

$$CaCO_3(s) + HC_2H_3O_2(aq) \rightarrow$$

total-ionic:

net-ionic:

D. molecular:

$$Fe(OH)_3(s) \rightarrow$$

total-ionic:

net-ionic:

- 6. Redox (Oxidation-Reduction) Reactions:
 - A. $As_2O_3(s) + NO_3^-(aq) \rightarrow AsO_4^{-3}(aq) + NO(g)$ (under acidic conditions)

Oxidation half reaction:

Reduction half reaction:

Balanced reaction:

B. $Cl_2(g) \rightarrow Cl^-(aq) + ClO^-(aq)$ (under basic conditions)

Oxidation half reaction:

Reduction half reaction:

Balanced reaction: