

Problem Set 9: Chemical Reaction Types

- 1) Describe the dynamics of a precipitation reaction.
- 2) Describe the dynamics of a combustion reaction.
- 3) Describe the dynamics of an acid-base reaction.
- 4) Describe the dynamics of an oxidation-reduction reaction.
- 5) Assign oxidation numbers to every atom, and identify the oxidizing and reducing agents for each of the following reactions.
 - a) $4 \text{Fe} + 3 \text{O}_2 \rightarrow 2 \text{Fe}_2\text{O}_3$
 - b) $\text{P}_4 + 10 \text{Cl}_2 \rightarrow 4 \text{PCl}_5$
 - c) $2 \text{Cr}^{3+} + \text{H}_2\text{O} + 6 \text{ClO}_3^- \rightarrow \text{Cr}_2\text{O}_7^{2-} + 6 \text{ClO}_2 + 2\text{H}^+$
- 6) Choose the most correct statements about chemical equilibrium.
 - a) At equilibrium the number of the forward reactions per unit of time, and the number of reverse reactions per unit of time are equal.
 - b) At equilibrium the concentrations of the reactants and products are equal, and the forward and reverse reactions have ceased.
 - c) At equilibrium the reactants have been consumed, and only the reverse reactions are occurring.
 - d) At equilibrium the concentrations of the reactants and products no longer change.