

Chapter 20 Review "Oxidation-Reduction Reactions"

Pre-AP Chemistry
Charles Page High School
Stephen L. Cotton

Chapter 20 Review

- If an atom is reduced in a redox reaction, what must happen to another atom in the system?
- What is another name for an oxidation-reduction reaction?
- When iron oxide becomes iron, what type of reaction occurs?
- In what type of reaction are electrons gained?

Chapter 20 Review

- Oxidation is a ____ of electrons.
- What are transferred in an oxidation reduction reaction?
- In the reaction of sodium with oxygen, which atom is reduced?
- In the reaction of sodium with oxygen, which atom is the reducing agent?

Chapter 20 Review

- In the reaction of calcium with chlorine, which atom is the oxidizing agent?
- In the reaction of calcium with chlorine, which atom is oxidized?
- In the reaction of hydrogen with iodine, which atom is oxidized?
- In the reaction of hydrogen with iodine, which atom is the reducing agent?

Chapter 20 Review

- $\text{Cu} \rightarrow \text{Cu}^{2+} + 2\text{e}^-$
The above equation represents the type of reaction called ____.
- Which type of reaction does $\text{Sn}^{2+} \rightarrow \text{Sn}^{4+}$ represent?
- What is the reducing agent in:
 $2\text{Na} + 2\text{H}_2\text{O} \rightarrow 2\text{NaOH} + \text{H}_2$?

Chapter 20 Review

- What is the oxidizing agent in:
 $\text{CH}_4 + 2\text{O}_2 \rightarrow \text{CO}_2 + \text{H}_2\text{O}$?
- Which statement is true about the following: $\text{S} + \text{Cl}_2 \rightarrow \text{SCl}_2$, realizing that chlorine is more electronegative:
a) sulfur is reduced to SCl_2 , or
b) chlorine is reduced to SCl_2 ?
- What is the oxidizing agent in the following: $\text{I}^- + \text{MnO}_4^{1-} \rightarrow \text{I}_2 + \text{MnO}_2$?

Chapter 20 Review

- Why is oxygen reduced in the reaction of hydrogen with oxygen to make water: a) oxygen pulls electrons toward itself, or b) oxygen pushes electrons toward the hydrogens?
- The oxidation number of magnesium in magnesium chloride is _____.

Chapter 20 Review

- The oxidation number of hydrogen when it is in a compound other than a hydride is _____.
- The oxidation number of bromine in bromine gas is _____.
- What is the oxidation number for each atom in NH_4Cl ?
- What is defined as the charge an atom would have in a compound if its bonding electrons were assigned to the more electronegative atom?

Chapter 20 Review

- The oxidation number of sulfur in each of the following is +6 except for: a) $\text{S}_2\text{O}_4^{2-}$, or b) SO_4^{2-} ?
- In which of the following compounds is the oxidation number of nitrogen different from the others: a) NO_3^{1-} , b) N_2O_5 , c) NH_4Cl , or d) $\text{Ca}(\text{NO}_3)_2$?

Chapter 20 Review

- Identify the atom that increases in oxidation number in the following:
 $2\text{MnO}_2 + 2\text{K}_2\text{CO}_3 + \text{O}_2 \rightarrow 2\text{KMnO}_4 + 2\text{CO}_2$
- Which of the following is a redox reaction: a) double-replacement, or b) combustion?
- What coefficient of H^{1+} balances the atoms in the following half-reaction:
 $\text{H}^{1+} + \text{MnO}_2 \rightarrow \text{Mn}^{2+} + \text{H}_2\text{O}$?

Chapter 20 Review

- What is the reduction half-reaction for the following unbalanced redox equation:
 $\text{Cr}_2\text{O}_7^{2-} + \text{NH}_4^{1+} \rightarrow \text{Cr}_2\text{O}_3 + \text{N}_2$?
- What is shown by a half-reaction?
- Which oxidation-reduction reactions are best balanced by the half-reaction method?

Chapter 20 Review

- Which of the following is an oxidation half-reaction:
a) $\text{Sn}^{2+} \rightarrow \text{Sn}^{4+} + 2\text{e}^-$, or
b) $\text{Cl}_2 + 2\text{e}^- \rightarrow 2\text{Cl}^{1-}$?
- Which of the following is a reduction half-reaction:
a) $\text{Zn} \rightarrow \text{Zn}^{2+} + 2\text{e}^-$, or
b) $2\text{H}^{1+} + 2\text{e}^- \rightarrow \text{H}_2$?

Chapter 20 Review

- What is the oxidation number of magnesium in magnesium iodide?
- What is the sum of the oxidation numbers in lithium carbonate?
- What is the sum of the oxidation numbers in calcium carbonate?
- What is the sum of the oxidation numbers in the chlorate ion?

Chapter 20 Review

- What is the change in oxidation number of chromium when $\text{Na}_2\text{Cr}_2\text{O}_7$ becomes CrI_3 ?

End of Chapter 20 Review