**Name:** _____ **Class:** _____ **Date:** _____ **ID: A**

## Chapter 20 Take Home Quiz (10 points) Due April 9

**Multiple Choice**
*Identify the choice that best completes the statement or answers the question.*

____ 1) What is another name for an oxidation-reduction reaction?
Ⓐ O-reaction Ⓒ redox reaction
Ⓑ R-reaction Ⓓ oxred reaction

____ 2) What are transferred in an oxidation-reduction reaction?
Ⓐ protons Ⓒ electrons
Ⓑ ions Ⓓ atoms

____ 3) In the reaction of sodium with oxygen, which atom is reduced?
Ⓐ sodium Ⓒ both a and b
Ⓑ oxygen Ⓓ neither a nor b

____ 4) In the reaction of calcium with chlorine, which atom is the oxidizing agent?
Ⓐ calcium Ⓒ both a and b
Ⓑ chlorine Ⓓ neither a nor b

____ 5) In the reaction of hydrogen with iodine, which atom is oxidized?
Ⓐ hydrogen Ⓒ both a and b
Ⓑ iodine Ⓓ neither a nor b

____ 6) What is the reducing agent in the following reaction?
$2Na + 2H_2O \rightarrow 2NaOH + H_2$
Ⓐ Na Ⓒ NaOH
Ⓑ $H_2O$ Ⓓ $H_2$

____ 7) What is the reducing agent in the following reaction?
$2Na + S \rightarrow Na_2S$
Ⓐ Na Ⓒ $Na_2S$
Ⓑ S Ⓓ $Na^+$

____ 8) Which statement is true about the following reaction?
$S + Cl_2 \rightarrow SCl_2$
(Hint: Chlorine is the more electronegative element.)
Ⓐ Sulfur is reduced to $SCl_2$. Ⓒ Chlorine is oxidized to $SCl_2$.
Ⓑ Chlorine is reduced to $SCl_2$. Ⓓ Sulfur is the oxidizing agent.

____ 9) What is defined as the charge an atom would have in a compound if its bonding electrons were assigned to the more electronegative atom?
Ⓐ reduction number Ⓒ valence
Ⓑ oxidation number Ⓓ electropositivity

____ 10) The oxidation number of sulfur in each of the following is +6 EXCEPT for ____.
Ⓐ $SO_3$ Ⓒ $SO_4^{2-}$
Ⓑ $Na_2SO_4$ Ⓓ $S_2O_4^{2-}$

____ 11) In which of the following compounds is the oxidation number of nitrogen different from the other three?

Ⓐ $NO_3^-$ Ⓒ $NH_4Cl$

Ⓑ $N_2O_5$ Ⓓ $Ca(NO_3)_2$

____ 12) In the following unbalanced reaction, which atom is oxidized?
$HNO_3 + HBr \rightarrow NO + Br_2 + H_2O$

Ⓐ hydrogen Ⓒ oxygen

Ⓑ nitrogen Ⓓ bromine

____ 13) Which element increases its oxidation number in the following reaction?
$2Na + 2H_2O \rightarrow 2NaOH + H_2$

Ⓐ sodium

Ⓑ hydrogen

Ⓒ oxygen

Ⓓ No element increases its oxidation number.

____ 14) What coefficient of $H^+$ balances the atoms in the following half-reaction?
$H^+ + MnO_2 \rightarrow Mn^{2+} + H_2O$

Ⓐ 1 Ⓒ 3

Ⓑ 2 Ⓓ 4

____ 15) What is the oxidation half-reaction for the following unbalanced redox equation?
$Cr_2O_7^{2-} + Fe^{2+} \rightarrow Cr^{3+} + Fe^{3+}$

Ⓐ $Cr^{3+} \rightarrow Cr_2O_7^{2-}$ Ⓒ $Fe^{3+} \rightarrow Fe^{2+}$

Ⓑ $Fe^{2+} \rightarrow Fe^{3+}$ Ⓓ $Cr_2O_7^{2-} \rightarrow Cr^{3+}$

____ 16) What is shown by a half-reaction?

Ⓐ oxidation or reduction of an element Ⓒ decomposition of an ion or molecule

Ⓑ neutralization of an ion or molecule Ⓓ none of the above

____ 17) Which oxidation-reduction reactions are best balanced by the half-reaction method?

Ⓐ covalent reactions Ⓒ ionic reactions

Ⓑ acid-base reactions Ⓓ intermolecular reactions

____ 18) What is the name of the following process?
$2Fe(s) + O_2(g) + 2H_2O(l) = 2Fe(OH)_2(s)$

$4Fe(OH)_2(s) + O_2(g) + 2H_2O(l) = 4Fe(OH)_3(s)$

Ⓐ salt hydrolysis Ⓒ corrosion

Ⓑ electrolysis Ⓓ buffering

____ 19) Which of the following is an oxidation half-reaction?

Ⓐ $Sn^{2+} \rightarrow Sn^{4+} + 2e^-$ Ⓒ $O_2 + 4H^+ + 4e^- \rightarrow 2H_2O$

Ⓑ $Cl_2 + 2e^- \rightarrow 2Cl^-$ Ⓓ $Fe^{3+} + e^- \rightarrow Fe^{2+}$

____ 20) Which of the following is a reduction half-reaction?

Ⓐ $Zn \rightarrow Zn^{2+} + 2e^-$ Ⓒ $Na \rightarrow Na^+ + e^-$

Ⓑ $NO + 2H_2O \rightarrow N_3^- + 4H^+ + 3e^-$ Ⓓ $2H^+ + 2e^- \rightarrow H_2$