Electrochemistry Quiz

# Multiple Choice [1 point each]



# Short Answer

*Directions: Write the half reactions for each of the redox reactions below and determine the oxidized reactant, reduced reactant, oxidizing agent, and reducing agent. [8 points each]*

6.) Na + H2O 🡪 NaOH + H2

Oxidation Half-Reaction: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

Reduction Half-Reaction: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

Oxidized: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ Reduced: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

Oxidizing Agent: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ Reducing Agent: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

7.) Zn + HNO3 🡪 Zn(NO3)2 + NO2 + H2O

Oxidation Half-Reaction: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

Reduction Half-Reaction: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

Oxidized: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ Reduced: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

Oxidizing Agent: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ Reducing Agent: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

*Directions:*

*A. Write the oxidation numbers for each element. [2 points]*

*B. Write the half reactions [4 points]*

*C. Label the oxidation and the reduction half-reactions [1 point]*

*D. Balance the equation according to the number of electrons. [2 points]*

8.) \_\_\_ Ni + \_\_\_ Sn+4 🡪 \_\_\_ Ni+2 + \_\_\_ Sn

\*\*BONUS\*\* [worth 2 points]

Would you prefer to drive a hydrogen fuel cell vehicle or an electric vehicle? To earn bonus points, provide two reasons for your choice based on the article from class.