Chemistry 12

Electrochemistry I Worksheet

Name:
Date:
Block:

1. Define each:
   a) Oxidation:

   b) Reduction:

   c) Oxidizing agent:

   d) Reducing agent:

2. State the oxidation number of each of the elements that is underlined.

   a) $\underline{N}H_3$

   b) $H_2\underline{S}O_4$

   c) $Zn\underline{S}O_3$

   d) $\underline{Al}(OH)_3$

   e) $\underline{Na}$

   f) $\underline{Cl}_2$

   g) $\underline{Ag}NO_3$

   h) $\underline{Cl}O_4^-$

   i) $\underline{S}O_2$

   j) $K_2\underline{Cr}O_4$

3. What is the oxidation number of **carbon** in each of the following substances?
   a) CO

   b) C

   c) CO_2

   d) CO_3^{2-}

   e) C_2H_6

   f) CH_3OH

4. Label each as oxidation or reduction.
   a) $Al \rightarrow Al^{3+} + 3e^-$

   b) $S + 2e^- \rightarrow S^{2-}$

   c) $2\ O^{2-} \rightarrow O_2 + 4e^-$

   d) $Ca \rightarrow Ca^{2+} + 2e^-$

   e) $Ba^{2+} + 2e^- \rightarrow Ba$

   f) $Ga^{3+} + 3e^- \rightarrow Ga$

   g) $2\ N^{3-} \rightarrow N_2 + 6e^-$

   h) $S^{2-} \rightarrow S + 2e^-$

   i) $Br_2 + 2e^- \rightarrow 2Br^-$

   j) $H_2 \rightarrow 2H^+ + 2e^-$

   k) $P + 3e^- \rightarrow P^{3-}$

   l) $2H^+ + 2e^- \rightarrow H_2$

   m) $2F^- \rightarrow F_2 + 2e^-$

   n) $P^{3-} \rightarrow P + 3e^-$

5. Label the species that is the **reducing agent** and the **oxidizing agent**.

a) Fe^{2+} + Co → Co^{2+} + Fe

b) Ag^{+} + Ni → Ni^{3+} + Ag

c) Cu^{2+} + Pb → Pb^{2+} + Cu

d) O_2 + Sn → O^{2-} + Sn^{2+}

e) Co^{2+} + F^{-} → Co + F_2