Oxidation-Reduction Worksheet

- 1. Determine the oxidation number of each element underlined:
 - a) H_2CO_3
 - b) MnO₄²⁻
 - c) $K_2Cr_2O_7$
 - d) $HC_2H_3O_2$
- 2. Identify the species being oxidized and reduced in each of the following reactions:
 - $Cr^{+} + Sn^{4+} \rightarrow Cr^{3+} + Sn^{2+}$ a)

oxidized:_____ reduced:_____

 $3 \text{ Hg}^{2+} + 2 \text{ Fe (s)} \rightarrow 3 \text{ Hg} + 2 \text{ Fe}^{3+}$ oxidized: reduced: b)

c)

 $2 \text{ As (s)} + 3 \text{ Cl}_2(g) \rightarrow 2 \text{ AsCl}_3$ oxidized:_____ reduced:____

3. Complete each sentence below by choosing the proper term:

a) When ClO₃ reacts to form ClO₂, it acts as a (an) _____agent. (oxidizing/reducing)

- When H₂S reacts to form SO₄²-, it acts as a (an) _____agent. b) (oxidizing/reducing)
- When MnCl₂ reacts to form MnO₂, it acts as a (an) _____agent. c) (oxidizing/reducing)
- When Zn metals reacts to form ZnCl₂, it acts as a (an) _____ d) (oxidizing/reducing)

4. Balance each skeleton half-reaction below, and add to obtain the balanced overall equation:

a)
$$\hspace{1cm} H^+ \hspace{0.1cm} + \hspace{0.1cm} MnO_4^- \hspace{0.1cm} \rightarrow \hspace{0.1cm} Mn^{2+} \hspace{0.1cm} + \hspace{0.1cm} H_2O$$

$$SO_2 + H_2O \rightarrow HSO_4^- + H^+$$

$$C_2H_5OH \ + \qquad H_2O \ \rightarrow \qquad CO_2 \ + \qquad H^+$$