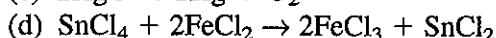
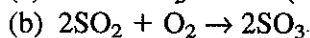
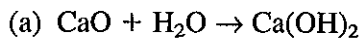


CHAPTER 19 REVIEW*Oxidation-Reduction Reactions***SECTION 19-1****SHORT ANSWER** Answer the following questions in the space provided.1. _____ All the following equations involve redox reactions *except* _____.

2. Assign the correct oxidation number to the individual atom or ion in the following:

_____ a. Mn in MnO_2 _____ b. S in S_8 _____ c. Cl in CaCl_2 _____ d. I in IO_3^- _____ e. C in HCO_3^- _____ f. Fe in $\text{Fe}_2(\text{SO}_4)_3$ _____ g. S in $\text{Fe}_2(\text{SO}_4)_3$ 3. In each of the following half-reactions, determine the value of x :

_____ d. Which of the above half-reactions represent reduction processes?

4. Give examples other than those listed in Table 19-1 on page 591 of the text for the following:

_____ a. a compound containing H in a -1 oxidation state

_____ b. a peroxide

_____ c. a polyatomic ion where S is $+4$ _____ d. a substance in which F is not -1

SECTION 19-1 continued

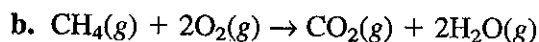
5. OILRIG is a mnemonic device often used by students to help them understand redox reactions.

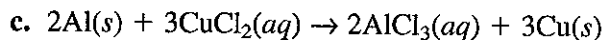
“Oxidation is loss, reduction is gain.”

Explain what that phrase means—loss and gain of what?

6. For each of the following reactions, state whether or not any oxidation and reduction is occurring, and write the oxidation-reduction half-reactions for those cases where redox does occur:







7. Table 19-4 on page 615 of the text lists a half-cell reaction that represents the conversion of $\text{Cr}_2\text{O}_7^{2-}$ to Cr^{3+} .

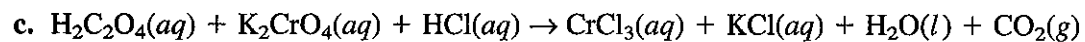
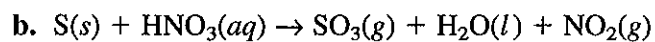
_____ a. What is the oxidation number assigned to each Cr in $\text{Cr}_2\text{O}_7^{2-}$?

_____ b. How many electrons are needed to convert 2Cr^{3+} to $\text{Cr}_2\text{O}_7^{2-}$?

c. Show that this half-cell reaction balances by the number of Cr, O, and H atoms present in the products and reactants.

SECTION 19-2 continued

5. Balance the following equations. Write the oxidation and reduction half-reactions involved.



SECTION 19-4 continued

PROBLEMS Write the answer on the line to the left. Show all your work in the space provided.

6. Below is a diagram of a voltaic cell.

a. Write the anode half-reaction.

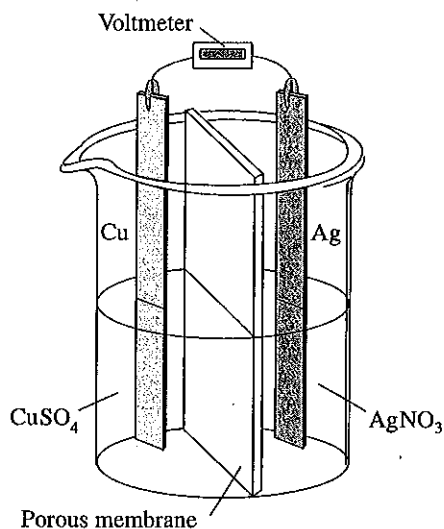
b. Write the cathode half-reaction.

c. Write the balanced cell reaction.

_____ d. Do electrons within the voltaic cell travel through the voltmeter in a clockwise or counterclockwise direction?

_____ e. Do anions in the beaker pass through the porous membrane in a clockwise or counterclockwise direction?

_____ f. Calculate what the voltmeter should read when the cell is at standard state conditions. Use data from Table 19-4 on page 615 of the text.



7. The silver in the voltaic cell described in item 6 is replaced with metal X and its 2+ ion. A voltage reading shows that the direction of current reverses, and the voltmeter now reads +0.74 V.

_____ a. From these data, calculate the reduction potential of metal X.

_____ b. Predict the identity of metal X, based on the data in Table 19-4 on page 615 of the text.