Oxidation - Reduction

1. Indicate the oxidation number of each atom in the following:

$$K_{2}Cr_{2}O_{7}$$
 K +1 Cr +6 O -2
 $Ca_{3}(PO_{4})_{2}$ Ca +2 P +5 O -2
 $N_{2}O_{4}$ N +4 O -2
 $S_{2}O_{3}^{2-}$ S +2 O -2
 MnO_{4}^{2-} Mn +6 O -2
 $H_{2}PtCl_{6}$ H +1 Pt +4 Cl -1

2. Consider the following reaction:

 $Zn(s) + HCl(aq) \rightarrow ZnCl_2(aq) + H_2(g)$

a) What has been oxidized?

Zn (s) b) What has been reduced? H⁺

- c) Which is the oxidizing agent? H⁺
- d) Which is the reducing agent? Zn (s)
- 3. Which is the reducing agent in the following reaction?

2 $S_2O_3^{2-}(aq) + I_2(aq) \rightarrow S_4O_6^{2-}(aq) + 2 I^-(aq)$ $I_2(aq)$ is reduced and $S_2O_3^{2-}(aq)$ is oxidized. $S_2O_3^{2-}(aq)$ is the reducing agent.