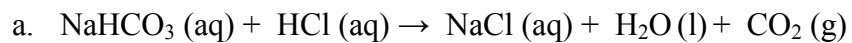


**Chem 151 Drilling Question Set #4 (Answer Key)**  
**Assigning Oxidation Numbers and Identifying Redox Reactions/Reagents**

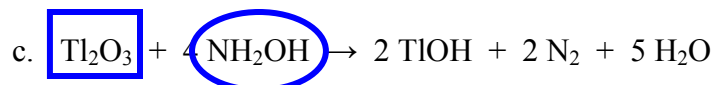
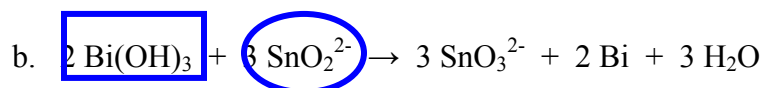
1. Assign Oxidation numbers to each element in the following species:

- a.  $\text{SrBr}_2$                       *Sr: +2    Br: -1*
- b.  $\text{CH}_4$                             *H: +1    C: -4*
- c.  $\text{NaNO}_3$                         *Na: +1    O: -2    N: +5*
- d.  $\text{K}_2\text{O}$                              *K: +1    O: -2*
- e.  $\text{KO}_2$                             *K: +1    O: -1/2 (then, you know this is a super oxide)*
- f.  $\text{KH}$                               *K: +1    H: -1*
- g.  $\text{K}_2\text{O}_2$                          *K: +1    O: -1 (this is a peroxide)*
- h.  $\text{Zn(OH)}_4^{2-}$                       *Zn: +2    O: -2    H: +1 (I recognized OH and assigned Zn to +2)*
- i.  $\text{CN}^-$                              *N: -3    C: +2*
- j.  $\text{Mg}_3\text{N}_2$                          *Mg: +2    N: -3*
- k.  $\text{Na}_3\text{PO}_4$                         *Na: +1    O: -2    P: +5*
- l.  $\text{Fe(CN)}_6^{4-}$                       *Fe: +2    C: +2    N: -3 (I recognized CN and assigned Fe to +2)*
- m.  $\text{Cl}_2\text{O}_7$                          *O: -2    Cl: +7*
- n.  $\text{NH}_4\text{NO}_3$                         *H: +1    O: -2    N in  $\text{NH}_4^+$  is -3; N in  $\text{NO}_3^-$  is +5*
- o.  $\text{Hg}_2\text{SO}_4$                         *O: -2    S: +6    Hg: +1 (I recognized  $\text{SO}_4^{2-}$  and assigned Hg to +1)*
- p.  $\text{S}_4\text{O}_6^{2-}$                          *O: -2    S: +5/2*
- q.  $\text{B}_2\text{H}_6$                             *H: -1    B: +3*
- r.  $\text{PbCl}_2$                             *Cl: -1    Pb: +2*
- s.  $\text{OF}_2$                              *F: -1    O: +2*
- t.  $\text{XeF}_6$                             *F: -1    Xe: +6*
- u.  $\text{PCl}_6^-$                             *Cl: -1    P: +5*
- v.  $\text{Al}_2(\text{SO}_4)_3$                       *Al: +3    O: -2    S: +6*
- w.  $\text{KI}_3$                               *K: +1    I: -1/3*
- x.  $\text{V(H}_2\text{O)}_4\text{O}_2^+$                       *O: -2    H: +1    V: +5*
- y.  $\text{KSCN}$                             *K: +1    S: -2    N: -3    C: +4*
- z.  $\text{CH}_3\text{CH}_2\text{OH}$                       *H: +1    O: -2    C: +2 (the O.N. of the two C atoms are different; +2 is an average O.N. of the two C atoms)*

2. Identify the redox reactions in the following. For each redox reaction, put a circle around the reducing agent(s) and a rectangle around the oxidizing agent(s).



*Not Redox reaction*



*Not Redox reaction*

