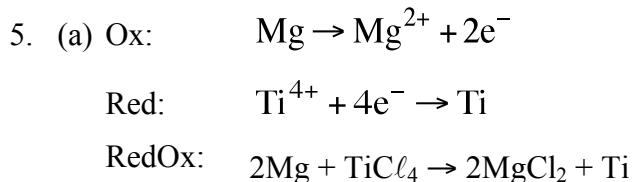
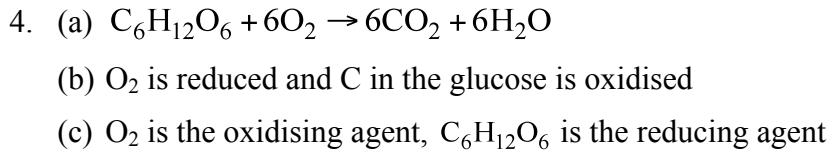
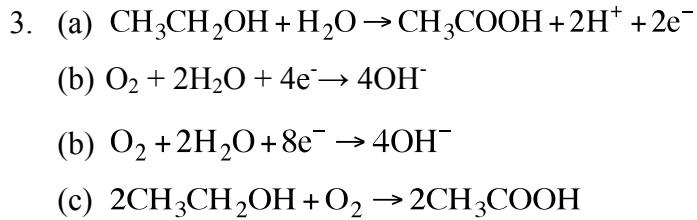
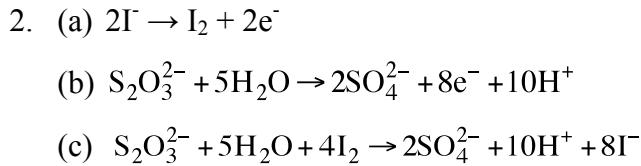




## Oxidation and Reduction Set 21: Balancing Redox Equations

1. (a)  $2\text{I}^- \rightarrow \text{I}_2 + 2\text{e}^-$   
 $\text{Cl}_2 + 2\text{e}^- \rightarrow 2\text{Cl}^-$   
 $2\text{I}^- + \text{Cl}_2 \rightarrow \text{I}_2 + 2\text{Cl}^-$
- (b)  $\text{Cu} \rightarrow \text{Cu}^{2+} + 2\text{e}^-$   
 $\text{Au}^+ + \text{e}^- \rightarrow \text{Au}$  x 2  
 $\text{Cu} + 2\text{Au}^+ \rightarrow \text{Cu}^{2+} + 2\text{Au}$
- (c)  $\text{Zn} \rightarrow \text{Zn}^{2+} + 2\text{e}^-$   
 $\text{Pb}^{2+} + 2\text{e}^- \rightarrow \text{Pb}$   
 $\text{Zn} + \text{Pb}^{2+} \rightarrow \text{Zn}^{2+} + \text{Pb}$
- (d)  $\text{Fe} \rightarrow \text{Fe}^{2+} + 2\text{e}^-$   
 $2\text{H}^+ + 2\text{e}^- \rightarrow \text{H}_2$   
 $\text{Fe} + 2\text{H}^+ \rightarrow \text{Fe}^{2+} + \text{H}_2$
- (e)  $\text{K} \rightarrow \text{K}^+ + \text{e}^-$  x 2  
 $2\text{H}_2\text{O} + 2\text{e}^- \rightarrow \text{H}_2 + 2\text{OH}^-$   
 $2\text{K} + 2\text{H}_2\text{O} \rightarrow 2\text{K}^+ + \text{H}_2 + 2\text{OH}^-$
- (f)  $\text{Al} \rightarrow \text{Al}^{3+} + 3\text{e}^-$  x 2  
 $2\text{H}^+ + 2\text{e}^- \rightarrow \text{H}_2$  x 3  
 $2\text{Al} + 6\text{H}^+ \rightarrow 2\text{Al}^{3+} + 3\text{H}_2$
- (g)  $\text{Pb} \rightarrow \text{Pb}^{2+} + 2\text{e}^-$   
 $\text{Cu}^{2+} + 2\text{e}^- \rightarrow \text{Cu}$   
 $\text{Pb} + \text{Cu}^{2+} \rightarrow \text{Pb}^{2+} + \text{Cu}$
- (h)  $\text{Al} \rightarrow \text{Al}^{3+} + 3\text{e}^-$  x 2  
 $\text{Zn}^{2+} + 2\text{e}^- \rightarrow \text{Zn}$  x 3  
 $2\text{Al} + 3\text{Zn}^{2+} \rightarrow 2\text{Al}^{3+} + 3\text{Zn}$
- (i)  $\text{Cu} \rightarrow \text{Cu}^{2+} + 2\text{e}^-$   
 $2\text{NO}_3^- + 4\text{H}^+ + 2\text{e}^- \rightarrow 2\text{NO}_2 + 2\text{H}_2\text{O}$   
 $\text{Cu} + 2\text{NO}_3^- + 4\text{H}^+ \rightarrow \text{Cu}^{2+} + 2\text{NO}_2 + 2\text{H}_2\text{O}$
- (j)  $\text{SO}_2 + 2\text{H}_2\text{O} + 6\text{e}^- \rightarrow \text{SO}_4^{2-} + 4\text{H}^+$   
 $\text{OCl}^- + 2\text{H}^+ + 3\text{e}^- \rightarrow \text{Cl}^- + \text{H}_2\text{O}$  x 2  
 $\text{SO}_2 + 2\text{OCl}^- \rightarrow \text{SO}_4^{2-} + 2\text{Cl}^-$



(b)  $TiCl_4$  is reduced, Mg metal is oxidised

