

CH1011

Tutorial 7

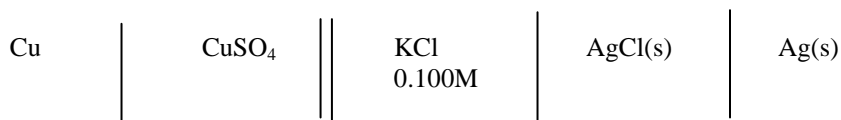
Name:

1. Assign the **oxidation state** of carbon in the following compounds:



2. The following two redox couple are combined: $\text{E}^\circ_{\frac{1}{2} \text{Cr}^{3+}_{(\text{aq})}/\text{Cr}_{(\text{s})}} -0.74\text{V}$ $\text{Fe}^{3+}_{(\text{aq})}/\text{Fe}^{2+}_{(\text{aq})} 0.77\text{V}$
- Work out and balance the spontaneous **redox reaction**.
 - Calculate the standard cell voltage $\text{E}^\circ_{\text{cell}}$.
 - Identify the component that is the **oxidant** and the component that is the **reductant**.

3. What is the cell reaction in the following cell?
Calculate the standard free energy change ΔG° for the reaction:



Given that the potential of this cell at 298K is +0.030V and that E° for the electrode reaction $\text{AgCl(s)} + \text{e}^- \rightleftharpoons \text{Ag(s)} + \text{Cl}^-$ is + 0.223V, calculate the concentration of CuSO₄ in the cell.

$$\text{E}^\circ_{\text{Cu}^{2+}/\text{Cu}} = +0.340\text{V}$$

$$F = 96,500 \text{ coulombs mol}^{-1}$$

