14.34 (a) $\Delta G^\circ_r = -2\Delta G^\circ_f(\text{NaCl, s}) = -2(-384.14\ \text{kJ}\cdot\text{mol}^{-1}) = 768.28\ \text{kJ}\cdot\text{mol}^{-1}$

(b) The reduction of sodium ions is a one-electron process,

$\text{Na}^+ + 1\,\text{e}^- \rightarrow \text{Na(s)};$

therefore, $1\ \text{mol Na}^+ = 1\ \text{mol e}^-$.

$$\text{current} = \left(\frac{400.\ \text{g Na}}{4.00\ \text{h}}\right)\left(\frac{1\ \text{mol Na}}{22.99\ \text{g Na}}\right)\left(\frac{96\,485\ \text{C}}{1\ \text{mol Na}}\right)\left(\frac{1\ \text{h}}{3600\ \text{s}}\right)$$

$$= 117\ \text{C}\cdot\text{s}^{-1} = 117\ \text{A}$$

14.44 (a) $\text{Mg(s)} + \text{Br}_2\text{(l)} \rightarrow \text{MgBr}_2\text{(s)}$

(b) $3\ \text{BaO(s)} + 2\ \text{Al(s)} \xrightarrow{\Delta} \text{Al}_2\text{O}_3\text{(s)} + 3\ \text{Ba(s)}$

(c) $\text{CaO(s)} + \text{SiO}_2\text{(s)} \xrightarrow{\Delta} \text{CaSiO}_3\text{(l)}$

14.52 (a) $\text{Al}_2\text{O}_3\text{(s)} + 2\ \text{OH}^-\text{(aq)} + 3\ \text{H}_2\text{O(l)} \rightarrow 2[\text{Al(OH)}_4]^-\text{(aq)}$

(b) $\text{Al}_2\text{O}_3\text{(s)} + 6\ \text{H}_3\text{O}^+\text{(aq)} + 3\ \text{H}_2\text{O(l)} \rightarrow 2[\text{Al(H}_2\text{O)}_6]^{3+}\text{(aq)}$

(c) $2\ \text{B(s)} + 2\ \text{NH}_3\text{(g)} \xrightarrow{\Delta} 2\ \text{BN(s)} + 3\ \text{H}_2\text{(g)}$