# AP WORKSHEET 09GHIJ: ANSWERS

1.

(a) (i) 0.27 V

(ii) $1.38 \times 10^{9}$

(b) $\Delta G$ will be significantly negative since the reaction is spontaneous with a positive E and a large K.

2. $5.45 \times 10^{-13}$ (worked solution below)

$Ag^{+}_{(aq)} + ½H_{2(g)} \rightarrow Ag_{(s)} + H^{+}_{(aq)}$

$E° = + 0.80$ V

New voltage NOT + 0.80 V, so apply Nernst equation

$+ 0.437 = + 0.80 - (0.0592/1) \log ([1]/[Ag^{+}])$

Solving for $Ag^{+}$, we get $[Ag^{+}] = 7.38 \times 10^{-7}$

Since $K_{sp} = [Ag^{+}] [Br^{-}]$, i.e., $x^2$, $K_{sp} = 5.45 \times 10^{-13}$

3.

(a) -1.21 V

(b) It is not spontaneous and it does not occur.

4.

(a) 1.235 V

(b) 1.227 V