HW13-7 Soln)

Easier than it looks, perhaps.

$$\Delta U = -(5.874 \times 10^{-6}\text{eV}) \times \frac{1.6 \times 10^{-19}\text{J}}{\text{eV}} = -9.40 \times 10^{-25}\ \text{J}\ .$$

$$E_{\text{Photon}} = \frac{hc}{\lambda} = -\Delta U \quad \lambda = \frac{hc}{-\Delta U} = \frac{6.63 \times 10^{-34}(3 \times 10^{8})}{9.40 \times 10^{-25}} = 0.212\ \text{m}\ .$$

This is referred to as the 21 cm line.