44. The result of problem 3 in Chapter 39 is adapted to these units ($hc = 1240\,\text{eV}\cdot\text{nm} = 1240\,\text{keV}\cdot\text{pm}$). For the K_α line from iron

$$\Delta E = \frac{hc}{\lambda} = \frac{1240\,\text{keV}\cdot\text{pm}}{193\,\text{pm}} = 6.4\ \text{keV}\ .$$

We remark that for the hydrogen atom the corresponding energy difference is

$$\Delta E_{12} = -(13.6\,\text{eV})\left(\frac{1}{2^2} - \frac{1}{1^1}\right) = 10\ \text{eV}.$$

That this difference is much greater in iron is due to the fact that its atomic nucleus contains 26 protons, exerting a much greater force on the K- and L-shell electrons than that provided by the single proton in hydrogen.