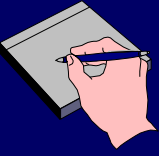
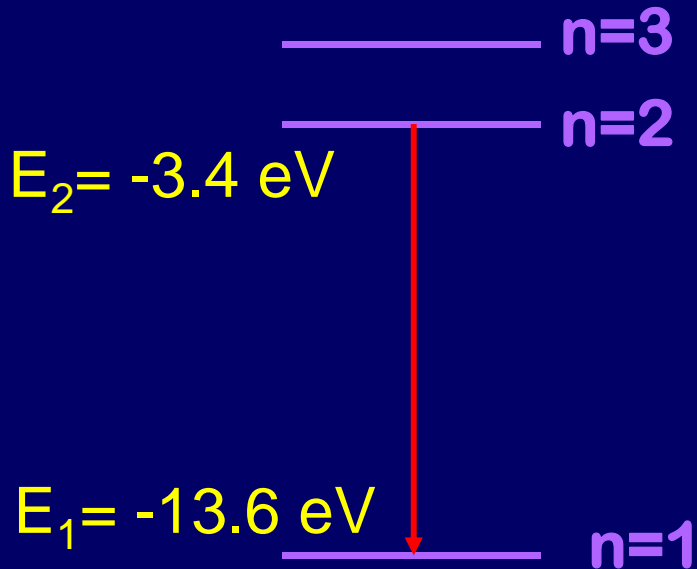


Example



Spectral Line Wavelengths

Calculate the wavelength of photon emitted when an electron in the hydrogen atom drops from the $n=2$ state to the ground state ($n=1$).



$$E_n = -13.6 \text{ eV} \frac{Z^2}{n^2}$$

$$hf = E_2 - E_1$$

$$= -3.4 \text{ eV} - (-13.6 \text{ eV}) = 10.2 \text{ eV}$$

$$E_{\text{photon}} = \frac{hc}{\lambda}$$

$$\lambda = \frac{hc}{10.2 \text{ eV}} = \frac{1240}{10.2} \approx 124 \text{ nm}$$