P #50 Ch 28 - pg 897

$E_{ion} = 4.100\ eV$

$\lambda_1 = 310.0\ nm$ $\quad E = \frac{h \cdot c}{\lambda} = \frac{1240\ eV \cdot nm}{310\ nm}$ $\quad E = 4.01\ eV$

$\lambda_2 = 400.0\ nm$ $\quad E = \frac{h \cdot c}{\lambda} = \frac{1240\ eV \cdot nm}{400\ nm}$ $\quad E = 3.11\ eV$

$\lambda_3 = 1378\ nm$ $\quad E = \frac{h \cdot c}{\lambda} = \frac{1240\ eV \cdot nm}{1378\ nm}$ $\quad E = .90\ eV$

Find E_1: $E_{ion} = \Delta E_{\infty \to 1}$ so $4.100\ eV = 0\ eV - E_1$

$E_1 = -4.100\ eV$

Find additional E values:

$\Delta E = 4.01\ eV$ is greatest ΔE, so it represents highest E level

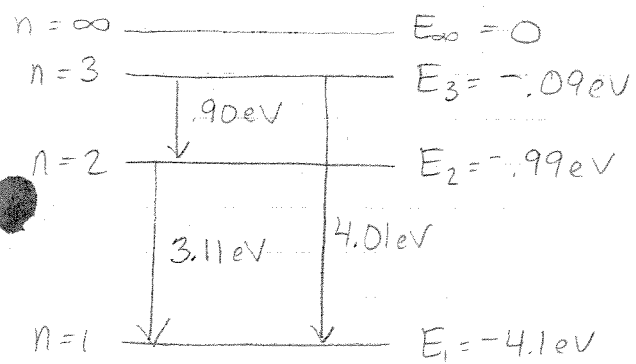
$\Delta E = E_1 - E_{high}$ so $4.01\ eV = (-4.10\ eV) - E_{high}$

$E_{high} = -.09\ eV$

$\Delta E = 3.11\ eV$ is next ΔE, so

$\Delta E = E_1 - E_{next}$ $\quad 3.11\ eV = (-4.10\ eV) - E_{next}$

$E_{next} = -.99\ eV$



(Note: $\Delta E = .90\ eV$ could represent another E level, but it is als a transition of $E_3 \to E_2$, so it is not used for least # of energy levels possible)