

Name:

1) CLASS(2)

In a high voltage discharge tube, a wavelength of 410.2 nm is emitted from a hydrogen atom. Find the initial and final values of the quantum number n for the electron which produces this wavelength. *Hint: Think about the maximum and minimum you get for each series, and try to see if this specific wavelength is in a range.*

2) CLASS(2)

We know, using conservation of the angular momentum, that electrons when by absorbing/emitting a photon change their quantum number n , they have to change their quantum number l by ± 1 .

- a) Can an electron go from $1s$ to $3d$ absorbing one photon? How about $3s$ to $4p$?
- b) An electron changes n from 2 to 1. Find the l quantum number before and after emitting the photon.

3) CLASS(2)

The orbital quantum number for an electron in a Li^{2+} atom is $l = 3$. What are the possible n quantum number for this electron? What are the possible m_l quantum number for this electron? Find the maximum and minimum wavelengths of photons emitted when this electron jumps from a possible n to a lower one.