PLI
18 June, 2020

1. **Calculate the energy required to excite the hydrogen electron from level n = 1 to level n =2. Also calculate the wavelength of light that must be absorbed by a hydrogen atom in its ground state to reach this excited state.**

1. **An energy of $3.3*10^{-19}$J/atom is required to cause a cesium atom on a metal surface to lose an electron. Calculate the longest possible wavelength of light that can ionize a cesium atom**

2. **Which set of quantum numbers cannot occur together to specify an orbital or a sub-orbital?**

   a) n=2, l=1, m_l= -1
   b) n=3, l=2, m_l= 0
   c) n=3, l=3, m_l= 0
   d) n=4, l=3, m_l=0

3. **Find the maximum number of electrons that can have these quantum numbers:**

a. **n = 3:**
b. **n = 4, ml = 1 (don't worry about anything past f orbitals):**
c. **n = 4, ms = + 1⁄2:**
d. **n = 3, l = 2:**
e. **n = 2, l = 1:**

4. **Calculate the longest and shortest wavelengths of light emitted by electrons in the hydrogen atom that begin in the n = 6 state and then fall to states with smaller values of n.**

5. **An excited hydrogen atom emits light with a frequency of 1.141×10^{14} Hz to reach the energy level for which n = 4. In what principal quantum level did the electron begin?**