**Name\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ 10/28/22**

**CH 111 Workshop 6 – Chapter 6**

1. Determine the wavelength of light (in nm) emitted when an electron in a hydrogen atom makes a transition from an orbital in n = 6 to an orbital in n = 5.
2. An electron in the level of the hydrogen atom is excited to a higher energy level, absorbing light with a frequency. What is the value of for the level to which the electron relaxed?
3. Answer the following about quantum numbers.
   1. What is the maximum number of orbitals that can occupy the n = 3 shell? 9
   2. What is the maximum number of electrons that can occupy a l = 5 subshell? 22
   3. Each of the following sets of quantum numbers is supposed to specify an orbital. However, each set contains one quantum number that is not allowed. Replace the quantum number that is not allowed with one that is allowed.
4. How many electrons in an atom could have these sets of quantum numbers?
5. 18
6. 2
7. 18
8. Calculate the wavelength (in nm) and energy of the red light emitted by a barcode scanner that has a frequency of .
9. Write electron configurations for each of the following elements using the indicated forms.

1s

2s

2p

1. O (orbital box)

1s

2s

2p

3s

1. (orbital box)

1s

2s

2p

3s

3p

1. (orbital box)
2. Br (spdf and noble gas) &

1. Cu (spdf and noble gas)
2. U (noble gas)
3. Os (noble gas)
4. (spdf and noble gas)
6. Explain why fluorine has a greater affinity for electrons than neon despite neon being to the right of fluorine on the periodic table.

Adding an electron to neon adds an electron to a higher energy shell.