**Name:\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_Class:\_\_\_\_\_\_\_\_\_\_\_\_**

**Waves Quantum Numbers and Electron configuration Quiz Review**

1. Summarize:

 The principal quantum number, ***n***, can have the values of: \_\_\_ \_\_\_ \_\_\_ \_\_\_ \_\_\_, etc.

 The angular momentum quantum number, **l**, can have integer values from \_\_\_\_\_\_ to \_\_\_\_\_\_.

 The magnetic quantum number, ***m*l**, can have integer values from \_\_\_\_\_ to \_\_\_\_\_.

2. When n = 3, **l** can have values of \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_.

 For the 3d orbital, **l** has a value of \_\_\_.

 When n = 4, **l** can have values of \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_.

 For the 4p orbital, **l** has a value of \_\_\_.

 When n = 2, **l** can have values of \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_.

 For the 2s orbital, **l** has a value of \_\_\_

3. Summarize:

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| orbital | s | p | d | f |
| value of **l** |  |  |  |  |

4. There are five 4d orbitals. List the quantum numbers for each orbital.

|  |  |  |
| --- | --- | --- |
| ***n*** | **l** | m**l** |
|  |  |  |
|  |  |  |
|  |  |  |
|  |  |  |
|  |  |  |

5. Calculate the wavelength of electromagnetic radiation that has a frequency of 5.56 MHz.

6. Calculate the frequency of electromagnetic radiation that has a wavelength equal to 667 nm.

7. Write the complete ground state electron configurations for the following:

a) lithium \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

b) oxygen \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

c) calcium \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

d) titanium \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

8. Write the abbreviated ground state electron configurations for the following:

a) helium \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

b) nitrogen \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

c) chlorine \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

d) iron \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

9. Compare and contrast Bohr’s model and Heisenberg’s electron cloud model.