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**Electron Orbitals Review Worksheet**

The last electron of each element is in what type of orbital (s,p,d,f)?

| Cl | Ba | Ag | Np |
|---|---|---|---|
| p | s | d | f |

Give the electron configuration of the elements or ions below.

Na $1s^2 2s^2 2p^6 3s^1$

F $1s^2 2s^2 2p^5$

Se $1s^2 2s^2 2p^6 3s^2 3p^6 s^2 3d^{10} 4p^5$

$P^{3-}$ $1s^2 2s^2 2p^6 3s^2 3p^6$

$Li^+$ $1s^2$

Give the abbreviated electron configuration of the elements or ions below.

K $[Ar]4s^1$

Te $[Kr]5s^2 4d^{10} 5p^4$

La $[Xe]6s^2 4f^1$

$Ca^{2+}$ $[Ar]$

What happens when a photon of light strikes an electron?

The photon cause the electron to move to a higher energy level if the photon has enough energy.

What happens when an electron moves from a higher electron shell to a lower electron shell?

The electron releases the energy of its movement as a photon that moves away from the electron.

raw the electron diagrams (on a separate piece of paper) of the elements or ions below.

Be Si $Ca^{2+}$ $S^{2-}$

ANSWERS TO THESE FOUR WILL BE IN A SEPERATE LINK BACK ON THE WORKSHEET PAGE.

Give the four quantum numbers (n, L, $m_L$, $m_s$) of the last electron of the elements below.

| He | B | Zn | U |
|---|---|---|---|
| n = 1 | n = 2 | n = 3 | n = 5 |
| L = 0 | L = 1 | L = 2 | L = 4 |
| m = 0 | m = -1 | m = 2 | m = -3 |
| m = +1/2 | m = -1/2 | m = +1/2 | m = -1/2 |

USE THE CONSTANTS (speed of light = c = 3.0 * $10^8$ m/s and Plank's constant = h = 6.626 * $10^{-34}$ $m^2kg/s$) WHEN NEEDED IN THE EQUATIONS BELOW.

If the wavelength of a light wave is 3.4 * $10^{-7}$ m, what is the frequency?

8.8 * $10^{14}$ Hz

If the frequency of a light wave is 7.2 * $10^9$ Hz, what is the wavelength?

4.2 * $10^{-2}$ m

If the energy of a light wave is 9.1 * $10^{-6}$ J, what is the frequency?

1.4 * $10^{28}$ Hz

If the wavelength of a light wave is 6.8 * $10^{-12}$ m, what is the energy?

2.9 * $10^{-14}$ J

For each situation below state whether it is more likely to be toward the RED end of the spectrum or the PURPLE end of the spectrum.

A long wavelength will be no the ___RED___ end of the spectrum.

A low frequency will be on the ___RED___ end of the spectrum.

A high energy wave will be on the ___PURPLE___ end of the spectrum.