

Electron Configurations Practice – Level 3

Please determine the proper ground state atom from the following expressed electron configurations. If the electron configuration as written is impossible please put that.

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

_____ $[\text{Ar}] 4s^2 3d^1$

_____ $1s^2 2s^2 2p^6 3s^2 3p^5$

_____ $[\text{Ne}] 3s^2 3p^6 4s^2 3d^{10}$

_____ $[\text{Ar}] 4s^2$

_____ $1s^2 2s^2 2p^6 3s^2 3p^6 4s^1$

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

_____ $[\text{Ne}] 3s^1$

_____ $[\text{Ar}] 4s^2 3d^{10} 4p^2$

_____ $1s^2 2s^1$

_____ $[\text{He}] 2s^2 2p^3$

_____ $1s^2 2s^2 2p^6 3s^2 3p^6 4s^2 3d^4$

Please express the electron configurations for the following ions:

Na^{+1} - _____

Sr^{+2} - _____

Br^{-1} - _____

Be^{+2} - _____

As^{-3} - _____

Rb^{+1} - _____

Ca^{+2} - _____

Cl^{-1} - _____

List the common ending (sublevel and electrons only) of the expressed electron configurations for the following families:

- A. Halogens = _____
- B. Nobel Gases (except He)= _____
- C. Alkali Metals= _____
- D. Alkaline earth metals = _____

Bonus:

Based on what we have learned about light emitting electrons (as they return from excited state to ground state) please explain why the first electron configuration is possible but the one below it is not.

A. $1s^1 2s^2 2p^6 3s^2 3p^6 4s^2$

B. $1s^3 2s^2 2p^6 3s^2 3p^6 4s^1$