

Electron Configuration

1. Write the electron configuration for the following **neutral** atoms.

Nitrogen  $1s^2 2s^2 2p^3$

Oxygen  $1s^2 2s^2 2p^4$

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

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

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

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

2. Write the electron configuration for the following neutral atoms: helium, neon, argon and krypton. What is the similarity in the configurations for these elements?

He  $1s^2$

Ne  $1s^2 2s^2 2p^6$

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

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

similarity all have a filled outermost orbital

3. For each of the following electron configurations of **neutral** atoms, determine the **name** of the element listed and determine if the configuration as written is in the **ground** state or the **excited** state.

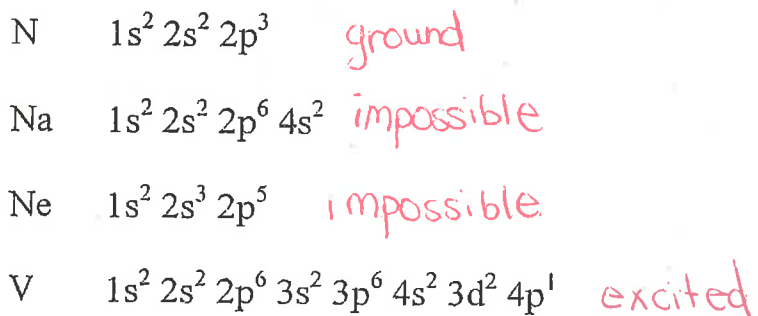
$1s^2 2s^2 2p^6$  ground

$1s^2 2s^2 2p^5 3s^2$  excited

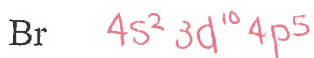
$1s^2 2s^2 2p^6 3s^2 3p^6 4s^2 3d^3$  ground

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

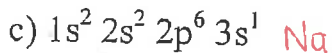
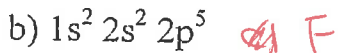
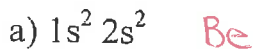
4. For each of the following electron configurations of **neutral** atoms, determine if the configurations as written is the **ground** state, the **excited** state, or if it is an **impossible** configuration:



5. Predict the outermost orbital filled for: (based on the table above)



6. Identify the elements whose atoms have the following electron configurations.



7. Without writing out the electron configuration for the following neutral atoms, use their position in the periodic table to determine how many electrons they have in their outermost orbitals.

