Practice - Noble Gas Notation

Write the electron configuration and the noble gas notation for each of the following atoms or ions, starting by first writing the element's symbol with the atomic number.

Part I: Neutral Atoms

1. Bromine

$_{35}$**Br**

Electron configuration: $1s^2 2s^2 2p^6 3s^2 3p^6 4s^2 3d^{10} 4p^5$.

Noble gas notation: $[Ar] 4s^2 3d^{10} 4p^5$.

2. Potassium

$_{19}K$

Electron configuration: $1s^2 2s^2 2p^6 3s^2 3p^6 4s^1$

Noble gas notation: $[Ar] 4s^1$

3. Silicon

$_{14}Si$

Electron configuration: $1s^2 2s^2 2p^6 3s^2 3p^2$

Noble gas notation: $[Ne] 3s^2 3p^2$

4. Nickel

$_{28}Ni$

Electron configuration: $1s^2 2s^2 2p^6 3s^2 3p^6 4s^2 3d^8$

Noble gas notation: $[Ar]$

5. Manganese

$_{25}Mn$

Electron configuration: $1s^2 2s^2 2p^6 3s^2 3p^6 4s^2 3d^5$

Noble gas notation: $[Ar]$

6. Gallium

$_{31}Ga$

Electron configuration: $1s^2 2s^2 2p^6 3s^2 3p^6 4s^2 3d^{10} 4p^1$

Noble gas notation: $[Ar]$

7. Krypton

$_{36}Kr$

Electron configuration: $1s^2 2s^2 2p^6 3s^2 3p^6 4s^2 3d^{10} 4p^6$

Noble gas notation: $[Ar]$

8. Zinc

$_{30}Zn$

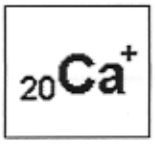
Electron configuration: $1s^2 2s^2 2p^6 3s^2 3p^6 4s^2 3d^{10}$

Noble gas notation: $[Ar]$

Part II: Ions

Recall, the charge on an ion affects the number of electrons in it.

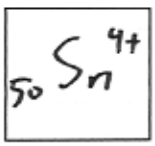
9. Ca^{+} (number of electrons = 20 - 1 = 19 e⁻)



Electron configuration: $1s^2 2s^2 2p^6 3s^2 3p^6 4s^1$

Noble gas notation: $[Ar]4s^1$

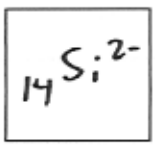
10. Sn^{4+} (number of electrons = 50 - 4 = 46)



Electron configuration: $1s^2 2s^2 2p^6 3s^2 3p^6 4s^2 3d^{10} 4p^6 5s^2 4d^8$

Noble gas notation: $[Kr]5s^2 4d^3$

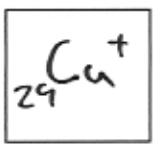
11. Si^{2-} (number of electrons = 14 - (-2) = 16)



Electron configuration: $1s^2 2s^2 2p^6 3s^2 3p^4$

Noble gas notation: $[Ne]3s^2 3p^4$

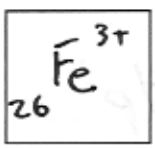
12. Cu^{+} (number of electrons = 29 - 1 = 28)



Electron configuration: $1s^2 2s^2 2p^6 3s^2 3p^6 4s^2 3d^8$

Noble gas notation: $[Ar]4s^2 3d^8$

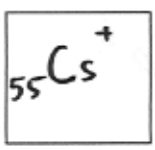
13. Fe^{3+} (number of electrons = 26 - 3 = 23)



Electron configuration: $1s^2 2s^2 2p^6 3s^2 3p^6 4s^2 3d^3$

Noble gas notation: $[Ar]4s^2 3d^3$

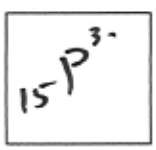
14. Cs^{+} (number of electrons = 55 - 1 = 54)



Electron configuration: $1s^2 2s^2 2p^6 3s^2 3p^6 4s^2 3d^{10} 4p^6 5s^2 4d^{10} 5p^6$

Noble gas notation: $[Kr]5s^2 4d^{10} 5p^6$

15. P^{3-} (number of electrons = 15 - (-3) = 18)



Electron configuration: $1s^2 2s^2 2p^6 3s^2 3p^6$

Noble gas notation: $[Ne]3s^2 3p^6$