

# Electron Configuration Practice Worksheet

1. Write the electron configuration of each given element in long and short form.

i. Ar (long) :

Ar (short) :

ii. Mg (long) :

Mg (short) :

iii. N (long) :

N (short) :

iv. Li (long) :

Li (short) :

v. P (long) :

P (short) :

vi. Cl (long) :

Cl (short) :

2. Write the atomic number, number of elements, and the long-form electron configuration of the elements given in the table below.

| Element | Atomic Number | Number of Valence Electrons | Electron Configuration (long form) |
|---------|---------------|-----------------------------|------------------------------------|
| He      |               |                             |                                    |
| B       |               |                             |                                    |
| O       |               |                             |                                    |
| Na      |               |                             |                                    |
| S       |               |                             |                                    |
| K       |               |                             |                                    |
| Mn      |               |                             |                                    |

3. Explain Aufbau Principle, Pauli Exclusion Principle, and Hund's Rule. Give an example of each.

# Electron Configuration Practice Worksheet

## Answers

1. Write the electron configuration of each given element in long and short form.

i. Ar (long) :  $1s^2 2s^2 2p^6 3s^2 3p^6$

Ar (short) :  $[\text{Ne}] 3s^2 3p^6$

ii. Mg (long) :  $1s^2 2s^2 2p^6 3s^2$

Mg (short) :  $[\text{Ne}] 3s^2 3p^6$

iii. N (long) :  $1s^2 2s^2 2p^3$

N (short) :  $[\text{He}] 2p^3$

iv. Li (long) :  $1s^2 2s^1$

Li (short) :  $[\text{He}] 2s^1$

v. P (long) :  $1s^2 2s^2 2p^6 3s^2 3p^3$

P (short) :  $[\text{Ne}] 3s^2 3p^3$

vi. Cl (long) :  $1s^2 2s^2 2p^6 3s^2 3p^5$

Cl (short) :  $[\text{Ne}] 3s^2 3p^5$

2. Write the atomic number, number of elements, and the long-form electron configuration of the elements given in the table below.

| Element | Atomic Number | Number of Valence Electrons | Electron Configuration (long form)   |
|---------|---------------|-----------------------------|--------------------------------------|
| He      | 2             | 2                           | $1s^2$                               |
| B       | 5             | 3                           | $1s^2 2s^2 2p^1$                     |
| O       | 8             | 6                           | $1s^2 2s^2 2p^4$                     |
| Na      | 11            | 1                           | $1s^2 2s^2 2p^6 3s^1$                |
| S       | 16            | 6                           | $1s^2 2s^2 2p^6 3s^2 3p^4$           |
| K       | 19            | 1                           | $1s^2 2s^2 2p^6 3s^2 3p^6 4s^1$      |
| Mn      | 25            | 7                           | $1s^2 2s^2 2p^6 3s^2 3p^6 4s^2 3d^5$ |

3. Explain Aufbau Principle, Pauli Exclusion Principle, and Hund's Rule. Give an example of each.

**Aufbau Principle** - Electrons first fill the lower energy subshells before progressively filling up the higher ones.

**Pauli Exclusion Principle** – No two electrons can have the same set of quantum numbers

**Hund's Rule** – Orbitals of equal energy are each occupied by one electron before a second electron occupies any orbital.