

# **Electronic theory of Valency**

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# Valence electron

It is defined as **number of electron present in outermost orbit** or shell of an atom of an element.

**For eg:**

**1)Na** (Sodium)  $Z=11$  (2,8,1)

**3)Al** (Aluminium)  $Z=13$  (2,8,3)

Valence electron is **1**

Valence electron is **3**

**2)Mg** (Magnesium )  $Z=12$  (2,8,2)

Valence electron is **2**

# Definition of Valency

It is defined as number of electron **loosed,or gained,or shared** by an atom of element to become stable by achieving octet state.

Examples

Sodium (Na) 11

2,8,1

It has one electron so it is unstable ,it gets stable by losing a electron and become sodium ion with a positive charge hence it is called as an electropositive ion

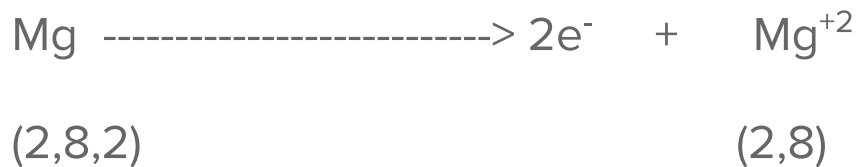


(2,8,1)

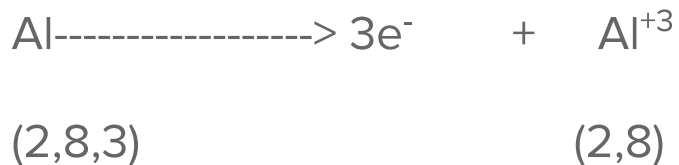
(2,8)

# Other Electropositive ion

## Magnesium



## Aluminium



# Conclusion

Therefore

Sodium has positive Electrovalency +1

Magnesium has positive Electrovalency +2

Aluminium has positive Electrovalency +3

This all are examples of **Positive Electrovalency** which is achieved by losing electron

# Valency achieved by gaining of electron

Phosphorus (15) (2,8,5)



(2,8,5)

(2,8,8)

Negative Electrovalency of -3

Sulphur (16) (2,8,6)



(2,8,6)

(2,8,8)

Negative Electrovalency of -2

# More examples

**Chlorine** (17) (2,8,7)



(2,8,7)

(2,8,8)

Negative Electrovalency of -1

Thus Phosphorus, Sulphur and Chlorine are examples of **Electronegative ion** because they have negative electrovalency which is achieved by **gaining** electron.



# Carbon

C (6) (2,4)

Carbon prefers Sharing its 4 electron with other carbon atom so that it can achieve its stability

Hence its Valency will be **4**

**covalency**

# Questions

- 1) What is valence electron.
- 2) Define Valency.
- 3) Why Sodium is electropositive atom.
- 4) Why chlorine is Electronegative atom.
- 5) Positive ions are called \_\_\_\_\_.
- 6) Positive ions are formed by \_\_\_\_\_ of electron.
- 7) Negative ions are called as \_\_\_\_\_
- 8) Negative ions are formed by \_\_\_\_\_ of electron.