

## Unit 6 Learning Targets

# THE INFLUENCE OF THE ELECTRON

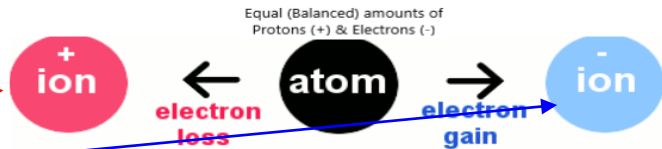
## Electricity & Magnetism

### 1. My knowledge of the Ions, and properties of Metals and Nonmetals lays the fundamentals for Electricity.

✓ Ions are altered forms of an atom in which the Quantity of Electrons is altered from its neutral form.

➤ Metals = Ions<sup>+</sup> [Lose/Give Electrons]

➤ Non-Metals = Ions<sup>-</sup> [Gain/Take Electrons]

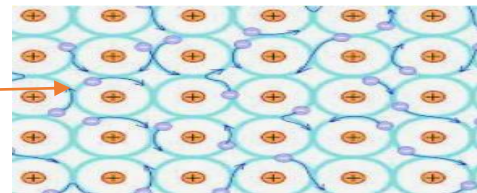


✓ The electron structure & properties influence an element or compounds ability to conduct electricity.

➤ Conductors = Metallic {Sea of Electrons}

➤ Semi-conductors = Metalloids {Resistors}

➤ Insulators = Non-Metals {Hold Electrons Tight}



### 2. I can discuss how magnetism induces the movement of Electrical Charge.

✓ Magnetic Force, Electric Current and Static Charge

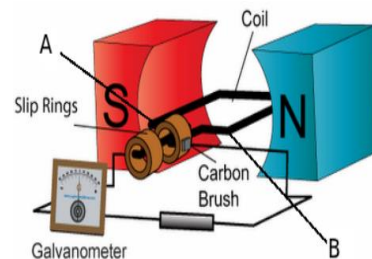
➤ Magnetic fields can Induce Electric current. (Generators)

➤ Electric Currents can Induce Mechanical Energy (Motors)

➤ Friction can Induce Static Charges & Discharges (Lightning)

➤ Electric Fields can induce Magnetic Forces (Electromagnets)

✓ Electromagnetic Waves have Electric and Magnetic Fields.



### 3. I can discuss the relationship between voltage, current & Resistance

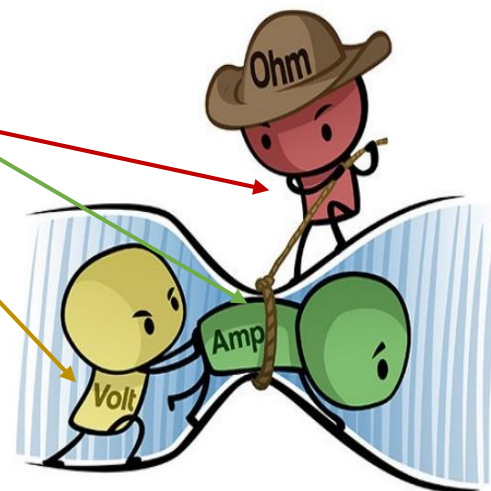
➤ Voltage = Electromotive Force aka: **Volts**

➤ Resistance = The Counter Attack: **Ohms**

➤ Current = Flow (like creek flow or River flow) aka: **Amperage (Amps)**

✓ I can use OHM's law to discuss and compare electrical circuits

✓ I can use OHM's law to mathematically compare electrical circuits



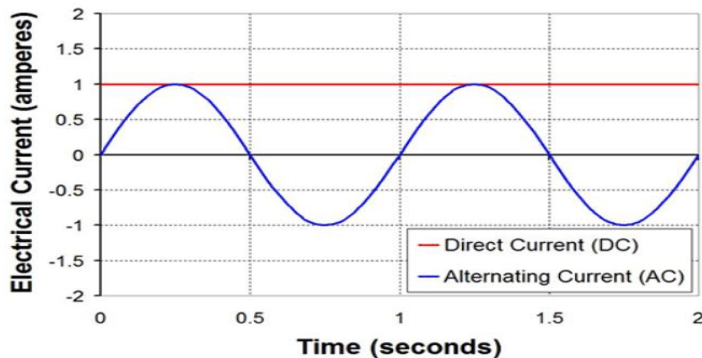
### 4. I know how Alternating Current (A.C.) and Direct Current (D.C.) provide Electromotive Force (Voltage)

✓ Practical Uses of D.C.

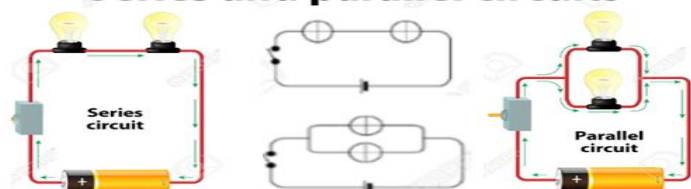
➤ Advantages & Disadvantages

✓ Practical Uses of A.C.

➤ Advantages & Disadvantages



#### Series and parallel circuits



| Advantages & Disadvantages of                       |  |
|---|--|
| Series Circuits                                     | Parallel Circuits  |
| ✓ 1 path of Current Flow                            | ✓ 2 or more paths of Current Flow                              |
| ✓ Higher Resistance ( $\Omega$ )                    | ✓ Lower Resistance ( $\Omega$ )                                |
| ✓ needs more Voltage & requires less Current (Amps) | ✓ needs more Current (amps) & requires less Voltage            |
| ✓ One break in circuit kills the whole circuit      | ✓ The circuit can still be operational with breaks in circuit. |
| ✓ Limited Uses                                      | ✓ More Versatile   |