# Chapter 11 – Quick Revision Sheet

## Electricity

### Electric Current

**Definition:**

Electric current is the flow of electric charge through a conductor.

**Formula:**

$I = Q / t$

**Unit:**

Ampere (A)

### Electric Potential

Electric potential is the work done to bring a unit positive charge to a point.

### Potential Difference

Potential difference is the work done to move a unit charge from one point to another.

**Formula:**

$V = W / Q$

**Unit:**

Volt (V)

## Ohm's Law

**Definition:**

Ohm's Law states that at constant temperature, the current flowing through a conductor is directly proportional to the potential difference across its ends, provided physical conditions remain the same.

**Formula:** $V = IR$

## Resistance

Resistance is the opposition offered by a conductor to the flow of current.

**Unit:** Ohm (Ω)

**Factors Affecting Resistance**

- Length (↑ length → ↑ resistance)
- Area (↑ area → ↓ resistance)
- Material (depends on resistivity)
- Temperature (↑ temp → ↑ resistance in metals)

## Combination of Resistors

Combination of resistors means connecting two or more resistors together in a circuit to obtain a required resistance.

| Series Combination | Parallel Combination |
|---|---|
| Connected in single path | Connected across same points |
| Same current flows | Same voltage across each |
| Total resistance increases | Total resistance decreases |
| $Rs = R_1 + R_2 + R_3$ | $1/Rp = 1/R_1 + 1/R_2 + 1/R_3$ |
| One failure stops whole circuit | Devices work independently |

## Heating Effect of Electric Current

**Definition:**

When current flows through a conductor, heat is produced.

$$H = I^2Rt$$

**Applications:**

- Heater
- Electric iron
- Fuse

## Electric Power

**Definition:**

Electric power is the rate at which electrical energy is consumed.

$$P = VI$$

**Other Forms:**

- $P = I^2R$
- $P = V^2/R$

**Unit:**

Watt (W)