CAPACITOR

1 Capacitor

Capacitor is a passive device of the circuit which stores electrical energy or charge. It is also known as **condenser**.

$$C = \frac{Q}{V} \quad \text{or} \quad C = \frac{\epsilon_0 A}{d}$$

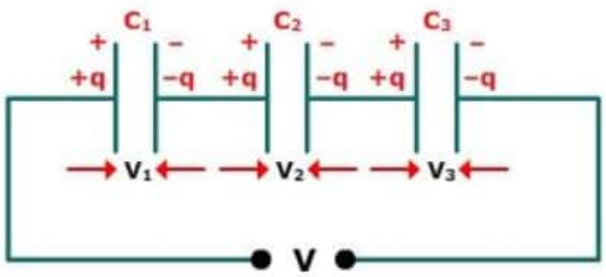
Capacitance is measured in **Farad (F)**

Q = Charge **A** = Area

V = Voltage **d** = Diameter

2 Combination

i Series



- Charge stored on each capacitor is same and equal to the magnitude of the charge, which comes from the battery..

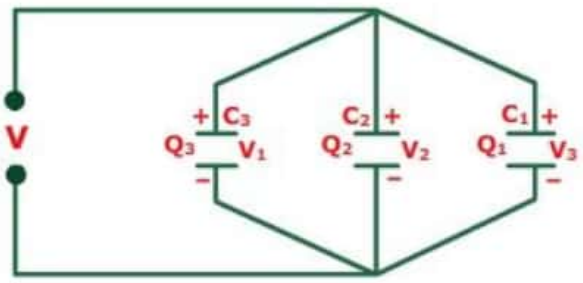
$$Q = q_1 = q_2 = q_3$$

- The sum of voltage across the individual capacitor is equal to the voltage of the battery.

$$V = V_1 + V_2 + V_3$$

- $\frac{1}{C_{eq}} = \frac{1}{C_1} + \frac{1}{C_2} + \frac{1}{C_3}$
- Equivalent capacitance of the capacitor is always less than the smallest value of the capacitance of the capacitor in the circuit.

ii Parallel



- The Voltage across each capacitor is the same,and it is equal to the voltage of the battery.

$$V = V_1 = V_2 = V_3$$

- The sum of the charge stored on an individual capacitor is equal to the magnitude of the charge, which comes from the battery.

$$Q = q_1 + q_2 + q_3$$

- $C_{eq} = C_1 + C_2 + C_3$
- Equivalent capacitance of the capacitor is always greater then the largest value of the capacitance of the capacitor in the circuit.