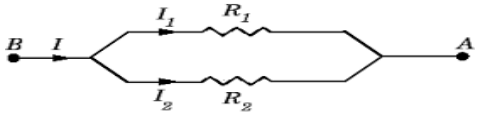
Physics Class Notes

Click Here To Watch The Video

Parallel Connection

Parallel connection of resistors is shown below



The effective resistance of the parallel combination,$1/R=1/R_1+1/R_2$

or $R=R_1.R_2/(R_1+R_2)$

When **'n'** resistors of equal resistance **r Ω** are connected in parallel, the effective resistance, **R=r/n**

Features

- Effective resistance decreases with the increase of the number of resistors.
- Large current flows through small resistance and small current through large resistance. (Current is different)
- Same potential difference will be available at all resistors.
- When a number of resistors are connected in parallel, the effective resistance will be less than the least one among them.

Problem

1. It is given 5Ω,20Ω resistors and 10V battery
   a. What is the effective resistance of the circuit?
   b. What is the current in the circuit?

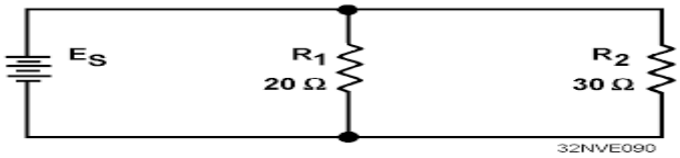
Ans:

a. $R=R_1.R_2/(R_1+R_2)=5\times20/(5+20)=100/25=4\Omega$

b. $I=V/R=10/4=2.5A$

Home Work

1.Calculate the effective resistance of the circuit.



2. 20 resistors of 2Ω each are connected in parallel. Calculate the effective resistance.
3. when a 6Ω and a 3Ω resistors are connected in parallel to a 12V battery. Calculate the effective resistance and current in the circuit.