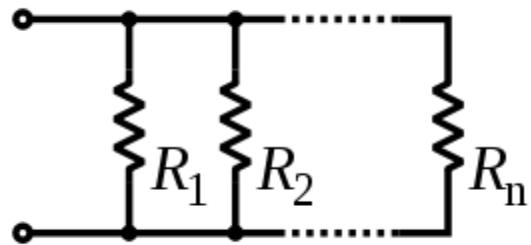


Answer on Question #50143, Physics, Electric Circuits

Infinite number of resistances are connected parallelly in a circuit . Determine the equivalent resistance of the entire circuit provided the wires have negligible resistance.

Solution:

The total resistance of resistors connected in parallel is the reciprocal of the sum of the reciprocals of the individual resistors.



$$\frac{1}{R_{eq}} = \frac{1}{R_1} + \frac{1}{R_2} + \dots + \frac{1}{R_n}$$

When all resistances are the same $R_1 = R_2 = \dots = R$

$$\frac{1}{R_{eq}} = \frac{n}{R}$$

Thus,

$$R_{eq} = \frac{R}{n}$$

When $R \rightarrow \infty$

$$R_{eq} = \frac{R}{\infty} = 0$$

Answer: $R_{eq} = 0$