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Semester: 1st Semester.

Term: mid

Id#: 16595

Subject: Basic Electro mechanical Engineering.

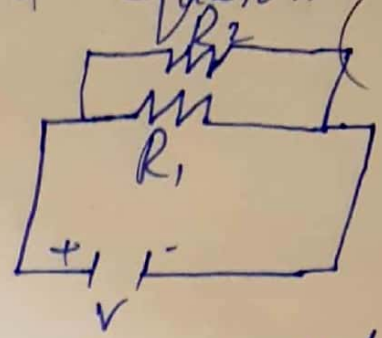
(BEME)

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(a)

Formula for two parallel resistances

$$\frac{1}{R_e} = \frac{1}{R_1} + \frac{1}{R_2}$$

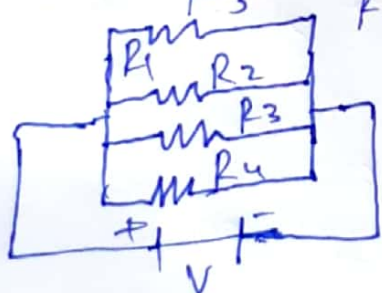


Formula for "n" number of parallel resistances

$$\frac{1}{R_e} = \frac{1}{R_1} + \frac{1}{R_2} + \frac{1}{R_3} + \dots + \frac{1}{R_n}$$

(b) in parallel combination of resistances total or equivalent resistance

$$\frac{1}{R_e} = \frac{1}{R_1} + \frac{1}{R_2} + \frac{1}{R_3} + \frac{1}{R_4} + \dots + \frac{1}{R_n}$$



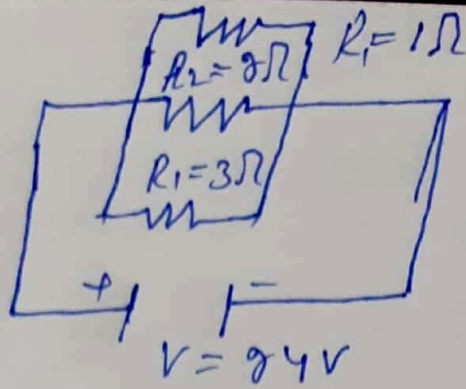
while total conductance increases in parallel combination

$$G_e = G_1 + G_2 + G_3 + \dots + G_n$$

End

(P-1)

(2)  
Q No



Sol: To find  $I_1$

$$I_1 = \frac{V}{R_1} \Rightarrow I_1 = \frac{84}{1} \Rightarrow \boxed{I_1 = 84 A}$$

$$P_1 = I^2 R = P_1 = (84)^2 (1) \Rightarrow \boxed{P_1 = 7056 W}$$

To find  $I_2$ :

$$I_2 = \frac{V}{R_2} \Rightarrow I_2 = \frac{84}{8}$$

$$\Rightarrow \boxed{I_2 = 10.5 A}$$

$$P_2 = \frac{V^2}{R_2} \Rightarrow P_2 = \frac{(84)^2}{8} \Rightarrow \boxed{P_2 = 882 W}$$

To find  $I_3$ :  $I_3 = \frac{V}{R_3} = \frac{84}{3}$

$$\Rightarrow \boxed{I_3 = 28 A}$$

$$P_3 = \frac{V^2}{R_3} = \frac{(84)^2}{3}$$

$$\Rightarrow \boxed{P_3 = 2352 W}$$

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Final

$\boxed{p-2}$

(3) Q#3  
Q No (a) Current and Voltage

Ans: Current :- Charge flowing through any cross section of conductor in unit time is called current

$$\boxed{I = \frac{Q}{t}} \rightarrow \text{its unit is ampere (A)}$$

=> Voltage :- work done on unit positive test charge in an electric field is called voltage

$$\boxed{V = \frac{W}{q_0}}$$

=> its unit is volt (V)

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(b) Resistance & Conductance:

=> Resistance :- Opposition offered by a conductance to the flow of charge is called resistance

$$\boxed{R = \frac{V}{I}}$$

its unit is Ohm ( $\Omega$ )

=> Conductance :- Reciprocal of resistance is called conductance

$$\boxed{G = \frac{1}{R}} \Rightarrow \text{its unit is Siemen}$$

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Inductance:- Tendency of an electrical conductor to oppose a change in the electric current flowing through it is called inductance. its unit is henry (H).

Conductance:- Reciprocal of resistance is called conductance

$$G = \frac{1}{R} \Rightarrow \text{its unit is Seimen (S).}$$

(C) power:- The product of current and voltage in an electric circuit is called power  $P = IV$

→ Energy:- The ability of charges to do work in an electric circuit is called energy.

(d) Synchronous Motor:- An electric motor having a speed exactly proportional to the current frequency.

Asynchronous Motor:- An electric motor whose rotor rotates at the speed less than the synchronous speed. its also called induction motor