Basic Electro Mechanic (1)

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Answer # 2 (a)

Ans **For Two Resistance :-**

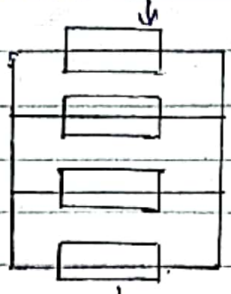
$$R_{eq} = \frac{R_1 + R_2}{R_2 + 1}$$

For "n" Number of Resistance :-

$$R_{eq} = \frac{1}{R_1} + \frac{1}{R_2} + \frac{1}{R_3} \cdots \frac{1}{R_n}$$

Answer # 2 (b)

Ans In a Parallel circuit resistance decrease and conductance increase with addition of more resistors



Adding Succesive Resistance i's parallel

R increase with more Resistor.
G Decrease with more Resistor.

Answer #(2)

Given Data :-

Voltage, V_2 = 24 volts
Resistance, R_1 = 1 Ω
Resistance, R_2 = 2 Ω
Resistance, R_3 = 3 Ω

Required :-

Current = $I_1, I_2, I_3 = ?$
Power = $P_1, P_2, P_3 = ?$

Solution :-

By ohm's law

$$I = V/R$$

For I_1 = $V = 24$ volts, $R_1 = 1\Omega$

$$I_1 = \frac{V}{R_1} = \frac{24}{1}$$

$$\boxed{I_1 = 24 \text{ (amperes) A}}$$

For I_2 = $V = 24$ volts, $R_2 = 2\Omega$

$$I_2 = 24/2$$

$$\boxed{I_2 = 12 \text{ Amperes}}$$

I_3 = $V = 24$ volts, $R_3 = 3\Omega$

$I_3 = 24/3$

$I_3 = 8$ Amperes

Power ⇒ $P = I \times V$

For P_1 = $I_1 = 24$ A, $V = 24$ volts

$P_1 = 24 \times 24$

$P_1 = 576$ watts

For P_2 = $I_2 = 12$ A, $V = 24$ volts

$P_2 = 12 \times 24$

$P_2 = 288$ watts

For P_3 = $I_3 = 8$ A, $V = 24$ V

$P_3 = 8 \times 24$

$P_3 = 192$ watts

Answer #(3)

Q Differentiate between the following

(a)

Voltage	Current
(1) Voltage also called electromotive force is simply the energy per unit charge. In other words voltage is the difference in electric potential b/w two points	(1) Current is just rate of flow of electric charge In simple words the current is the rate at which electric charge flows in a circuit at a partical points.
(2) The SI unit of voltage = (V)	(2) The SI unit is Ampere (A)
(3) Denoted by "V"	(3) Denoted by I
(4) Measured by voltmeter	(4) Measured by using an Ammeter.
(5) Voltage creat an electrosatic field	(5) Current creat a magnetic field.

(B)

Resistance	Conductance.
→ The length of conductor is similar to the length of a hallway. A shorter hallway would allow people to move through at a higher rate than a longer one.	→ Conductance is reciprocal of resistance
→ So a shorter would allow electrons to move though at a higher rate than longer one.	Conductance is a term is not used much in wired circuits but it is used extensively in circuits involving solution
→ Symbol OHMS Ω	→ Symbol Cn.

(C)

Power	Energy
→ Power is the rate at which work is done or energy transmitted.	→ Energy is the capacity to do work. Energy is Power integrated over time.
→ unit Watt = Joules/second	→ Unit = watt-sec or joule = Newton meter.
→ Symbol = P	W
→ Power is the rate at which energy is transfered.	→ Energy is what make changes happen and can be transfered from one object to another.
→ Power cannot be transfered from one to another	Energy change from one to another.

(D)

Inductance	Capacitance.
→ The electrical component associated with inductance is known as inductor which usually coils with a core or without	Capacitance is associated with capacitors. There are several types of capacitor used in circuits.
→ Inductance is measured by Henry (H) symbol is L.	Capacitance is measured by Farad in symbol is C.

(e)	Synchronous Motor	Asynchronous Motor
(i)	Synchronous mater is a machine whose rater speed and speedaf the stater magnetic field is eqval $N = NS = 120\ F/P$	(i) Asynchronos mater is a machine whose rotor rotates at speed less than two synchronous speed $N < NS$
(ii)	Brushless motor variable reductance mater	(ii) Ac induction motor is knows as Asynhronous
(iii)	The value of slip is zero	(iii) The value of slip is nateqval to zero
(iv)	It requires an additional DC power source to initially rotate to rot or near at the synchronous speed	(iv) It doesnat require any additional starting source.
(5)	Syrchronous mote is costly	(5) Less costly.
(6)	Efficiency is greater than Asynchronous mater	(6) Less efficient.
(7)	Not self starting	(7) self starting