QUESTION NO. 1:

There are two well-known formula for calculating the total Resistance of parallel connected resistance. One of these works only for two resistance while the other work. For any number of parallel resistance. Write these two formulas

ANSWER:

"FOR TWO NUMBERS"

$$\Rightarrow \frac{1}{R} = \frac{1}{R_1} + \frac{1}{R_2}$$

"FOR ANY NUMBER"

$$\frac{1}{R_T} = \frac{1}{R_1} + \frac{1}{R_2} + \frac{1}{R_3} \text{ ------}$$

(b) With parallel resistors the no. of total resistance decreases since the total resistance is in reciprocal form so it divides into intervals as shown

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

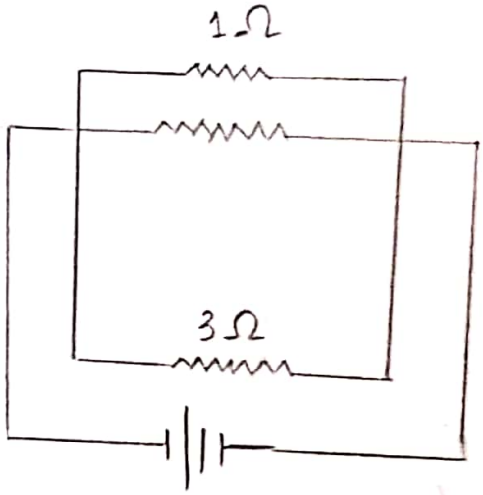
While the total conductance will increase because total conductance is the reciprocal of total resistance so there is ~~sto~~ smooth or flow of electrons is more.

$$G \propto \frac{1}{R}$$

QUESTION NO.2:

In a given circuit, three resistors recieve the same ammount of voltage (24V) from single source. Calculate the amount of current "drawn" by each resistor, as well as the amount of power dissipated by each resistor.

ANSWER:



Since R_1 is in parallel

So, $1/R_1$

Thus, $I_1 = V_1/R_1$

$I_1 = 24/1 = 24$ amp

As R_2 is in series So ⇒ R

Thus $I_2 = \frac{V_2}{R_2}$

$I_2 = 24/2 = 12$ amp

⇒ As R_3 is in parallel series So

$I_3 = \frac{V_3}{R_3} = 24/3 = 8$ amp

Power dissapated by each resist

$P = VI$

$P_1 = V_T I_1$

$P_1 = 24 \times 24 = 576\omega$

$P_2 = V_T I_2$

$P_2 = 24 \times 12 = 288\omega$

$P_3 = V_T I_3$

$P_3 = 24 \times 8 = 192\omega.$

QUESTION No. 3

Difference b/w the following

a. Current and Voltage

	CURRENT	VOLTAGE
Symbol	I	V
Definition	Current is the rate at which electric charge flows past a point in a circuit. or The rate of flow of electric charge.	Voltage also called electromotive force is the potential difference in charge b/w two points in an electrical field. or Voltage is the energy per unit charge.
Unit	A or amp or amperage	V or volts or Voltage
Relationship	Current is the effect	Voltage is the cause.
Measuring instrument	Ammeter	Voltmeter
SI unit	1A = 1C/s	1Volt = Joule/Coulomb ⇒ W/C
Field created	A magnetic field	An electrostatic field

b. Resistance and Conductive

	CONDUCTANCE	RESISTANCE
Symbol	G	R
Unit	Siemen 1 Siemen = $1ohm^{-1}$ = 1mho	Ohms (Ω)
Definition	The reciprocal of resistance.	Voltage by Current
Measurement	EC meter	Ohmmeter
SI unit	1 mho = 1ampere / 1 Volt	1ohm = 1 volt / 1ampere

c. Power and Energy

	POWER	ENERGY
Symbol	P	W
Definition	Power is the rate at which work is done or energy is transmitted	Energy is the capacity to do work.
Unit	Joules = watt - seconds = Newton meter	watt = Joules/seconds

d. Inductance and Capacitance

	INDUCTANCE	CAPACITANCE
Symbol	L	C
Definition	The property of an electrical conductor by which a change in current through it induces an emf in the conductor itself.	The capacitance of a device measures the ability to hold an electric charge.
SI unit	Henry (H)	Farad (F)
Equation	$L = \Phi / I$	$C = \Phi / V$

e. **Synchronous and Asynchronous Motor**

SYNCHRONOUS	ASYNCHRONOUS
→ Synchronous motor is a machine whose rotor speed and the speed of the stator magnetic field is equal.	→ Asynchronous motor is a machine whose rotor rotates at the speed less than the synchronous speed.
→ Synchronous motor does not have slip. The value of slip is zero.	→ Asynchronous motor has slip therefore the value of slip is not equal to zero
→ The speed of Synchronous does not depend on the variation in the load. It is constant.	→ The speed of Asynchronous motor decreases with the increasing load.
→ It is not self starting.	→ Asynchronous is self starting.
$N = N_S = 120f/p$	$N < N_S$
Applications Synchronous motor are used in Power stations, manufacturing industries etc.	→ Used in centrifugal pumps fans, blowers etc.