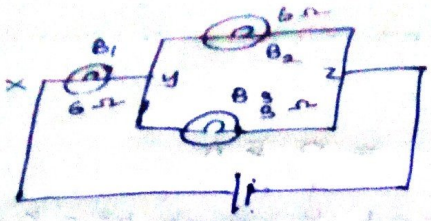
Tutorial 07

Three bulbs B_1, B_2 and B_3 are connected to 12V supply as shown in the following diagram.



(I) Calculate total resistance of the two bulbs B_2 and B_3.

$$\frac{1}{R} = \frac{1}{6} + \frac{1}{3} \quad \frac{1+2}{6} = \frac{1}{2} \quad R = 2\,\Omega$$

(II) What is the total resistance between the two points x and z.

$$R = 6 + 2 = 8\,\Omega$$

(III) What is the current gained from the electric supply.

$$V = IR$$

$$I = \frac{12\,V}{8\,\Omega} = 1.5\,A$$

(IV) Calculate the potential difference between x and Y.

$$V = IR$$

$$= 1.5A \times 6\,\Omega$$

$$= 9.0\,V$$

(V) Calculate potential difference between Y and Z.

$V = I R$

$= 1.5\ A \times 2\ \Omega$

$= 3\ V$

(VI) Calculate the current flowing through B_2 bulb.

$V = I R$

$I = V/R = \frac{3\ V}{6\ \Omega} = 0.5\ A$

(VII) Calculate the current through the bulb B_3.

$V = I R$

$I = V/R = \frac{3\ V}{3\ \Omega} = 1\ A$

(VIII) If the bulb B_3 is removed then what would be the current gain from the electric supply.

Same current flow in the B_1 and B_2.