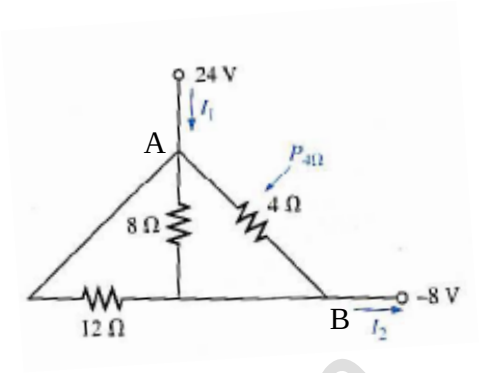
Q- For the network shown in Figure

a. Find the current I_1

b. Calculate the power dissipated by the 4 Ω resistor

c. Find the current I_2



One end of each of the three resistors are connected to the point A and the other end of each of it is connected directly to point B. Hence all the three resistors are in parallel and connected between points A and B with potential difference 24 – (-8) = 32 volts.

The equivalent resistance of the parallel combination of the three resistors is given by

$$\frac{1}{R} = \frac{1}{R_1} + \frac{1}{R_2} + \frac{1}{R_3}$$

Or $$\frac{1}{R} = \frac{1}{12} + \frac{1}{8} + \frac{1}{4}$$

Gives R = 24/11 = 2.18 Ω

And hence

a. The current I_1 = V/R = 32/2.18 = **14.67 A**

b. Power dissipated in 4Ω resistor is

P = V^2/R_3 = $32^2/4$ = **256 W**

c. The current I_2 = I_1 = **14.67 A**