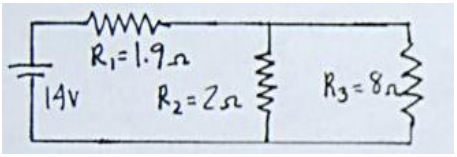
Q- In the circuit given bellow (using Ohm's Law) find



(a) The potential difference across R_1

(b) The current in R_2

(c) The power dissipated in R_3

Here R_2 and R_3 are parallel and hence their equivalent is given by

$$R_{23} = \frac{R_2 R_3}{R_2 + R_3} = \frac{2*8}{2+8} = 1.6\ \Omega$$

This is in series with R_1 and hence the equivalent resistance of the circuit will be

$$R = R_1 + \frac{R_2 R_3}{R_2 + R_3} = 1.9 + 1.6\ = 3.5\ \Omega$$

Current in the circuit using Ohm's law will be

$I = V/R = 14/3.5 = 4$ A

a) This whole current I is passing through R_1 hence the potential difference across R_1 will be

$V_1 = I*R_1 = 4.0*1.9 = 7.6$ V

b) The rest of the potential is dropped across R_2 and R_3 hence potential difference across R_2 and R_3 will be

$V_2 = V_3 = V - V_1 = 14 - 7.6 = 6.4$ V

Thus current through resistance R_2 will be given by

$I_2 = V_2/R_2 = 6.4/2 = 3.2$ A

c) The power dissipated in R_3 is given by

$$P_3 = \frac{V_3^2}{R_3} = \frac{6.4^2}{8} = 5.12\ W$$