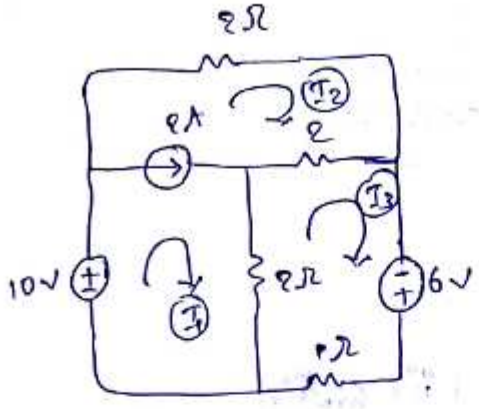
Answer

(Q) Given circuit



super mesh equation in ⓐ 100 P: ① & 100P ②

$$-10 + 2I_2 + 2(I_2 - I_3) + 2(I_1 - I_3) = 0$$

$$2I_1 + 4I_2 - 4I_3 = 10 \rightarrow ①$$

and $I_1 - I_2 = 2 \Rightarrow I_1 = 2 + I_2 \rightarrow ②$

mesh equation 100P ③

$$-6 + I_3 + 2(I_3 - I_1) + 2(I_3 - I_2) = 0$$

$$-2I_1 - 2I_2 + 5I_3 = 6 \rightarrow ③$$

slove equations ① ② & ③

$$I_1 = 7 \text{ AMP}$$

$$I_2 = 5 \text{ AMP}$$

$$I_3 = 6 \text{ AMP}$$

Power dissipated in the 1Ω resistor

$$P_{1\Omega} = I_3^2 (1) = 36 \text{ watts}$$

Likes: 2 **Dislikes: 0**