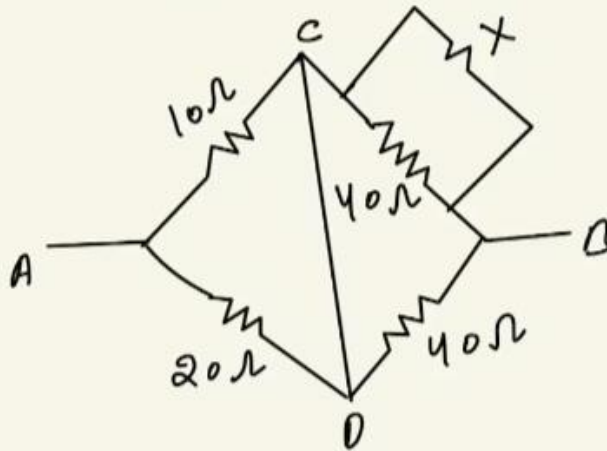
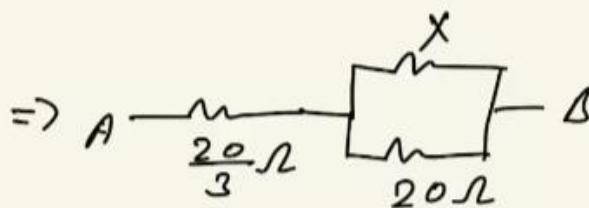
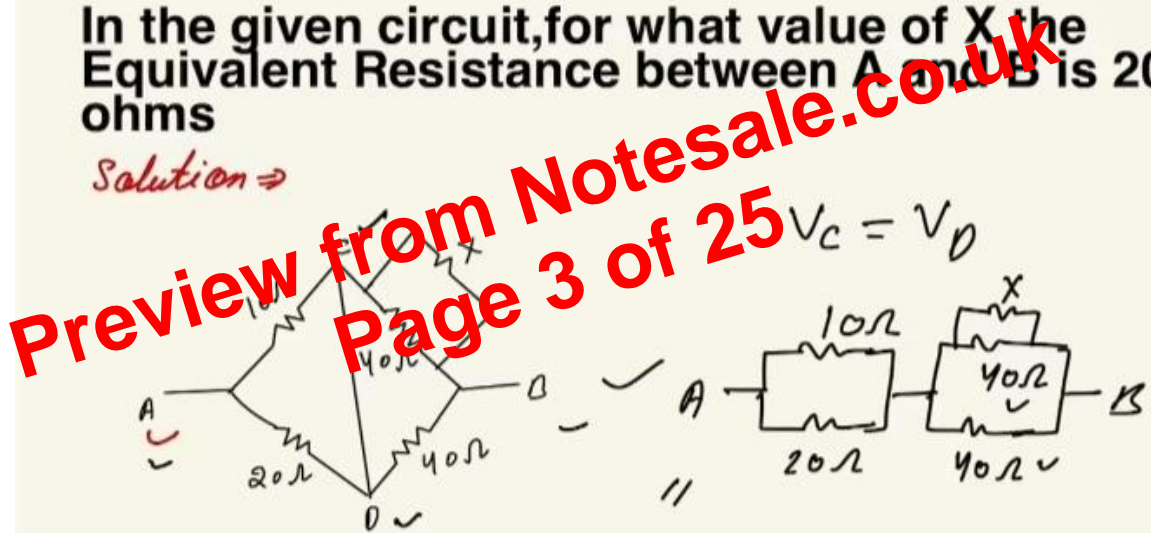


Q-2; and its solutions:



In the given circuit, for what value of X the Equivalent Resistance between A and B is 20 ohms

Solution \Rightarrow



$$R_{AB} = \frac{20}{3} + \frac{20X}{20+X}$$

$$20 = \frac{20}{3} + \frac{20X}{20+X}$$

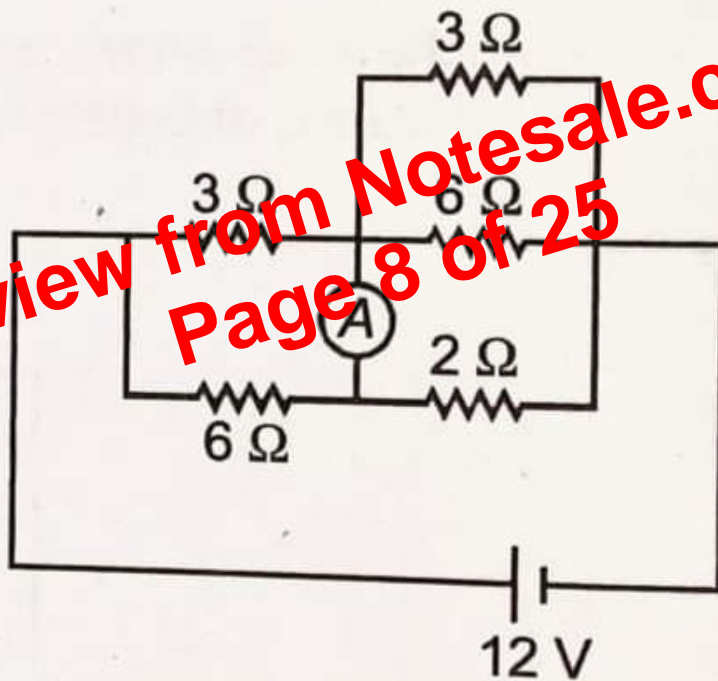
$$\frac{20X \cdot 10}{30} \Rightarrow \frac{20X}{20+X} = 20 - \frac{20}{3} = \frac{40}{3}$$

$$3(20X) = 40(20+X) \quad X = \frac{800}{20} = \underline{\underline{40\Omega}}$$

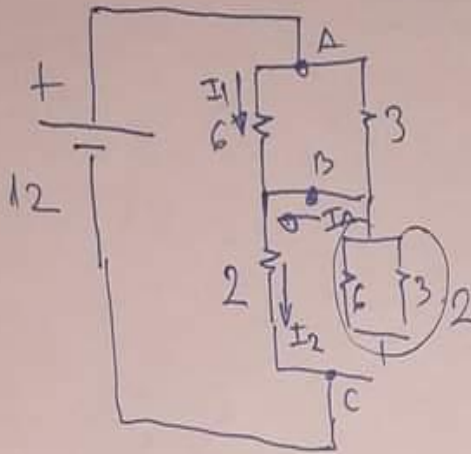
$$60X = 800 + 40X$$

Q.5

In the circuit diagram shown below, what is the reading of ideal Ammeter (A)?



Q.5 solution#2



$$U_{AB} = \frac{6 \cdot 3}{6+3} = \frac{2}{2+1} \cdot 12 = 8V$$

$$U_{BC} = \frac{2 \cdot 2}{2+2} = \frac{2}{2+2} \cdot 12 = 4V$$

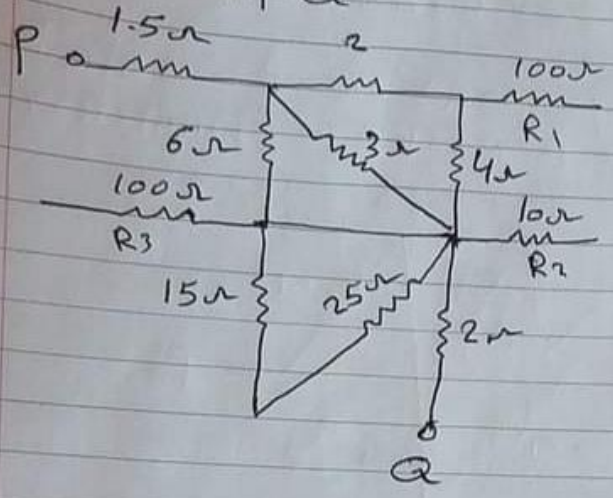
$$I_1 = \frac{U_{AB}}{6} = \frac{8}{6} A = \frac{4}{3} A$$

$$I_2 = \frac{U_{BC}}{2} = \frac{4}{2} A = 2 A$$

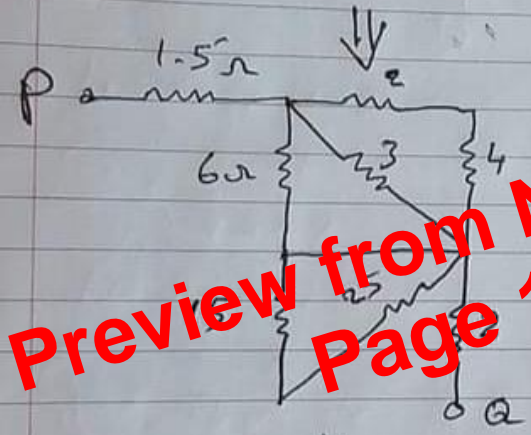
$$I_A = -I_1 + I_2 = -\frac{4}{3} + 2 = 2 - \frac{4}{3} = \frac{6-4}{3} = \frac{2}{3} A$$

Preview from Notesale.co.uk
Page 10 of 25

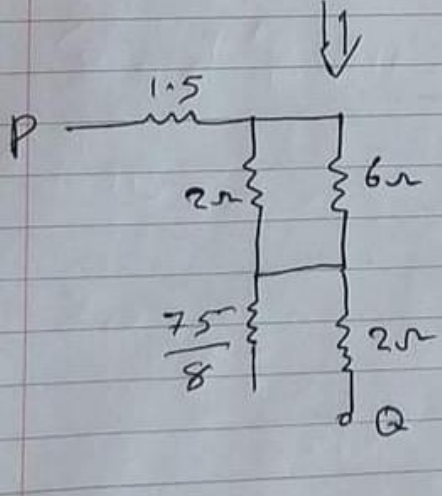
Find R_{PQ}



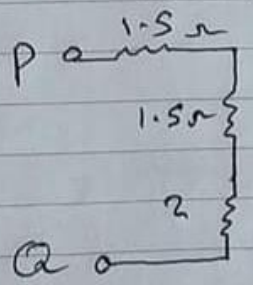
$R_1, R_2,$ and R_3
are out of
the circuit



2Ω and 4Ω in series



Resistance $\frac{75}{8}$ out of
the circuit



$$R_{PQ} = 1.5 + 1.5 + 2 \Rightarrow R_{PQ} = 5\Omega$$