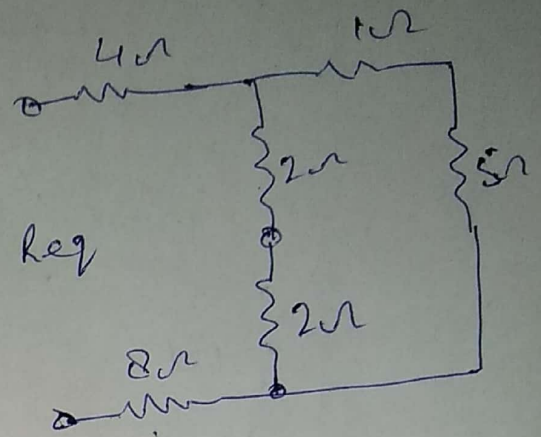
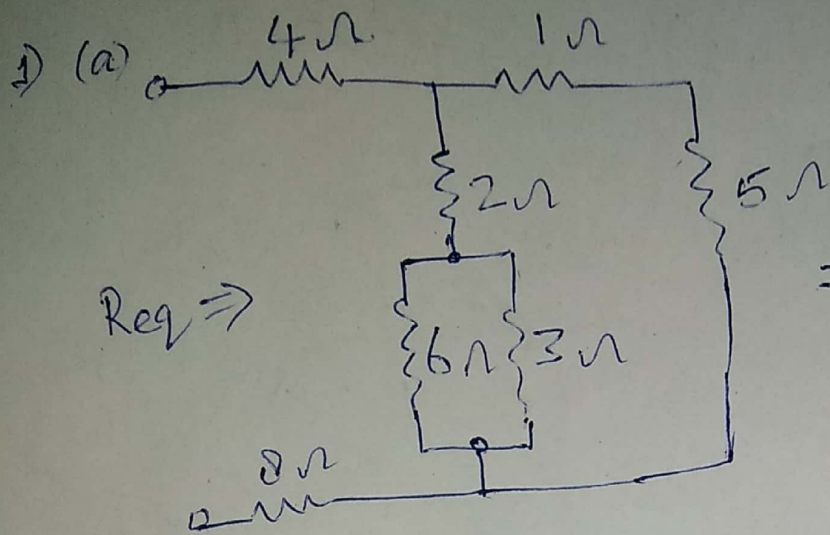
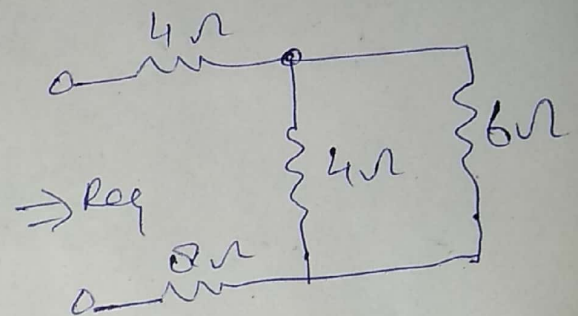
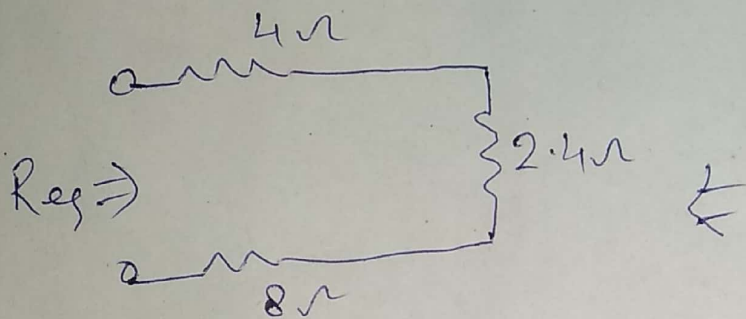


Tutorial Sheet No. 1

①

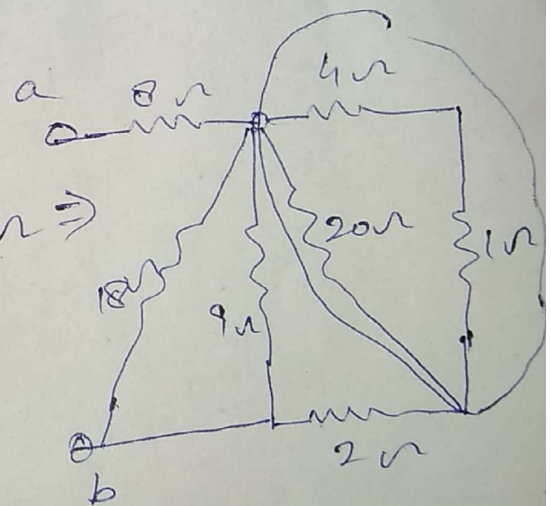
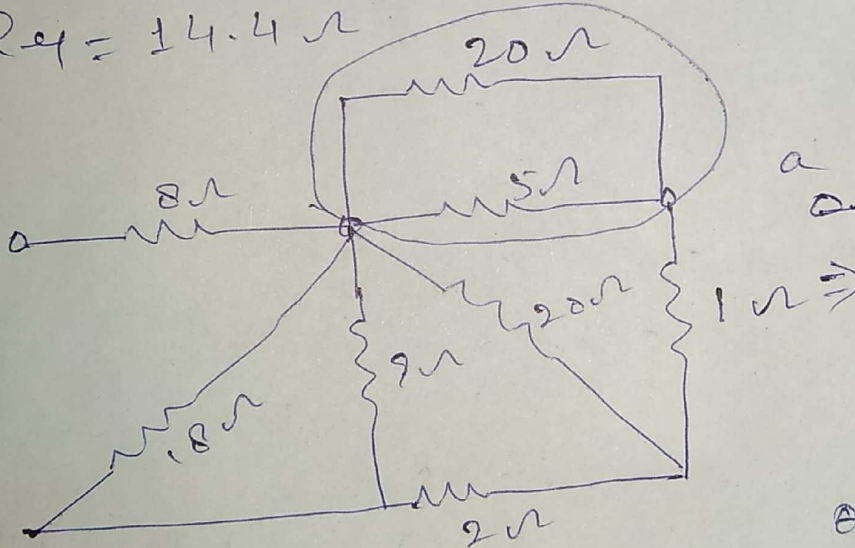


\Downarrow



$$R_{eq} = 14.4 \Omega$$

⑥

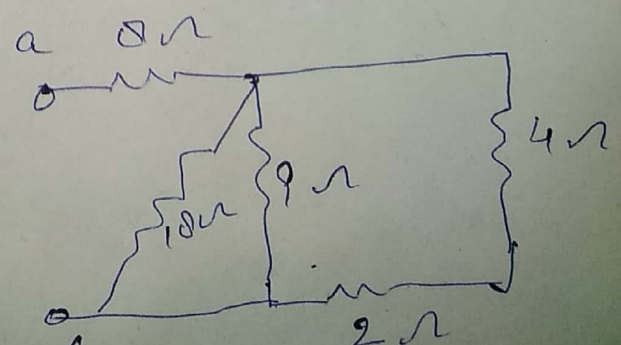


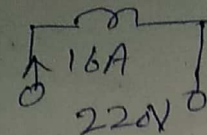
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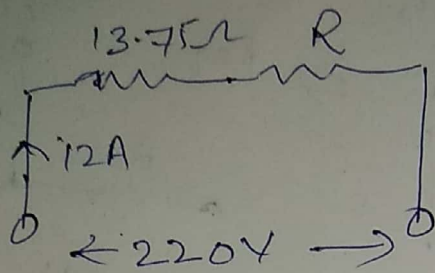
$$R_{eq} = 8 + 3 = 11 \Omega$$

$$8 + \frac{1}{\frac{1}{3} + \frac{1}{9} + \frac{1}{6}}$$

$$\frac{1}{R_{eq}} = \frac{1}{8} + \frac{1}{9} + \frac{1}{6}$$



2) (a)  $R_{open} = \frac{220}{16} = 13.75 \Omega$



$$\frac{220}{12} = 13.75 + R$$

$$R = 4.58 \Omega$$

(b) $V_R = I_{12} R = 12 \times 4.58 = 54.96V$

3) Total power $P = 15 + 10 + 20 = 45 \text{ Watt}$

(a) $I = \frac{P}{V} = \frac{45}{9} = 5 \text{ A}$

(b) $P_3 = 9 I_2^2$

$$I_2 = \sqrt{\frac{P_3}{9}} = \frac{20}{9} = 2.22 \text{ A}$$

$$I_1 = I - I_2 = 2.778 \text{ A}$$

(c) $R_3 = \frac{V^2}{P_3} = \frac{9^2}{20} = 4.05 \Omega$

$$15 = I_1^2 R_1 \Rightarrow R_1 = \frac{15}{2.778^2} = 1.945 \Omega$$

$$10 = I_2^2 R_2 \Rightarrow R_2 = \frac{10}{2.22^2} = 1.997 \Omega$$

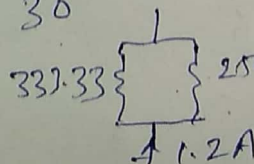
4) a) $P_T = 30 + 40 + 50 = 120 \text{ W}$

$$I = \frac{P_T}{V} = \frac{120}{100} = 1.2 \text{ A}$$

b) $I_T = 1.2 \text{ A}$, $R_1 = \frac{100^2}{30} = 333.33 \Omega$, $R_2 = \frac{100^2}{40} = 250 \Omega$

$$R_3 = \frac{100^2}{50} = 200 \Omega$$

$$I_1 = \frac{1.2 \times 111.1}{444.44} = 0.3 \text{ A}$$



$$I_2 = \frac{0.9 \times 200}{450} = 0.4 \text{ A}$$

$$I_3 = 0.5 \text{ A}$$