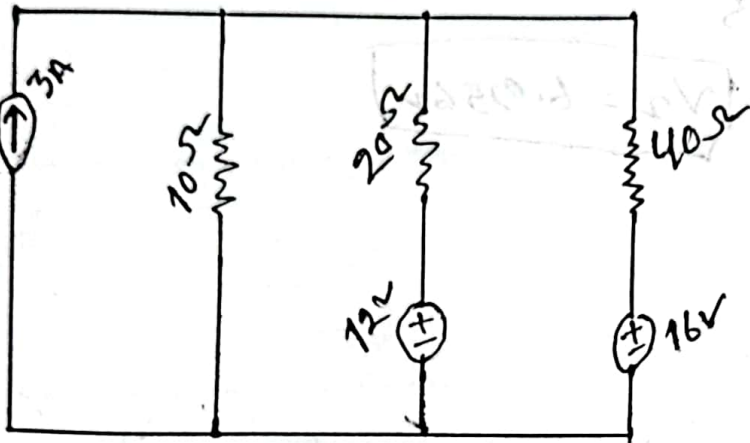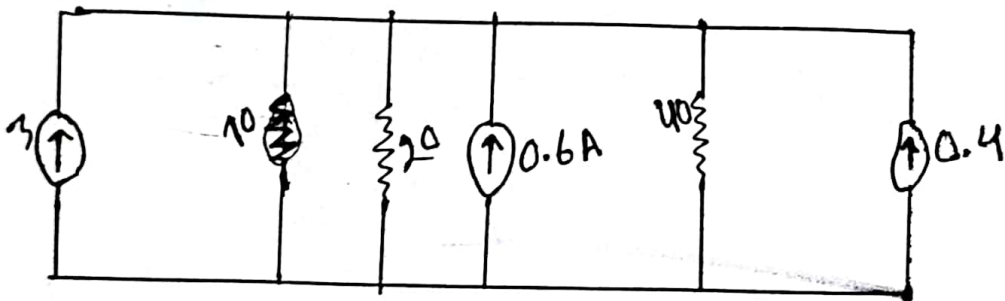2. Use source Transformation to reduce the circuit in a single voltage source and a single resistor.

Solution:-

by transforming to voltage source to current source we get

$$I_2 = \frac{12}{20}$$

$$= 0.6 A$$

and by transforming voltage source 3 to current source we get $I_3 = \frac{16}{40} = 0.4A$

∴ Total current, $I = I_1 + I_2 + I_3$
$$= 3 + 0.6 + 0.4$$
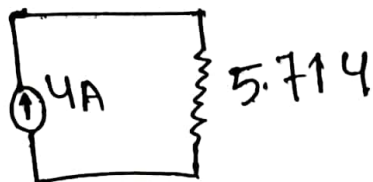$$=$$

∴ equivalent resistance →

$$\frac{1}{R_{eq}} = \frac{1}{R_1} + \frac{1}{R_2} + \frac{1}{R_3}$$

$$= \frac{1}{10} + \frac{1}{20} + \frac{1}{40}$$

$$\frac{1}{R_{eq}} = \frac{7}{40}$$

$$R_{eq} = \frac{40}{7} = 5.714$$

After transforming an the source the new circuit is

4A   5.714

Ans.