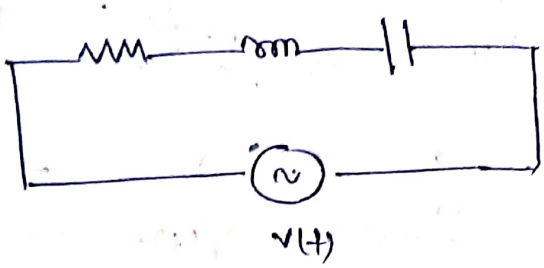
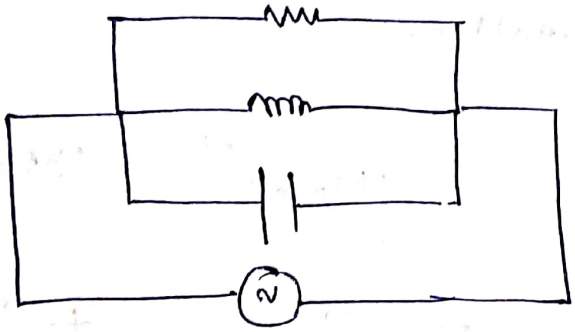
Numericals

Type. 1



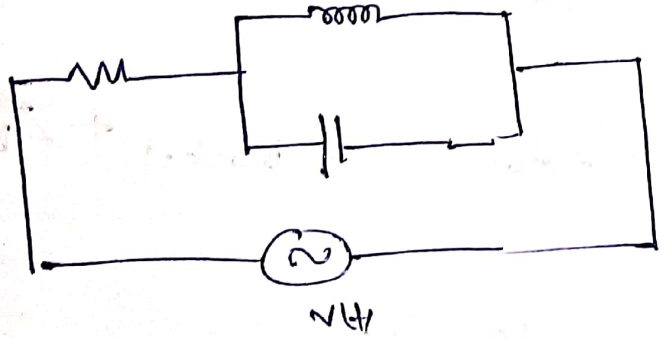
Series

Type. 2



parallel

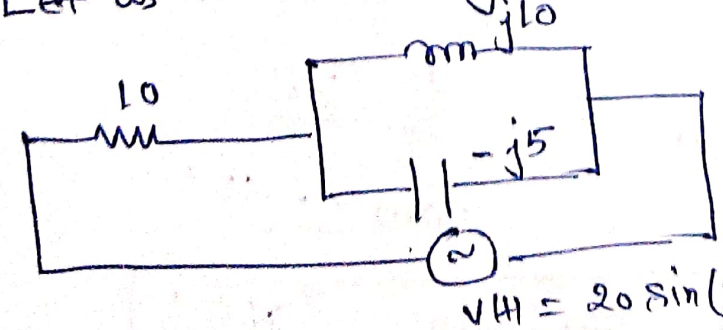
Type. 3.



Series parallel.

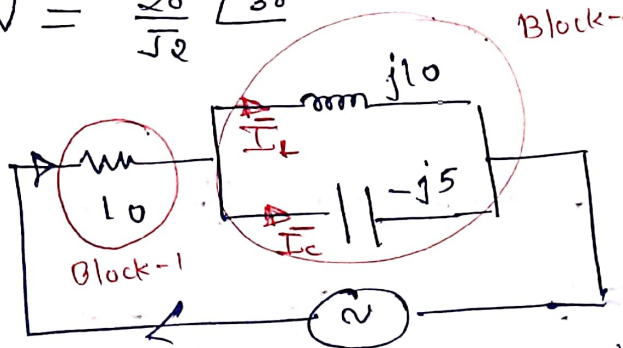
Method is same for any type Question as Explained in class and Vedio shared.

Ex: 3. Let us solve type. 3. with value.



Using current devider

$$\bar{V} = \frac{20}{\sqrt{2}} \angle 30^\circ$$



I_{total} $\quad V(t) = 20 \sin(\omega t + 30)$

Master Equation.

$$\bar{V} = V_{Block\,1} + V_{Block-2}.$$

$$\bar{I} Z_{total} = \bar{I} Z_{BLOCK} + \bar{I} Z_{block-2}.$$

$$Z_{total} = Z_{block-1} + Z_{Block-2}$$

$$= 10 - j10$$

$$= \sqrt{10^2+10^2} \angle \tan^{-1}\left[\frac{-10}{10}\right]$$

$$\boxed{\bar{Z}_{total} = \sqrt{200} \angle -45^\circ}$$

$Z_{block\,1} = 10$

$$Z_{block-2} = \frac{j10 \times (-j5)}{j10 - j5}$$

$$= \frac{+50}{j5}$$

$$= \frac{10}{j} = -j10$$

$$\bar{I}_{tal} = \frac{\frac{20}{\sqrt{2}} \angle 30^\circ}{\sqrt{200} \angle -45^\circ}$$

$$\boxed{\bar{I}_{total} = \frac{20}{\sqrt{2}\sqrt{200}} \angle 75^\circ}$$

Using current devider

$$\bar{I}_L = \frac{\bar{I}_{total} \cdot \bar{Z}_c}{Z_c + Z_L}$$

$$= \frac{\frac{20}{\sqrt{2}\sqrt{200}} \times 5\angle 90^\circ \angle 75^\circ}{-j5 + j10}$$

$$= \frac{100}{\sqrt{2}\sqrt{200}} \frac{\angle 165}{j5}$$

$$= \frac{100}{\sqrt{2}\sqrt{200}} \frac{\angle 165}{5\angle 90}$$

$$= \frac{20}{\sqrt{2}\sqrt{200}} \angle 165 - 90$$

$$\boxed{\bar{I}_L = \frac{20}{\sqrt{2}\sqrt{200}} \angle 75^\circ}$$

$$\bar{I}_c = \frac{\bar{I}_{total} \cdot \bar{Z}_L}{Z_L + Z_c}$$

$$= \frac{20}{\sqrt{2}\sqrt{200}} \times \frac{10\angle 90^\circ}{j5} \times 5\angle 75^\circ$$

$$= \frac{40}{200} \frac{\angle 90}{\sqrt{2}\sqrt{200} \times 5\angle 90} \angle 75$$

$$= \frac{40\angle 75}{\sqrt{2}\sqrt{200}}$$ Ans

Take any Question like type - 2 and type. 1 also and solve similar approach