

Quiz #2 SOLUTION:-

Q#1:-

$\bar{Z}_1 = 8 \angle -30^\circ$ and $\bar{Z}_2 = 2 \angle -60^\circ$, Find $\frac{Z_1}{Z_2}$ and express the result in rectangular form.

Sols-

$$\begin{aligned}\frac{\bar{Z}_1}{\bar{Z}_2} &= \frac{8 \angle -30^\circ}{2 \angle -60^\circ} \\ &= \frac{8}{2} \angle -30^\circ - (-60^\circ)\end{aligned}$$

$$\bar{Z} = \frac{\bar{Z}_1}{\bar{Z}_2} \Rightarrow 4 \angle 30^\circ$$

Now convert it in rectangular form.

$$\bar{Z} = 4 \angle 30^\circ$$

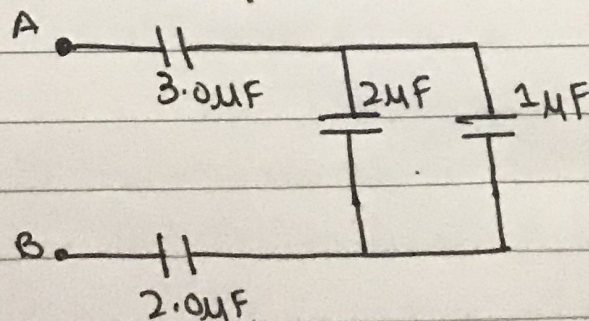
$$x = r \cos \theta = 4 \cos 30^\circ \Rightarrow 3.464$$

$$y = r \sin \theta = 4 \sin 30^\circ \Rightarrow 2$$

$$\bar{Z} = 3.464 + j2$$

Q#2:-

Calculate the total capacitance of the following circuit.

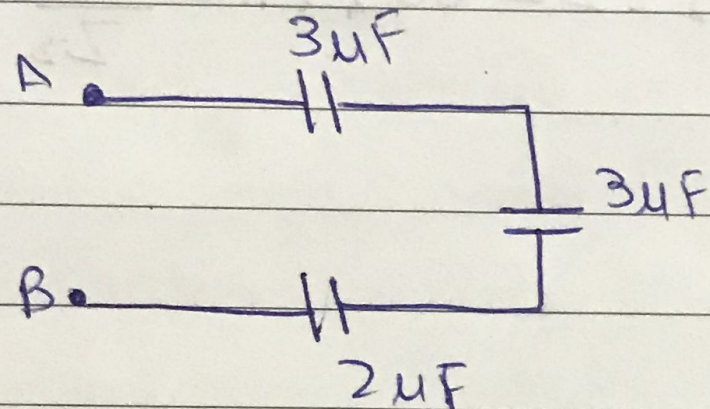


Date:

Sol:-

$2\mu\text{F}$ and $1\mu\text{F}$ are in parallel

$$2\mu\text{F} + 1\mu\text{F} \Rightarrow 3\mu\text{F}$$



Now all are in series

$$C_{eq} = \frac{1}{\frac{1}{3} + \frac{1}{3} + \frac{1}{2}} = \frac{1}{7/6} \Rightarrow \frac{6}{7} \text{ or } 0.857$$