

Ch. 15 Prob. 16

$$X_c = 10 \Omega$$

$$f = 60 \text{ Hz}$$

Find the capacitance

- first determine the angular frequency

$$f = \frac{\omega}{2\pi} \rightarrow \omega = 2\pi f = 2\pi (60 \text{ Hz})$$
$$\omega = 377 \text{ rad/s}$$

- Next use the formula for capacitive reactance

$$X_c = \frac{1}{\omega C} \rightarrow C = \frac{1}{\omega X_c}$$

$$C = \frac{1}{(377 \text{ rad/s})(10 \Omega)} = 2.65 \times 10^{-4} \text{ F}$$

265 μF