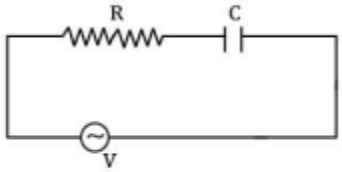
Alternating Current-L3

1. A $20\ \text{V},\ 50\ \text{Hz}$ AC source is connected across a resistor of resistance R and a capacitor of capacitance C as shown in the figure. The voltage across the resistor is $12\ \text{V}$. The voltage across the capacitor is



A. $18\ \text{V}$

B. $16\ \text{V}$

C. $10\ \text{V}$

D. $12\ \text{V}$

2. An AC circuit consists of a $220\ \Omega$ resistance and $0.7\ \text{H}$ choke. Find the average power absorbed from $220\ \text{V}$ and $50\ \text{Hz}$ source connected in this circuit if the resistance and choke are joined in parallel.

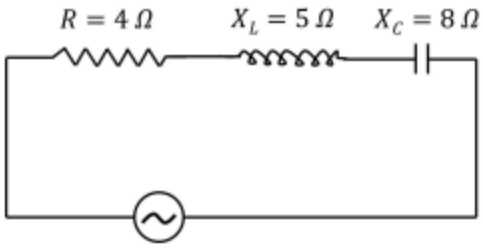
A. $110\ \text{W}$

B. $220\ \text{W}$

C. $310\ \text{W}$

D. $410\ \text{W}$

3. For the given AC RLC circuit, at a particular frequency of the AC source, the current -



A. Lead the voltage by $\tan^{-1}(3/4)$

B. Lead the voltage by $\tan^{-1}(5/8)$

C. Lag the voltage by $\tan^{-1}(3/4)$

D. Lag the voltage by $\tan^{-1}(5/8)$

4. Average power dissipated in a series AC RLC circuit connected to a source whose voltage is given by, $\mathcal{E} = \mathcal{E}_0 \sin(\omega t)$, if $X_L = X_C$ is -

R is the resistance of the resistor.

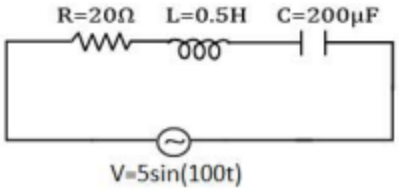
A. $\dfrac{(\mathcal{E}_0)^2}{R}$

B. $\dfrac{(\mathcal{E}_0)^2}{2R}$

C. $\dfrac{2(\mathcal{E}_0)^2}{R}$

D. $\dfrac{3(\mathcal{E}_0)^2}{R}$

5. Consider the following AC RLC circuit. The maximum voltage drop across the inductor is -



A. 17.5 V

B. 15.5 V

C. 12.5 V

D. 19.5 V

1. (B)
2. (B)
3. (A)
4. (B)
5. (C)