Alternating Current-L2

1. A coil has negligible resistance and an inductive reactance of $20\ \Omega$ at $50\ \text{Hz}$. If an AC source of $200\ \text{V}$ and $100\ \text{Hz}$ frequency is connected across the coil, the rms current in the coil will be

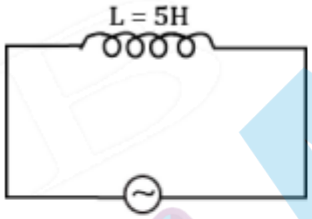
   A. $2.0\ \text{A}$

   B. $5.0\ \text{A}$

   C. $7.0\ \text{A}$

   D. $10.0\ \text{A}$

2. An inductor of inductance, $L = 5\ \text{H}$ is connected to an AC source having voltage, $V = 10\sin\left(10t + \frac{\pi}{6}\right)$. Find the inductive reactance.



   A. $20\ \Omega$

   B. $30\ \Omega$

   C. $50\ \Omega$

   D. $70\ \Omega$

3. A capacitor of capacitive reactance, $12\ \Omega$ is connected with an AC source having voltage, $V = 3\sin(\omega t + \pi/6)$. Find the expression of instantaneous current in the circuit.

A. $0.35\sin(\omega t + 2\pi/3)$

B. $0.25\sin(\omega t + 2\pi/3)$

C. $0.57\sin(\omega t - 2\pi/3)$

D. $0.15\sin(\omega t - 2\pi/3)$

4. An inductor of $1\ \mathrm{H}$ and a capacitor of $1\ \mu\mathrm{F}$ have equal reactance when connected to the same AC source at the same condition. The value of reactance is -

A. $10^4\ \Omega$

B. $10^2\ \Omega$

C. $10^3\ \Omega$

D. $10^5\ \Omega$

5. An inductor of $1\ \mathrm{H}$ and a capacitor of $1\ \mu\mathrm{F}$ have equal reactance when connected to the same AC source at the same condition. The value of reactance is -

A. $10^4\ \Omega$

B. $10^2\ \Omega$

C. $10^3\ \Omega$

D. $10^5\ \Omega$

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