
**FIGURE 7.1** AC voltage applied to a resistor.

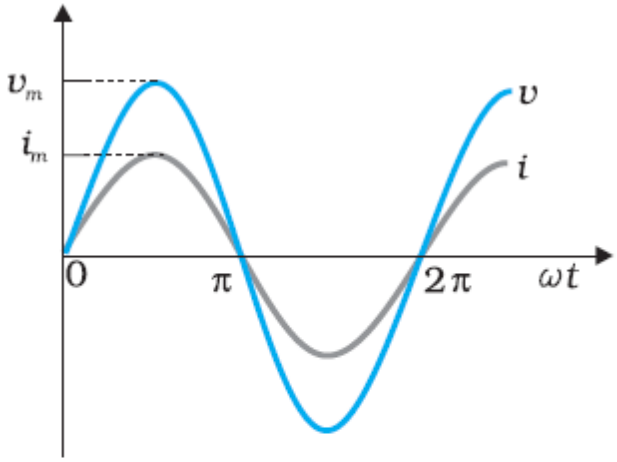


**FIGURE 7.2** In a pure resistor, the voltage and current are in phase. The minima, zero and maxima occur at the same respective times.

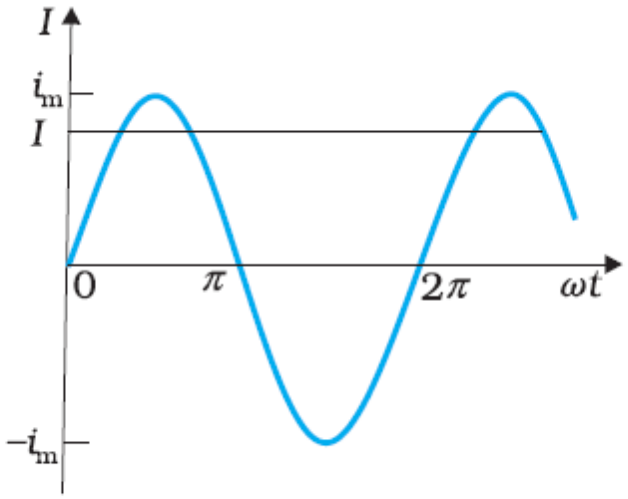


**FIGURE 7.3** The rms current $I$ is related to the peak current $i_m$ by $I = i_m/\sqrt{2} = 0.707\ i_m$.

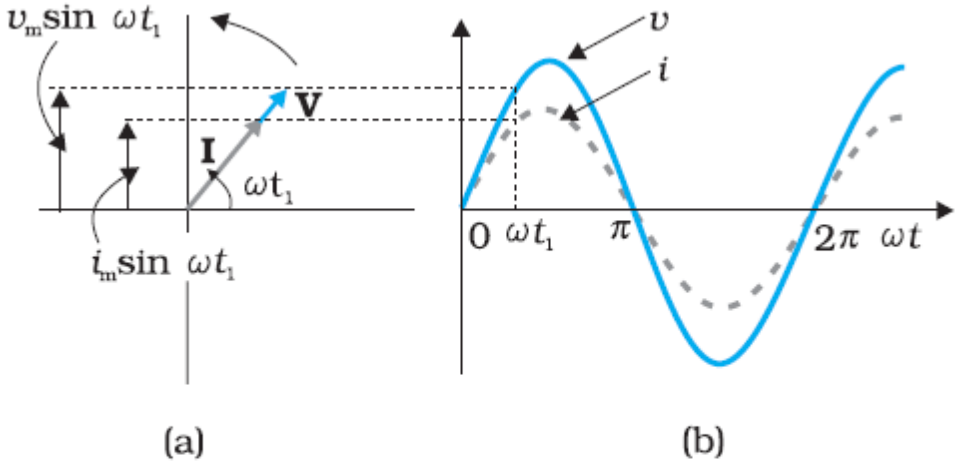


**FIGURE 7.4** (a) A phasor diagram for the circuit in Fig 7.1. (b) Graph of $v$ and $i$ versus $\omega t$.


**FIGURE 7.5** An ac source connected to an inductor.

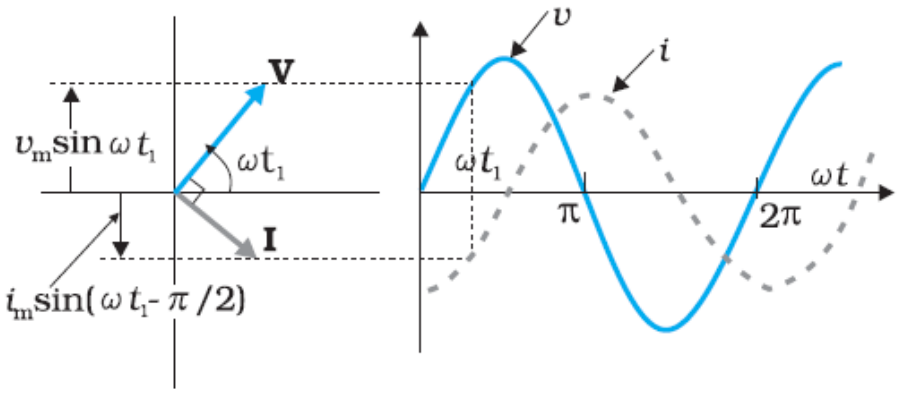


**FIGURE 7.6** (a) A Phasor diagram for the circuit in Fig. 7.5. (b) Graph of $v$ and $i$ versus $\omega t$.

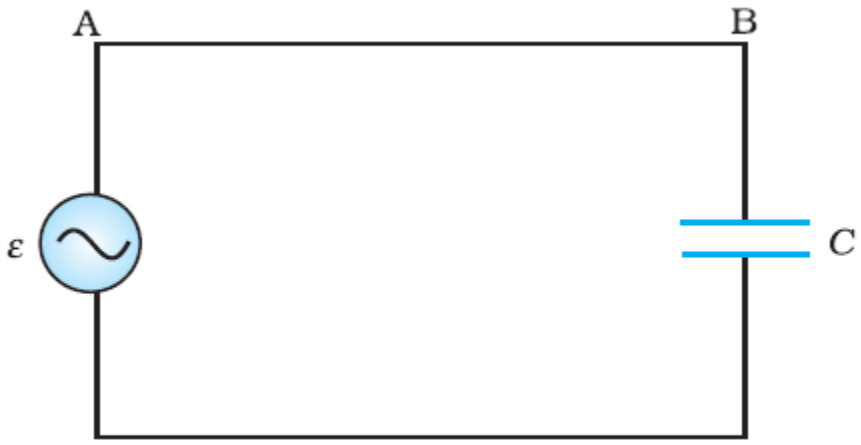


**FIGURE 7.8** An ac source connected to a capacitor.

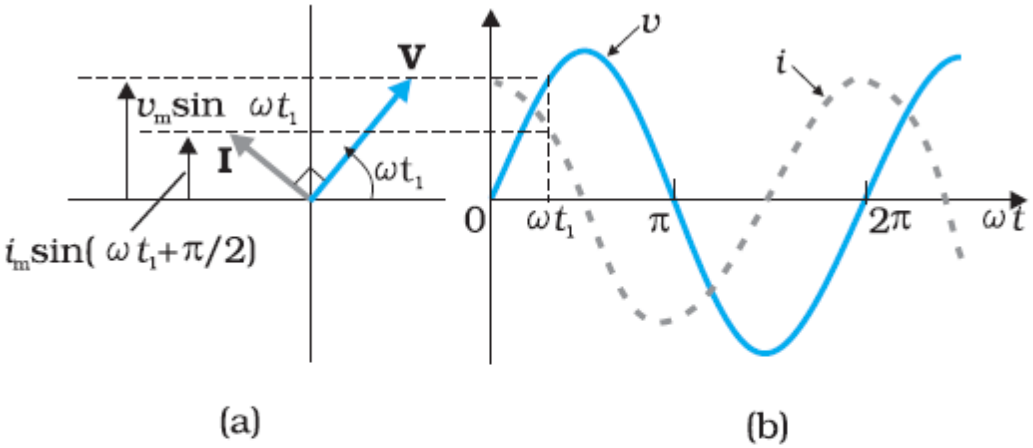


**FIGURE 7.9** (a) A Phasor diagram for the circuit in Fig. 7.8. (b) Graph of $v$ and $i$ versus $\omega t$.

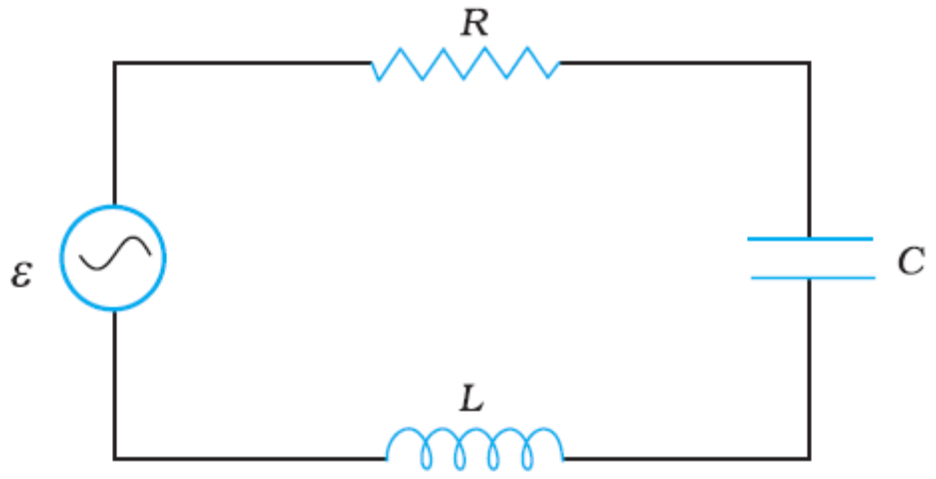


**FIGURE 7.12** A series *LCR* circuit connected to an ac source.

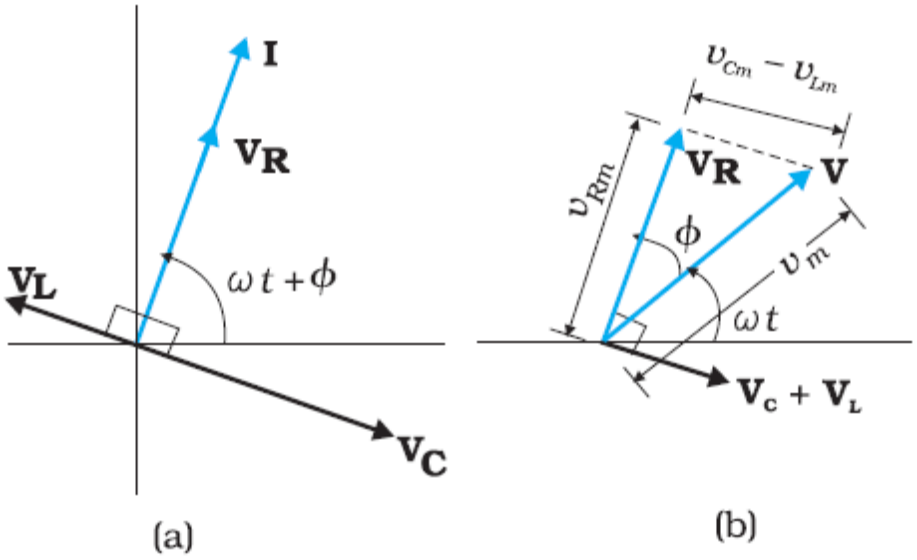


**FIGURE 7.13** (a) Relation between the phasors $\mathbf{V}_L$, $\mathbf{V}_R$, $\mathbf{V}_C$, and $I$, (b) Relation between the phasors $\mathbf{V}_L$, $\mathbf{V}_R$, and $(\mathbf{V}_L + \mathbf{V}_C)$ for the circuit in Fig. 7.11.

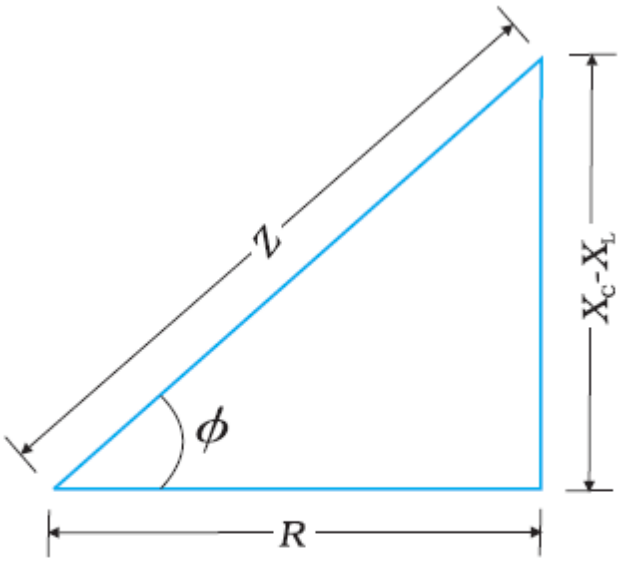


**FIGURE 7.14** Impedance diagram.

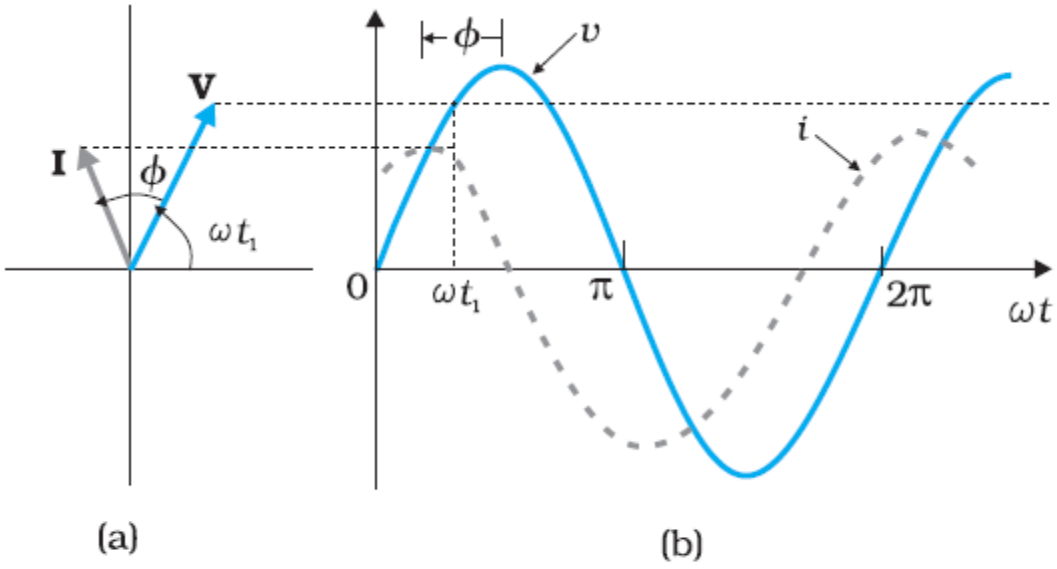


**FIGURE 7.15** (a) Phasor diagram of **V** and **I**. (b) Graphs of $v$ and $i$ versus $\omega t$ for a series $LCR$ circuit where $X_C > X_L$.

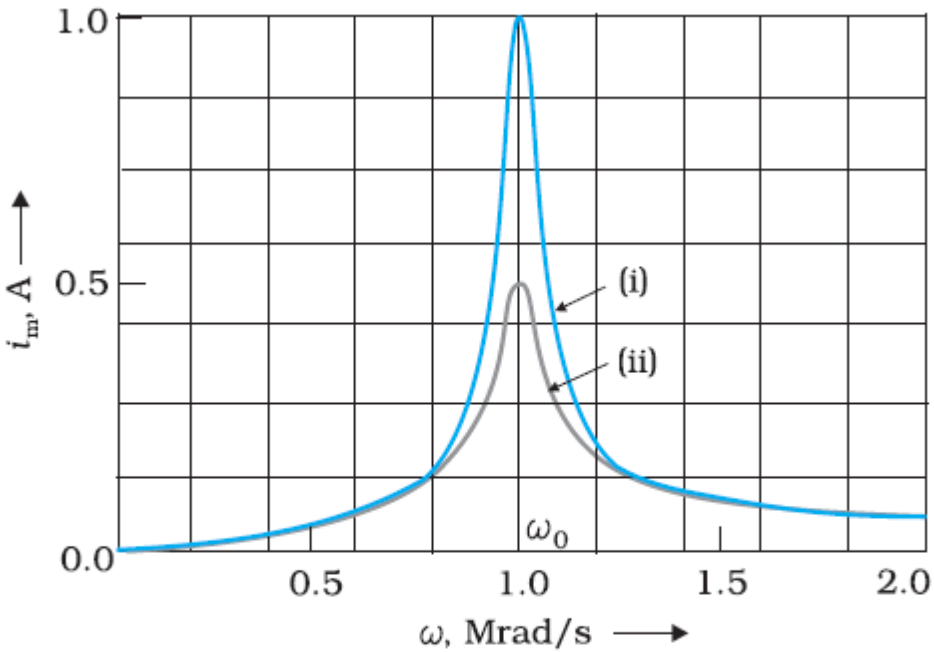


**FIGURE 7.16** Variation of $i_m$ with $\omega$ for two cases: (i) $R$ = 100 Ω, (ii) $R$ = 200 Ω, $L$ = 1.00 mH.

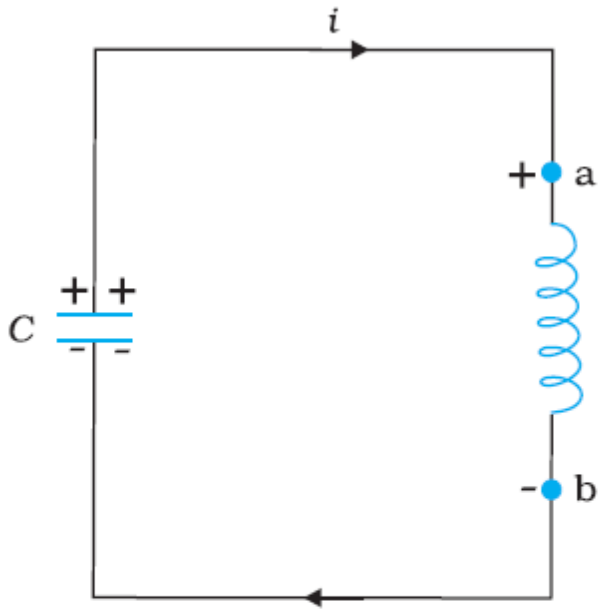


**FIGURE 7.18** At the instant shown, the current is increasing so the polarity of induced emf in the inductor is as shown.

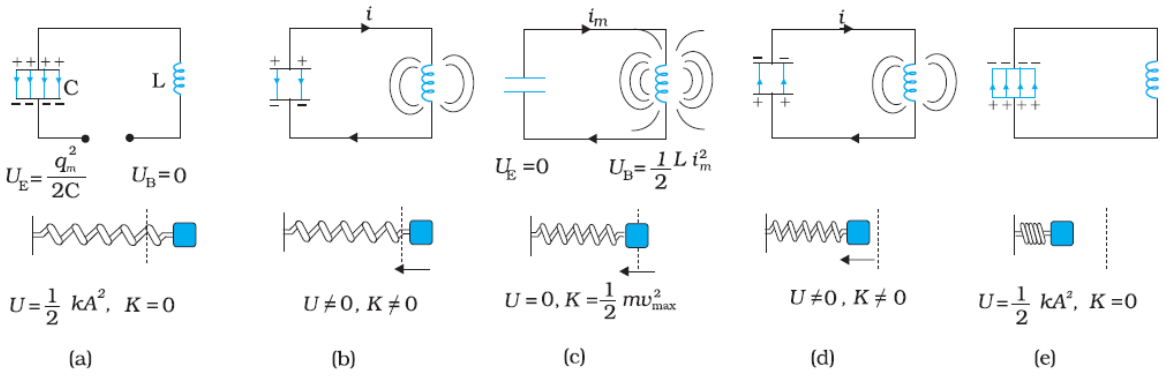


**FIGURE 7.19** The oscillations in an *LC* circuit are analogous to the oscillation of a block at the end of a spring. The figure depicts one-half of a cycle.

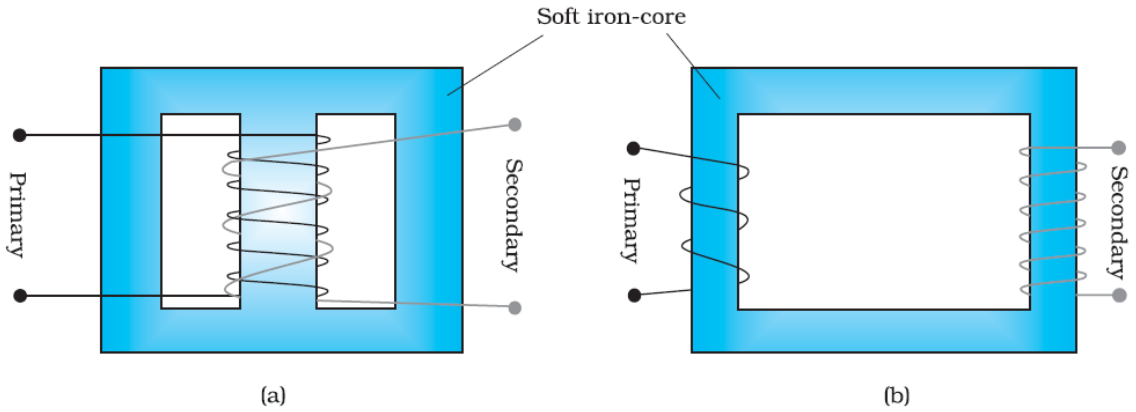


**FIGURE 7.20** Two arrangements for winding of primary and secondary coil in a transformer: (a) two coils on top of each other, (b) two coils on separate limbs of the core.