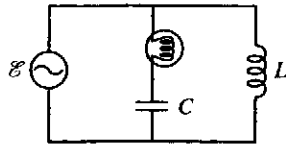


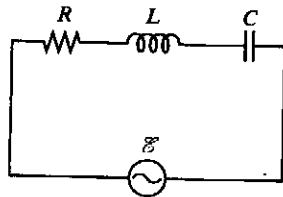
The light bulb has a resistance R , and the emf drives the circuit with a frequency ω . The light bulb glows most brightly at



1. very low frequencies.
 2. very high frequencies.
 3. the frequency $\omega = 1/\sqrt{LC}$.
- Note: this is not a resonant circuit. Resonant circuit has RLC in series

At high frequency, the impedance from the capacitor, $1/\omega C$, gets small (and the impedance from L is large). Small $X_C \Rightarrow$ large $I \Rightarrow$ large power dissipation \Rightarrow bulb glows brightly

For the RLC series circuit shown, which of these statements is/are true:



- (i) Potential energy oscillates between C and L. ✓ true
 - (ii) The source does no net work: Energy lost in R is compensated by energy stored in C and L. ✗ energy is dissipated in R as heat
 - (iii) The current through C is 90° out of phase with the one through L. }
 - (iv) The current through C is 180° out of phase with the one through L. } ✗ currents are in phase
 - (v) All energy is dissipated in R. ✓
1. all of them
 2. none of them
 3. (v)
 4. (ii)
 5. (i), (iv), and (v)
 6. (i) and (v)
 7. none of the above
- ↳ lag is between I & V