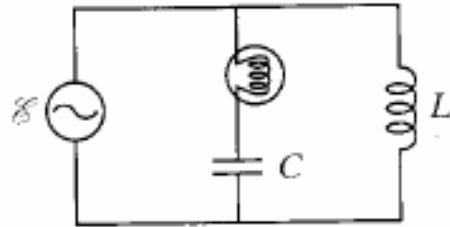


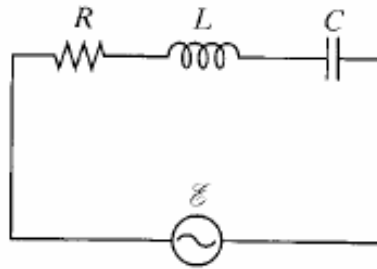
The light bulb has a resistance R , and the emf drives the circuit with a frequency ω . The light bulb glows most brightly at



1. very low frequencies.
2. very high frequencies.
3. the frequency $\omega = 1/\sqrt{LC}$.

Answer: 2. At very high frequencies, the capacitor has essentially zero impedance and the inductor essentially infinite impedance and so the current through the light bulb is largest.

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



- (i) Potential energy oscillates between C and L .
 - (ii) The source does no net work: Energy lost in R is compensated by energy stored in C and L .
 - (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 .
 - (v) All energy is dissipated in R .
1. (v)
 2. (ii)
 3. (i), (iv), and (v)
 4. (i) and (v)
 5. none of the above

Answer: 4. Only statements (i) and (v) are correct. Because the capacitor and the inductor are not sources of energy, energy dissipated by the resistor cannot be compensated for, so (ii) is incorrect. Furthermore, since the current is in phase throughout the circuit (iii) and (iv) are incorrect.