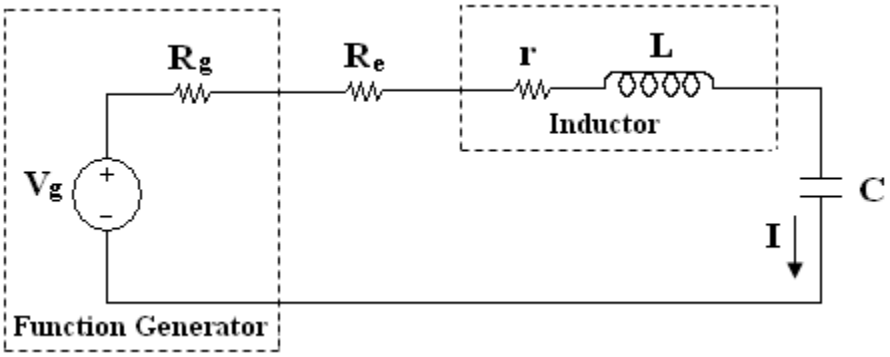
# JEE2330 – Spring 2025
# Lab #5 Problem

A series RLC circuit like the one shown here will be constructed in the lab this week. Assume that the generator resistance $R_g$ = 50 Ω, the external resistor $R_e$ = 200 Ω, L = 47 mH, r = 327 Ω. Also, assume that $v_g(t) = 6 \cos(2\pi ft)$ volts, where f = 15 kHz.




1. Compute the quality factor of the inductor at f = 15 kHz. Q = _____

2. Compute the value of the capacitor needed to resonate with the inductor at 15 kHz.
   C = _____

3. Compute the bandwidth of the resonant circuit in Hz. BW = _____

4. Compute the quality factor for the circuit at resonance. $Q_C$ = _____

5. Define the phasor voltage $\mathbf{V_g}$ provided by the function generator. $\mathbf{V_g}$ = _____

6. Compute the corresponding phasor current **I** in the circuit at resonance. **I** = _____

7. Compute the corresponding phasor voltage $\mathbf{V_C}$ across the capacitor at resonance.
   $\mathbf{V_C}$ = _____

8. Compute the power dissipated by the external resistor $R_e$ at resonance. $P_{Re}$ = _____

9. Compute the real power dissipated in the inductor at resonance. $P_r$ = _____