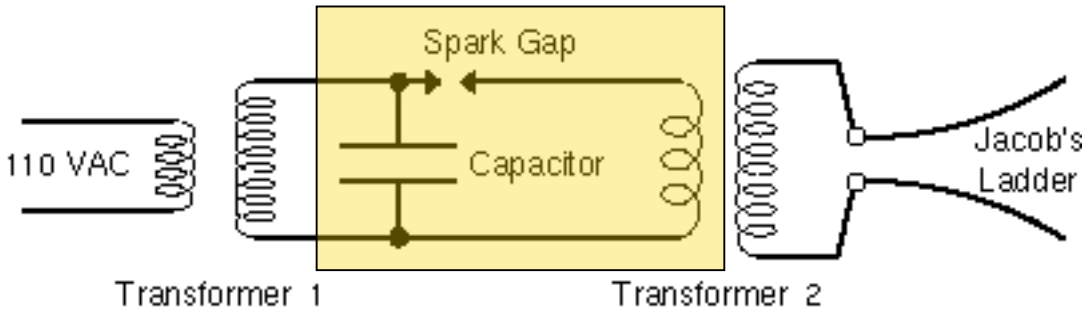
Physics 273, Fall 2007, Challenge # 5, Tesla Coil Demo

NAME: _____

The Tesla coil demonstrated in class, circuit below, uses a 5000 volt transformer to charge a large oil capacitor at 60 Hz. When the potential across the capacitor reaches the breakdown potential of the spark gap, breakdown across the gap occurs. The spark gap then becomes a conducting part of the circuit. The output of the circuit is at a frequency of about 200 kilohertz.




Consider the part of the circuit highlighted in yellow – what quantitative information can you estimate for the values of the capacitor and the inductor? Hint: treat the spark gap as a switch that closes and allows discharge of the capacitor through the inductor.