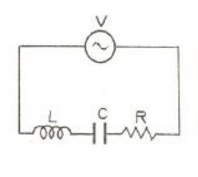
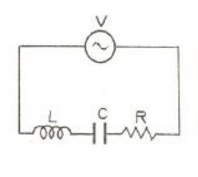
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| **STANDARD 12** | **PHYSICS** | **WORKSHEET 7** | **ALTERNATING CURRENT** |

1. **An alternating voltage given by V = 140sin314t is connected across a pure resistor of 50Ω. Find (i) the frequency of the source (ii) the rms current through the resistor.**
2. **A coil has an inductance of 1H. (i) At what frequency will it have a reactance of 3140Ω? (ii) What should be the capacity of a capacitor which has the same reactance at that frequency?**
3. **A 0.3H inductor, 60µF capacitor and a 50Ω resistor are connected in series with a 120V, 60Hz supply. Calculate (i) impedance of the circuit (ii) current flowing in the circuit.**
4. **A resistance of 2Ω, a coil of inductance 0.01H are connected in series with a capacitor and put across a 200V, 50Hz supply. Calculate**
5. **The capacitance of the capacitor so that the circuit resonates**
6. **The current and voltage across the capacitor at resonance. (Take π=3)**
7. **A series LCR circuit with L=4H, C= 100µF and R= 60Ω is connected to a variable frequency 240V source as shown in figure.**

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**Calculate**

1. **The angular frequency of the source which drives the circuit at resonance.**
2. **The current at the resonant frequency**
3. **The rms potential drop across inductor at resonance.**
4. **A series LCR circuit connected to a variable frequency 220V source with L= 80mH, C=50µF and R= 60Ω, as shown in figure.**

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**Determine:**

1. **The source frequency which drives the circuit in resonance**
2. **The quality factor Q of the circuit.**
3. **The primary coil of an ideal step up transformer has 100 turns and the transformer ratio is also 100. The input voltage and the power are 220V and 1100W respectively. Calculate**
4. **Number of turns in the secondary**
5. **The current in the primary**
6. **Voltage across the secondary**
7. **The current in the secondary**
8. **Power in the secondary.**
9. **The instantaneous current and voltage of an a.c circuit is given by I=10sin314t A and V=50sin314t V. what is the power dissipation in the circuit?**
10. **A resistor of 50Ω an inductor of 20/π H and a capacitor of 5/π µF are connected in series to a voltage source 230V, 50Hz. Find the impedance of the circuit.**
11. **An alternating voltage V= 200sin300t is applied across a series combination of R =10Ω and an inductor of 800mH. Calculate**
12. **Impedance of the circuit**
13. **Peak value of the current in the circuit**
14. **Power factor of the circuit.**