1. An alternating voltage of RMS value 100 V, 50 Hz is applied separately across a resistance of 10 ohms, an inductor of 100 mH, and a capacitor of 100 μF. Calculate the current flow in each case. Also draw and explain the phasor diagrams.
2. Two impedances Z1 and Z2 are connected in parallel across a 230 V, 50 Hz supply. The impedance, Z1 consists of a resistance of 14 ohms and an inductance of 16 mH. The impedance, Z2 consists of a resistance of 18 W and an inductance of 32 mH. Calculate the branch currents, line current, and total power factor. Draw the phasor diagram showing the voltage and currents.
3. A coil having a resistance of 5 ohm and inductance of 30 mH in series are connected across a 230 V, 50 Hz supply. Calculate current, power factor, and power consumed.
4. Two coils having impedance Z1 and Z2 are connected in series across a 230 V, 50 Hz power supply. The value of Z1 is 15**∟**40° ohm and voltage drop across Z1 is equal to 120∟30° V. Calculate the value of Z2.