Series Complex Impedances (25:43)

Identify the formula used to determine the total impedance of a series arrangement of complex impedances.

Determine the total impedance of a series arrangement of a 200Ω resistor and a 530.5mH inductor at an excitation frequency of 60Hz. Identify the primary nature of this circuit.

Determine the complex impedance of the above series circuit at a reduced excitation frequency of 30Hz. Identify the primary nature of this circuit.

Determine the complex impedance of the above series circuit at an increased excitation frequency of 120Hz. Identify the primary nature of this circuit.

Identify which element in a series circuit determines the primary nature of the circuit.

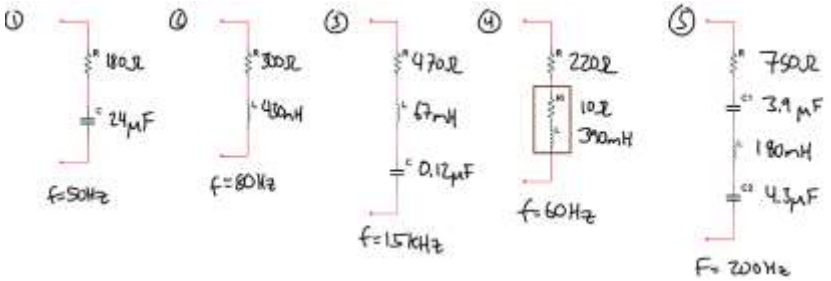
Determine the total impedance of a series arrangement of a 160Ω resistor, a 180mH inductor, and a 27µF capacitor at an excitation frequency of 50Hz. Identify the primary nature of this circuit. Identify how the capacitor and inductor interact.

Determine the complex impedance of the above series circuit at an increased excitation frequency of 400Hz. Identify the primary nature of this circuit.

Determine the impedance of a non-ideal 47mH inductor including an internal resistance of 14Ω at an excitation frequency of 1.2kHz.

Determine the total impedance of a series combination of the above non-ideal inductor and a 160Ω resistor and a 27µF capacitor at an excitation frequency of 1.2kHz.

Given the following data determine the total impedance of these series circuits:



Discuss how shorts and opens influence the total impedance of series AC circuits.

Determine the total impedance of a series arrangement of a 910Ω resistor, an 800mH inductor, and a 27µF capacitor at an excitation frequency of 60Hz.

Determine the total impedance of the above relationship when the capacitor is removed from consideration with a short circuit.

Determine the total impedance of the above relationship when there exists an open in the series path.

Given the following data determine the total impedance of these series circuits including shorts and opens: