

AC Circuits - Important Topics

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AC Waveform Definitions

Form Factor = RMS value / Average value.

Peak Factor = Peak value / RMS value.

R-L, R-C, and RLC Circuits

R-L: Contains resistance and inductance, phase difference between voltage and current.

R-C: Contains resistance and capacitance, phase shift due to capacitor.

RLC: Contains all three components, resonance occurs at a specific frequency.

Impedance and Admittance

Impedance (Z) = $R + jX$.

Admittance (Y) = $1/Z = G + jB$, where G is conductance and B is susceptance.

Power in AC Circuits

Active Power (P) = $VI\cos\theta$.

Reactive Power (Q) = $VI\sin\theta$.

Apparent Power (S) = VI .

Resonance

In RLC circuits, resonance occurs when inductive reactance equals capacitive reactance: $X_L = X_C$.

Three-Phase AC Circuits

Balanced Y- Δ and Y-Y connections.

Power Measurement using Two Wattmeter Method.

