Physics 200

Chapter 33: Alternating Current Circuits   (Lecture Examples)

Ex:1   Derive the current in a purely resistive "AC" circuit as a function of time.

Ex:2   Derive the reactance in a purely resistive "AC" circuit.

Ex:3   Determine the phase angle in a purely resistive "AC" circuit.

Ex:4   Derive the current in a purely inductive "AC" circuit as a function of time.

Ex:5   Derive the reactance in a purely inductive "AC" circuit.

Ex:6   Determine the phase angle in a purely inductive "AC" circuit.

Ex:7   Derive the current in a purely capacitive "AC" circuit as a function of time.

Ex:8   Derive the reactance in a purely capacitive "AC" circuit.

Ex:9   Determine the phase angle in a purely capacitive "AC" circuit.

Ex:10 Derive the impedance of a series LRC circuit.

Ex:11 Derive the average power of a series LRC circuit?

Ex:12 A transformer has 400 turns on the primary side and 1600 on the secondary side. On the primary side the current is 20 amps and the rms voltage is 110 V. Calculate the current and voltage on the secondary side?

Ex:13 A generator produces 100 A at 440 V it is stepped up to 44000 V and sent through a transmission line whose R = 50 Ω compare the % power lost to what it would be if V had not been stepped up.

Ex:14 Derive the gain of a RC low pass filter.