

OBJECTIVES AC CIRCUITS

TOPIC	OBJECTIVES
AC voltage	<p>Explain how ac voltage is produced by a generator (22.7)</p> <p>Determine instantaneous voltage, amplitude and period of an ac voltage from a diagram, calculate its (angular) frequency (20.5)</p> <p>Draw simple phasor diagrams</p>
Phase shift and impedance	<p>Realise that current and voltage usually are not in phase</p> <p>Determine time shift between current and voltage from a diagram, calculate phase shift</p> <p>Explain phase shift with phasor diagram</p> <p>Calculate current amplitude from voltage and impedance</p>
AC power	<p>Calculate rms values of voltage and current</p> <p>Calculate effective power (23.3)</p> <p>Calculate phase shift from effective power and rms values</p>
RCL circuits	<p>Calculate capacitive and inductive reactance (23.1/2)</p> <p>Apply formula for series or parallel circuits (23.3)</p>
Power losses in transmission lines (22.9)	<p>Calculate (relative) power losses in transmission lines</p> <p>Explain why high-voltage transmission lines are used</p>
Transmission of electric power (22.9)	<p>Sketch transmission of electric power</p> <p>Calculate (relative) power losses in transmission lines</p>
CONSTANT	VALUE
Household voltage in Europe (USA)	230 V/50 Hz (110 V/60 Hz)
High-voltage	220 kV (national) or 380 kV (European grid)