nominal	actual	
0.1 μF	0.09515	μF
0.47 μF	0.4464	μF
50 Ω	52.075	Ω
1.0 kΩ	0.98416	kΩ
2.5 kΩ	1.4772	kΩ
2.2 kΩ	2.1768	kΩ
10 mH	10.383	mH

3. Remove the load and measure the unloaded output voltage. This is the experimental Thevenin voltage. Record it in Table 11.2.

4. Replace the voltage source with a 50 Ω resistor to represent its internal impedance. Set the impedance meter to 1 kHz and measure the resulting impedance at the open load terminals. This is the experimental Thevenin impedance. Record these values in Table 11.2 and compare with the theoretical values.

5. Using the decade resistance box and capacitor, build the Thevenin equivalent circuit of figure 11.2 and apply the 1 kΩ load resistor. Measure the load voltage and record in Table 11.1. Compare with the values of the original (non-Thevenized) circuit and determine the deviation between the original and Thevenized circuits.

6. To verify that Thevenin's Theorem also works with an inductive source and a complex load, repeat steps 1 through 5 in like manner but using figure 11.3 with R1=1.5 kΩ, R2=2.2 kΩ, L=10 mH, Rload=1 kΩ with Cload=.1 μF. Set the generator to a 10 kHz sine wave at 2 V p-p. Record results in Tables 11.3 and 11.4.

Data Tables

V_{load} Theory	0.6178 V
V_{load} Original	0.6097 V
V_{load} Thevenin	~~1.186 V~~
% Deviation	1.32 %

Table 11.1

	Theory	Experimental	% Deviation
$E_{Thevenin}$	1.191 V	~~0.6097 V~~ 1.186 V	0.46 %
$Z_{Thevenin}$	880.+j350.5Ω	theory	

Table 11.2 (the eq.)

V_{load} Theory	0.5843 V
V_{load} Original	0.6097 V
V_{load} Thevenin	
% Deviation	4.35%

Table 11.3

	Theory	Experimental	% Deviation
$E_{Thevenin}$	1.992 V	1.993 V	0.23%
$Z_{Thevenin}$	880+j650.5 Ω	theory (no eq.)	

Table 11.4

Questions

1. How does the AC version of Thevenin's Theorem compare with the DC version?

The AC thevenin's theorem has an additional reactive component compared to the DC version.

2. Would the Thevenin equivalent circuits be altered if the source frequency was changed? If so, why?

The frequency-dependent components that exhibit reactance will change their values. ~~to~~

3. Based on the results of this exercise, would you expect Norton's Theorem for AC to behave similarly to its DC case?

With a steady-state AC source, the behaviour of ~~the~~ Norton's theorem would be equivalent, as in DC.