Massachusetts institute of Technology
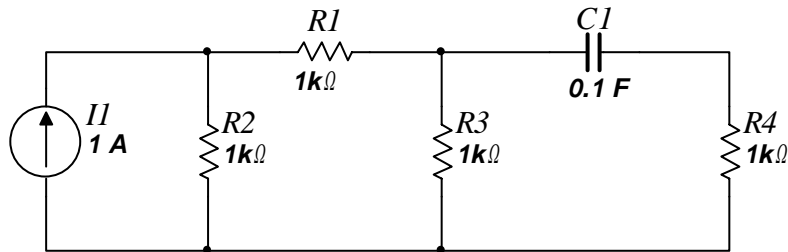**Department of Nuclear Science and Engineering**
Department of Electrical Engineering and Computer Science

22.071/6.071 - Introduction to Electronics, Signals and Measurement
Spring 2006
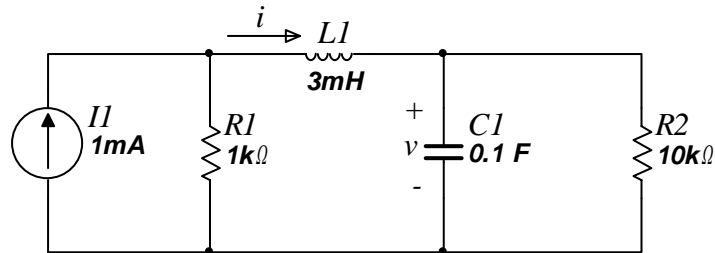
Homework 5
Due 3/15/06

Problem 1.

For dc operation determine the energy stored in the 0.1F capacitor

Problem 2.

Under dc conditions calculate the current i and the voltage v for the following circuit

Problem 3.

The voltage across a 5 mH inductor is $5\left(1-\exp\left[-.5t\right]\right)$ Volts. Calculate the current through the inductor and the energy stored in the inductor at time $t=2$ sec.

Problem 4.

A device outputs the square wave current waveform shown below on Figure 4(a). It is desired to obtain the triangular voltage waveform shown on Figure 4(b).

4(a)

4(b)
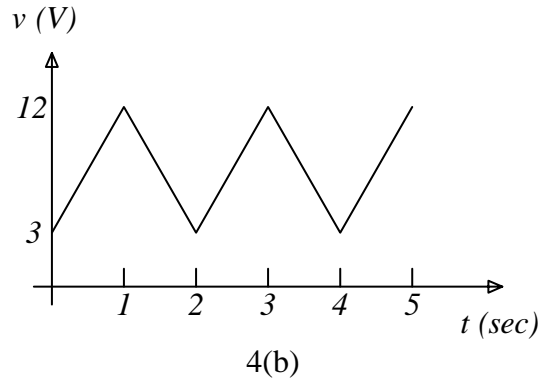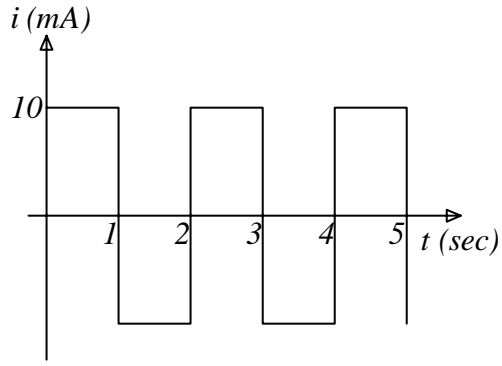
What device/element would you use and what are its characteristics including its initial state?

Problem 5.
Determine the Thevenin and the Norton equivalent circuits seen through ports a-b of the following networks.