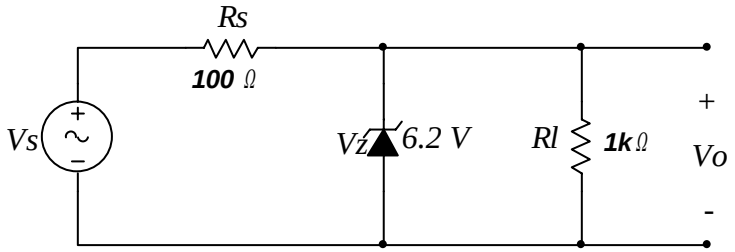
Massachusetts institute of Technology
Department of Nuclear Science and Engineering
Department of Electrical Engineering and Computer Science

22.071/6.071 - Introduction to Electronics, Signals and Measurement
Spring 2006

Homework 8
Due 4/19/06

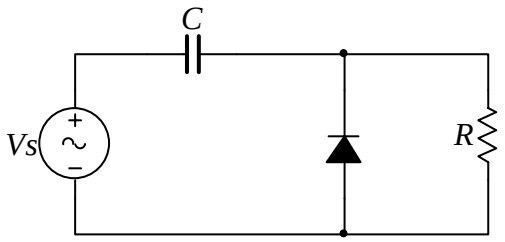
Problem 1.

The input signal Vs is a sinusoid with an amplitude of 10 Volts and a frequency of 1kHz. Determine the output waveform Vo (shape and relevant values)



Problem 2.

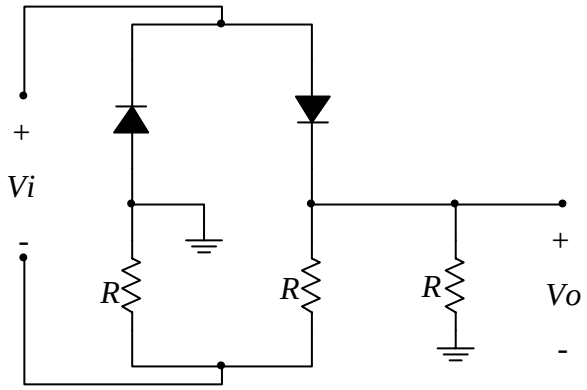
For this circuit C=47μF, R=20kΩ and the on resistance of the diode is 30Ω. Determine the charge and discharge times of the capacitor.



Problem 3.

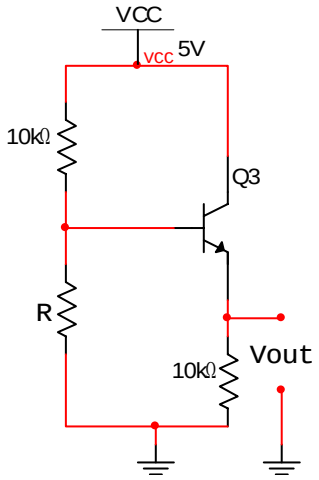
The input signal Vi is a sinusoid with an amplitude of 20 Volts. For the diode assume Vg=0 Volts. All resistors are equal to 10kΩ.

Determine the output signal Vo. Does the frequency of Vi matter?



Problem 4.

For the following circuit,



Determine the value of resistor R so that Vout = 2V