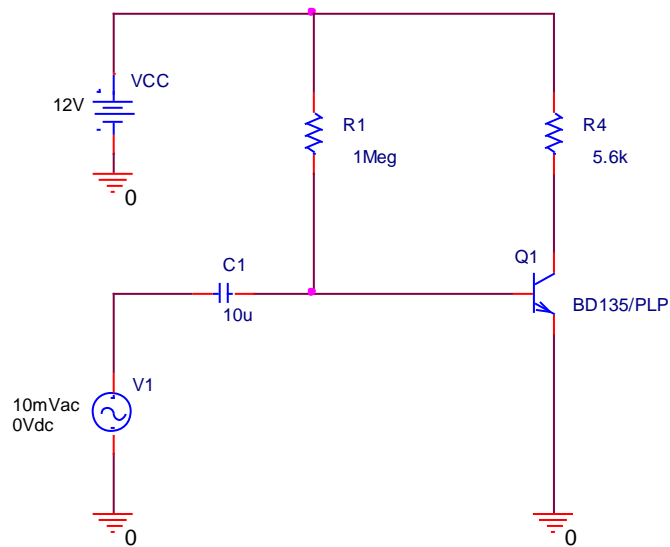MECE 347
Lab2
(Amplifier Frequency Response)

Introduction:
        The objective is to obtain the common emitter amplifier frequency response, draw the bode plots.

Procedure:
        Implement the following common emitter amplifier. Use a voltage divider in the front to get the small signal. Then, measure the gain (Vout/Vin) for the frequencies in the table.

Frequency (Hz)	Gain (Vout/Vin)	Power
5		
10		
20		
50		
100		
1k		
10k		
20k		
30k		
40k		
50k		
100k		
200k		

From your measurements, find the -3dB frequencies, and draw the bode plot for the amplitude gain only.

Square Wave Technique to determine the frequency response of a circuit:

Now apply a square wave signal of T=10 Hz and amplitude of 4 V to the input of the circuit and observe the output signal on the oscilloscope.

This time obtain the upper and lower cut-off frequencies of the circuit by using the formulas

f_H=0.35/t_R, where t_R is the rise time of the signal,
f_L=P.f_S/π, where P=V-V'/V, where P is called the tilt of the signal.
Note these formulas and its proper applications are given in your text book pp. 583-586.

Questions:

1. Compare the cut-off frequencies obtained in the two methods for the circuit and comment about the result.
2. Why there is arise time and tilt problem when we apply a square wave? Explain this by using Fourier Transforms and frequency domain behavior of the circuit.
3. How do you think that phase shift caused by the circuit will change by frequency? Explain.