Lab 9
Common Emitter Amplifier

1. Assemble the circuit in Fig. 1:

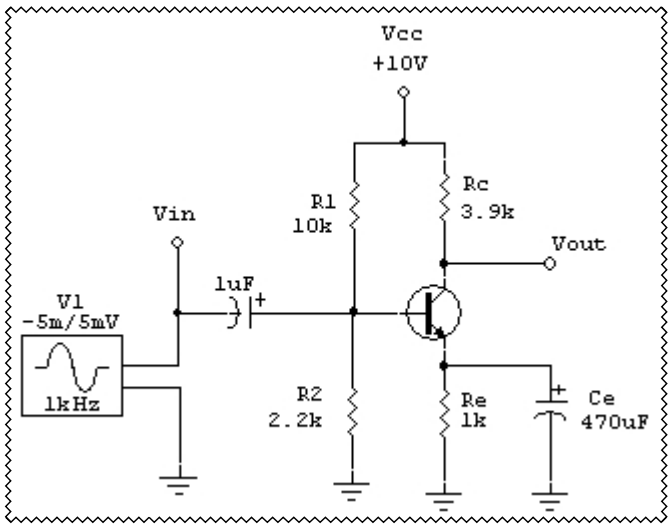


Fig. 1

2. Calculate the following DC values:

V_B = _____

V_E = _____

$I_E \doteq I_C$ = _____

V_{RC} = _____

V_C = _____

V_{CE} = _____ V_{BC} = _____ Is the transistor active?

3. Calculate the following AC values:

(AC resistance of the base-emitter junction) r'be = _____

Gain: A_V = _____

4. Measure the values that were calculated in step 2:

V_B = _____

V_E = _____

$I_E \doteq I_C$ = _____

V_{RC} = _____

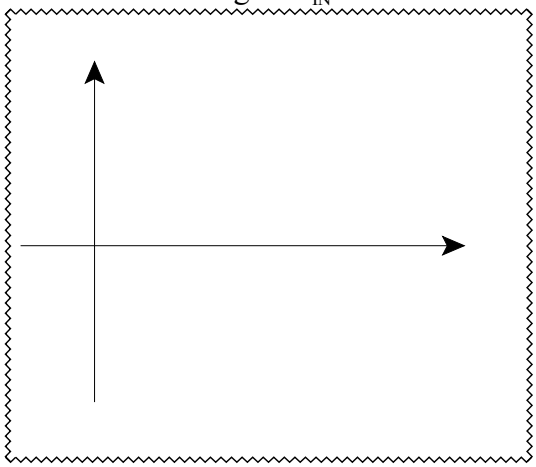
V_C = _____

V_{CE} = _____ V_{BC} = _____

5. Connect channel 1 of the oscilloscope to V_{IN} and channel 2 to V_{OUT}. (Notice that the input signal is a sine wave of $10mV_{PP}$ at 1kHz.)

Measure the gain: A_V = _____

Fig. 2 V_{IN}



6. Sketch the input and output waveforms. (Notice that V_{OUT} should be "riding" on V_C which is a DC value.) What is the relationship between the two waveforms? How do the calculated and measured values compare?

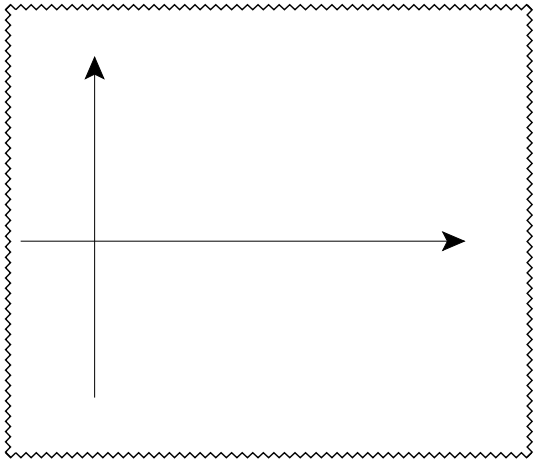


Fig. 3 V_{OUT}