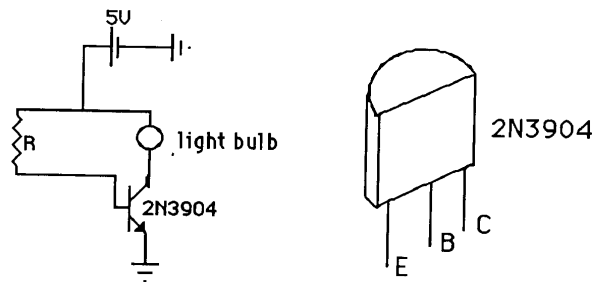


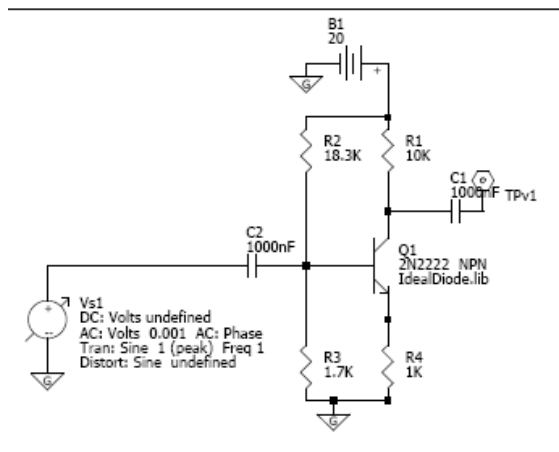
Physics 517/617 Experiment 4A

Basic Experiment - Physics 517/617

1) Build the following circuit. Vary R_1 between $500\ \Omega$ and $50\ \text{K}\Omega$ (using a resistor box if possible). Use a $100\ \Omega$ resistor instead of the light bulb. Measure V_{BE} and I_C . Determine β (h_{fe}) for each of your measurements. Plot I_B vs I_C . What is the saturation current and voltage (V_{CE})? For what values of R would this circuit make a good switch?



2) Build the following single stage common emitter amplifier (with emitter degeneration).



- First build the circuit without the capacitors or sinusoidal source.
- Check the V_{BE} is .7 volts
- Add the capacitor and sinusoidal generator to your circuit.

3) Measure the following properties of your amplifier and compare them to what you expect theoretically:

- operating point
- gain
- input impedance
- frequency response and frequency dependence of previous two quantities
- response to large signals

No additional work is required for Physics 617