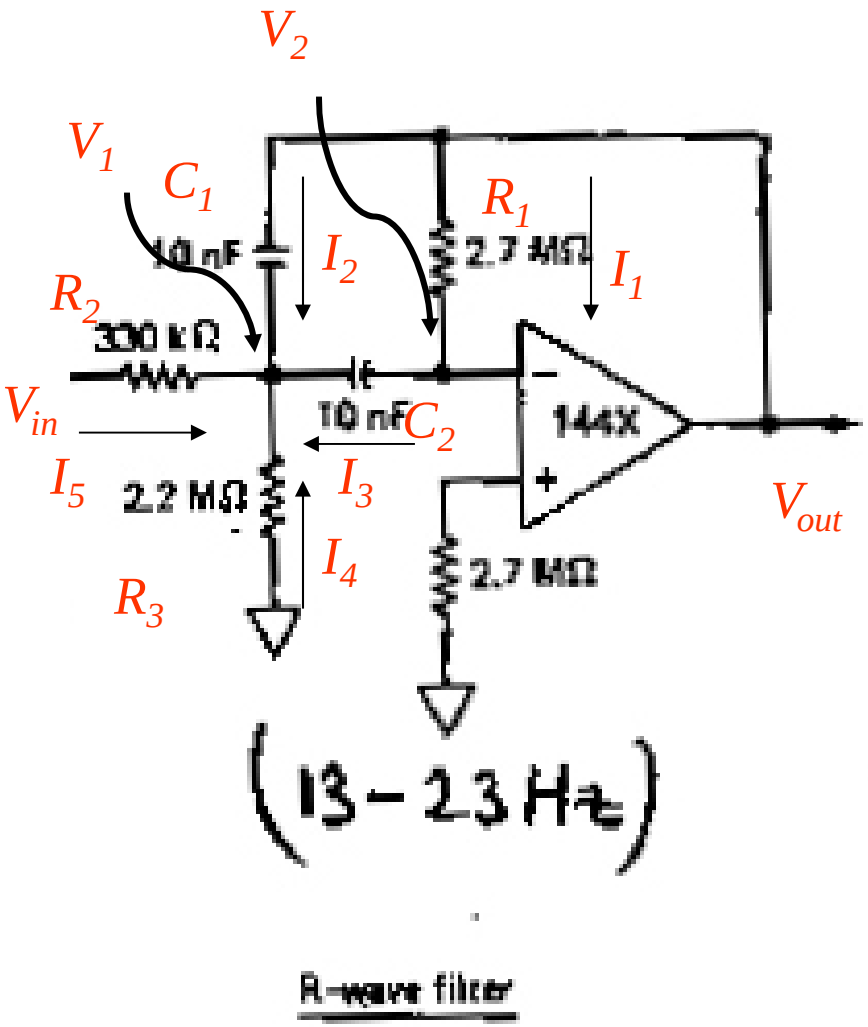
R-Wave Detector Experiment



1. Calculate the transfer function V_{out} / V_{in} as a function of the circuit parameters (resistors, capacitors, etc.).
2. Calculate the peak value of V_{out} / V_{in} and its peak frequency as function of the circuit parameters (resistors, capacitors, etc.).
3. Calculate the upper and lower cutoff frequencies and bandwidth of this circuit as a function of the circuit parameters (resistors, capacitors, etc.).
4. Using the values shown in the figure, verify that you calculations are correct by making a plot of the transfer function.
5. Repeat step 5 with the values of the circuit components you have in your kit.
6. Construct this circuit using these values.
7. Take measurements the actual frequency response of this circuit and plot the transfer function.
   a) Identify the peak gain and its frequency?
   b) Identify the upper and lower 3db (half power point) frequencies.
   c) Calculate the bandwidth of this circuit.