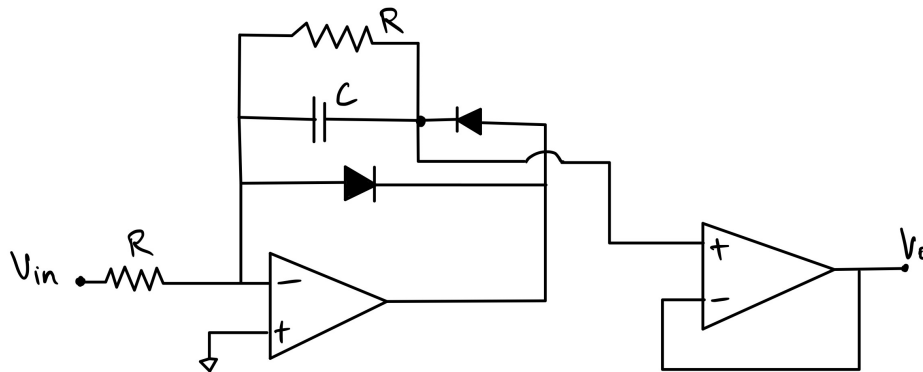


ANALOG LAB 2022

EE2401

Experiment 12: Signal strength detector

1. Find the frequency components (till third harmonic) of a half-wave rectified sinusoidal signal.
2. The following circuit implements a half-wave rectifier with first-order filter to give an output corresponding to the input signal strength (rms).



Design the circuit to meet the following specs:

- Input frequency: 0.1 kHz - 5 kHz
- Choose RC to reject the lowest input frequency
- LF347 opamp with +5V/-5V dual supply
- Diode 1N4148

Plot input amplitude vs average V_o for 0.1 kHz, 2.5 kHz and 5 kHz. Vary input amplitude from 0 to 5 V. Also submit a transient plot at 2.5 V amplitude for 0.1 kHz and 5 kHz.

CAD info:

- LF347 <https://www.ti.com/product/LF347#product-details>
- PSPICE models can be used in LTspice using this procedure: <https://www.analog.com/en/technical-articles/ltspice-simple-steps-to-import-third-party-models.html>

Submit the following:

- Testbench snapshot, output plots
- Hand calculation
- Any unusual observation along-with comments