

**BASIC FUNCTION GENERATOR .**

**Lab Duration:** one week

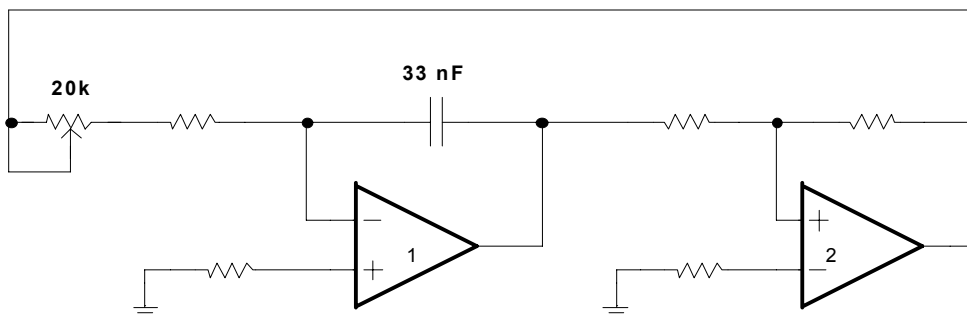
**Pre-Lab**

N	V <sub>sup</sub> (V)	V <sub>triang</sub> (V <sub>PP</sub> )	V <sub>square</sub> (V <sub>PP</sub> )	F <sub>min</sub> (Hz)	F <sub>max</sub> (Hz)
1	±5	3	10	1084	7652
2	±5	4	10	792	4856
3	±5	5	10	613	3224
4	±5	6	10	493	2255
5	±5	7	10	404	1592
6	±5	8	10	336	1155
7	±6	4	12	975	6887
8	±6	5	12	761	4662
9	±6	6	12	613	3224
10	±6	7	12	507	2319
11	±6	8	12	424	1671
12	±6	9	12	358	1232

Design a waveform oscillator to meet the design specifications you have been assigned. Op amps are OP291 rail-to-rail I/P and O/P and have bipolar transistor inputs.

Supply a circuit diagram with all standard resistor values labeled directly on the diagram. You may combine two standard values to make up one resistor three times at the most in the entire circuit. Provide all of your work for the pre-lab.

**Circuit Diagram**



Available 5% standard resistors

1	1.2	1.5	1.8	2.2	2.7	x 10 <sup>N</sup> N= ... -3,-2,-1,0,1,2,3 ...
3.3	3.9	4.7	5.6	6.8	8.2	

**Capacitors:** 33 nF only      **Pot:** 20k only      **Op amps:** OP291 rail-to-rail I/P and O/P

**LAB PROCEDURE**

1. Take necessary measurements to verify that design specs are all met. Provide your own test procedure
2. Measure 10%-90% rise time and fall time of square wave as well as +ve and -ve slew rate of op amp #2.

**CIRCUIT DEMO**

Demo results: V<sub>triang</sub> = \_\_\_\_\_      F<sub>min</sub> = \_\_\_\_\_      F<sub>max</sub> = \_\_\_\_\_      t<sub>rise</sub> : \_\_\_\_\_

Teacher Signature: \_\_\_\_\_