PrecisionFWRectifier -- Overview

Prof. S.Sundar
AP(Sr)
Electronics Engineering
Vellore Institute Of Technology

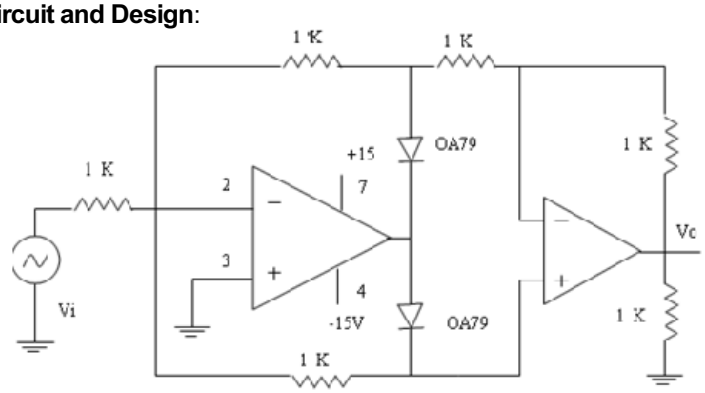
Objectives:
To design full wave precision rectifiers using op-amps.

Pre lab questions:
1. What is the difference between an ordinary rectifier and a precision rectifier using op-amps?
2. Identify the diode which will be ON during the positive half cycle in the half wave rectifier circuit below.
3. Identify the diode/diodes which will be ON during the positive half cycle in the full wave rectifier circuit below.

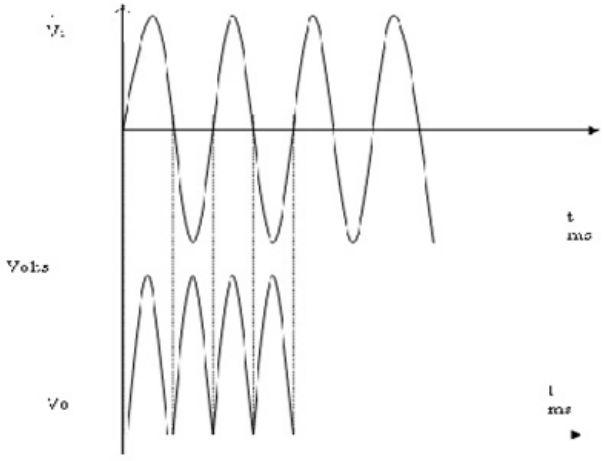
Components & Equipments required:
1. Operational amplifier - µA 741
2. Resistors
3. Diodes
4. Signal generator
5. CRO
6. Bread board
7. Power supply
8. Connecting wires

Half wave rectifier:

Circuit and Design:



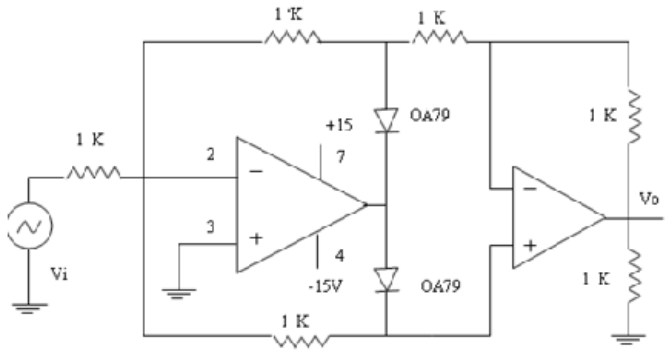
Model Graph:



PrecisionFWRectifier -- Procedures

Step 1

Connect the circuit as shown below.

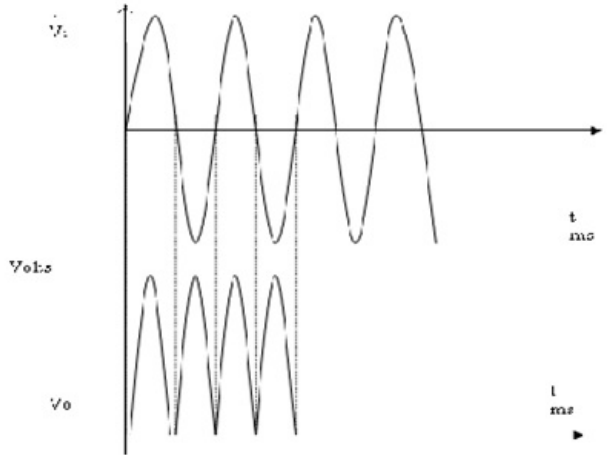


Step 2

Apply a small signal say 500mV, 1 kHz sine signal as Vi

Step 3

Observe the output Vo and input Vi simultaneously in the two channels of CRO. Verify if both positive and negative half cycles of the input signal are getting rectified as shown below.



Step 4

Plot your observations in a graph sheet.

Step 5

Post lab questions:
1. Apply triangular / square wave as inputs to the rectifier circuits and observe the outputs.
2. Does your full wave rectifier rectify ac signals of amplitude less than 1 volt?

Step 6

Inference/Result: