Lab 4: Wave-shaping Circuits

1 Pre Lab

1.1 P1

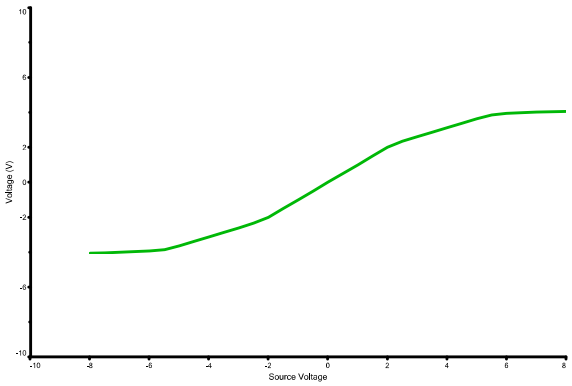
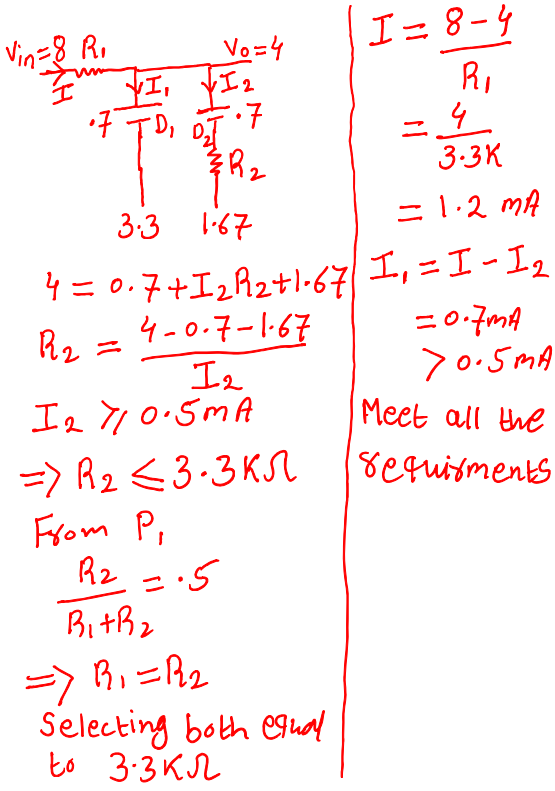
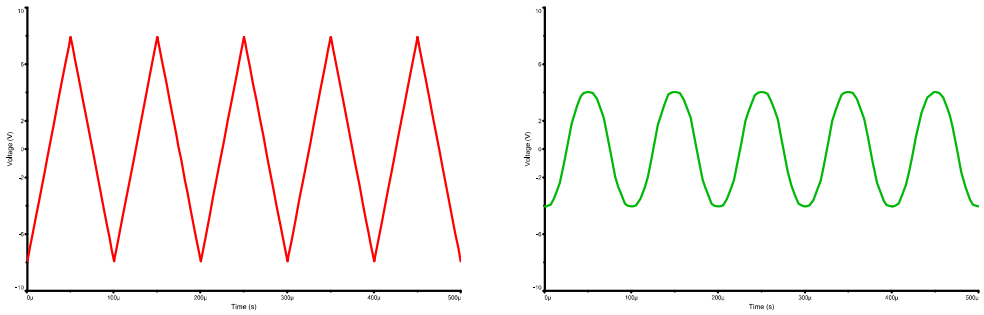


Figure 1: Graph P1. Input-output transfer characteristic of Wave Shaping Circuit

1.2 P2



1.3 P3



(a) Input Signal (b) Output Signal

Figure 2: Graph P3(a). Input and output voltage waveforms.

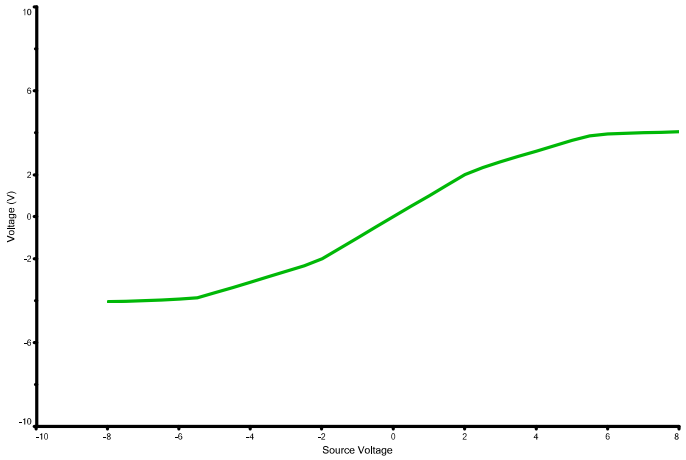


Figure 3: Graph P3(b). Input-output transfer characteristic.

1.4 P4

Let $I = 20mA$ (Midpoint of 15mA & 25mA)

$R_3 = \frac{12 - 3.3}{I}$

$= 435\Omega$

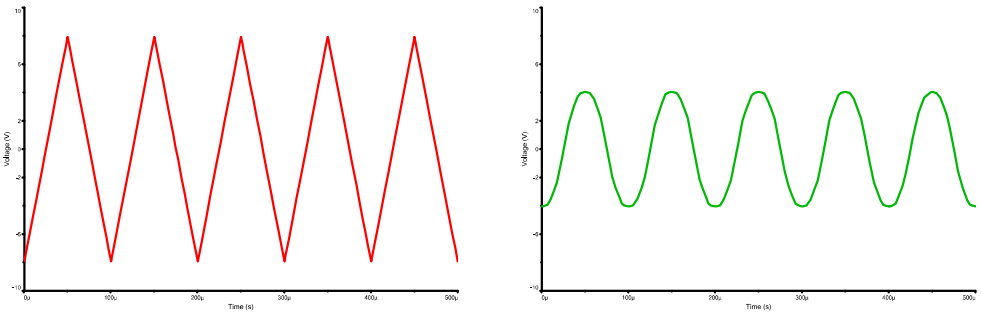
Closest value in Lab Kit is 470Ω

$R_4 = R_5 = \frac{1.67}{I}$

$= 83.5\Omega$

Closest value in Lab Kit is 91Ω

1.5 P5



(a) Input Signal (b) Output Signal

Figure 4: Graph P5(a). Input and output voltage waveforms.

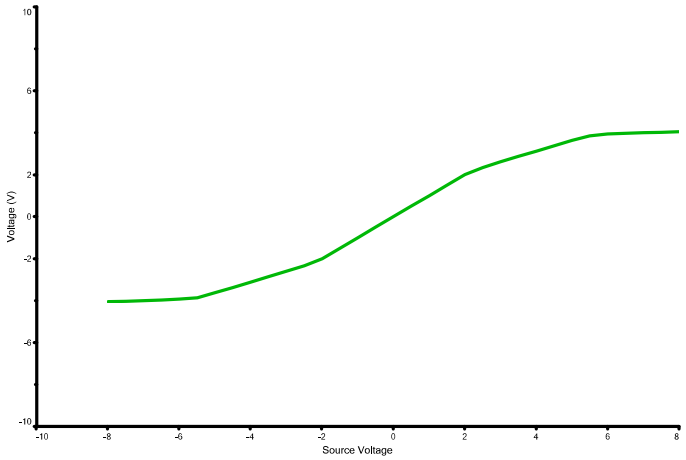
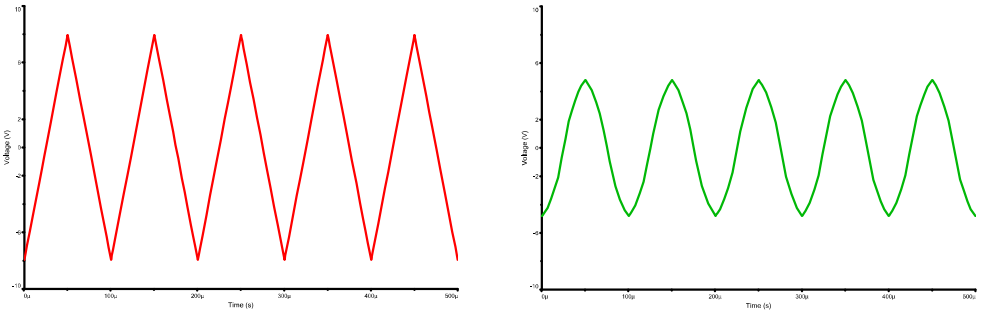


Figure 5: Graph P5(b). Input-output transfer characteristic.

1.6 P6



(a) Input Signal (b) Output Signal

Figure 6: Graph P6(a). Input and output voltage waveforms.

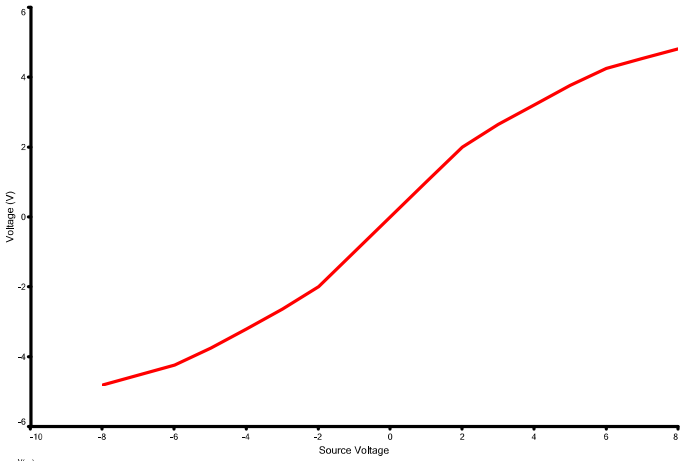
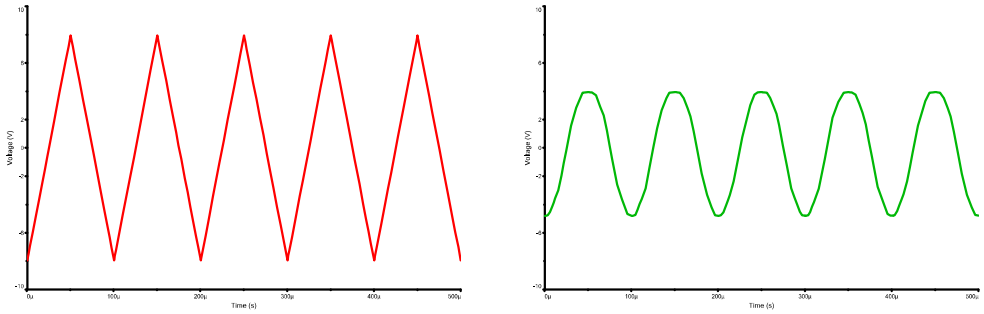


Figure 7: Graph P6(b). Input-output transfer characteristic.

1.7 P7



(a) Input Signal (b) Output Signal

Figure 8: Graph P7(a). Input and output voltage waveforms.

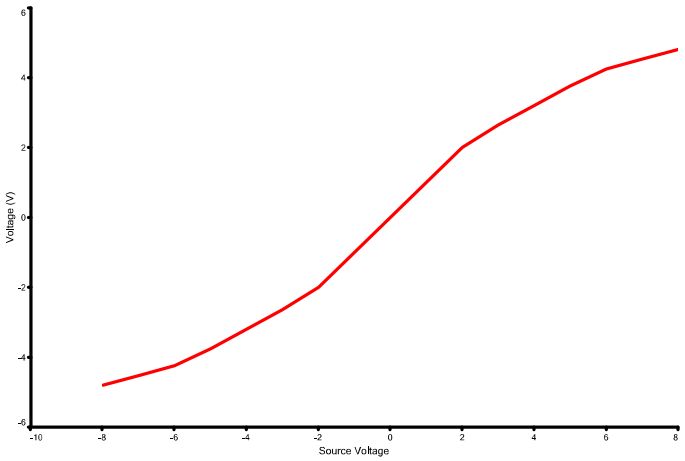


Figure 9: Graph P7(b). Input-output transfer characteristic.