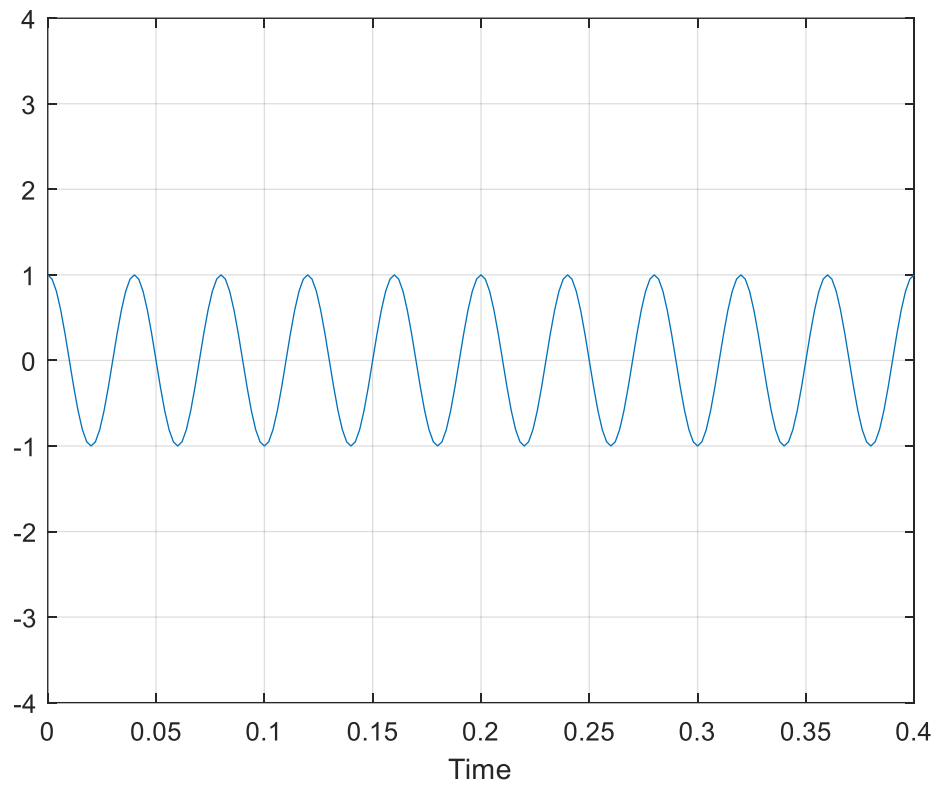
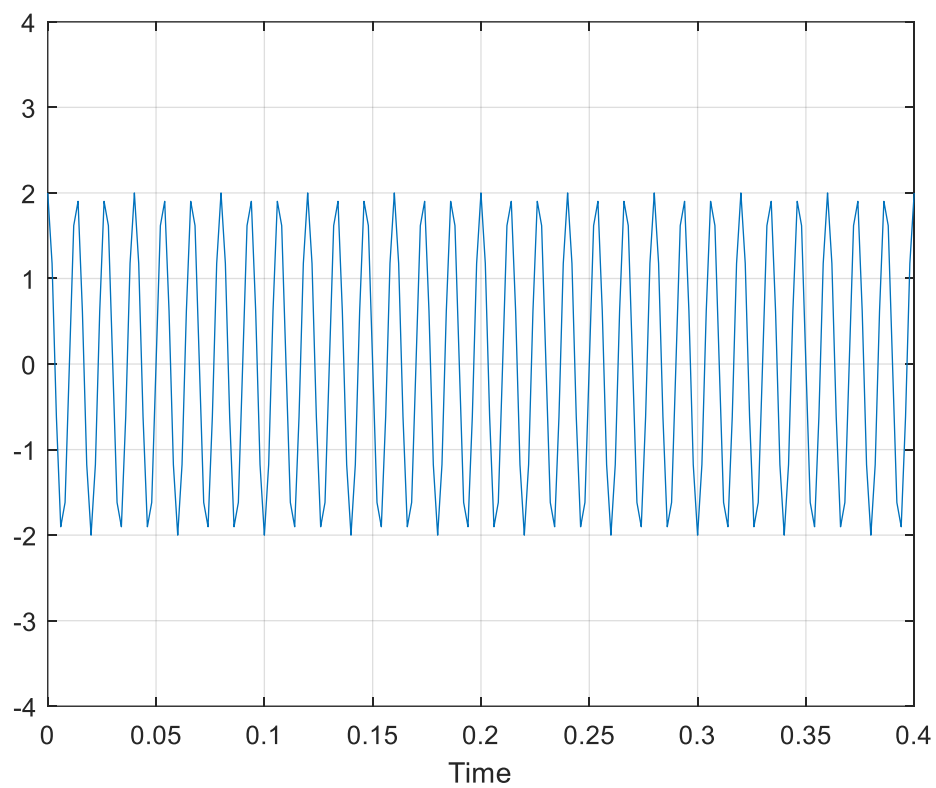


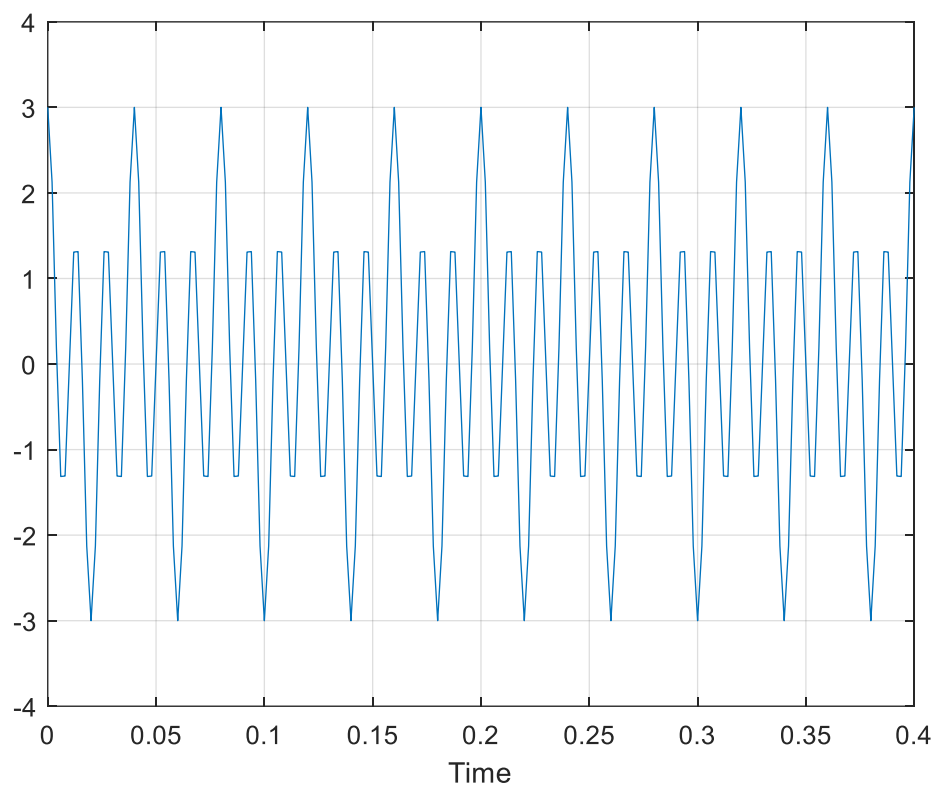
Q1



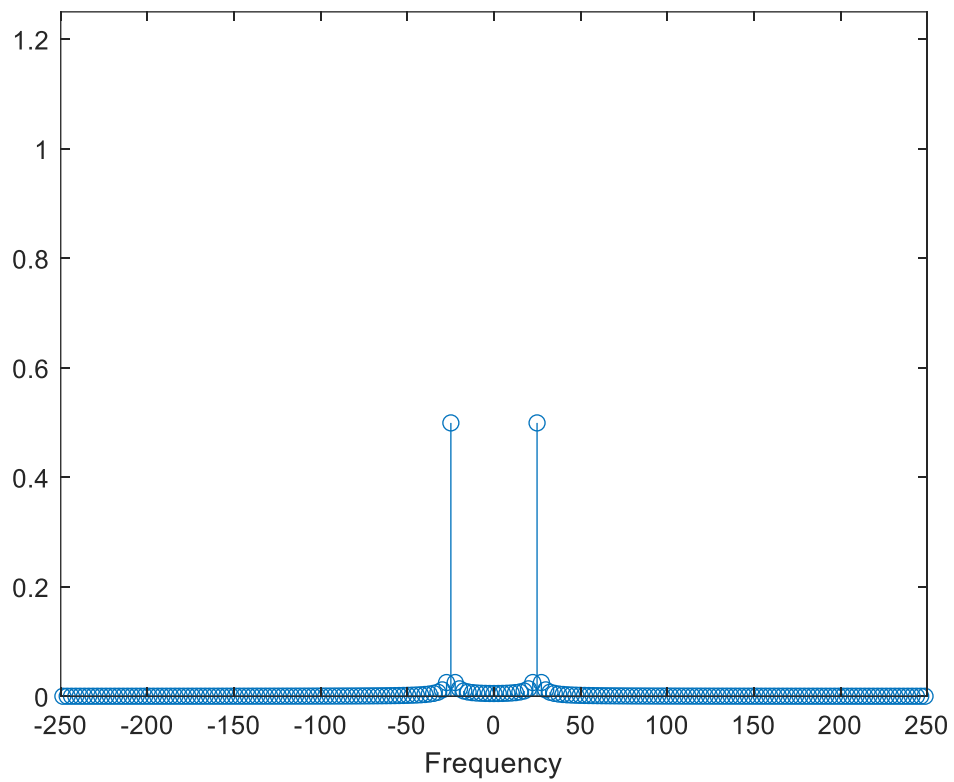
*Figure 1 - Sinusoidal Signal (25 Hz)*



*Figure 2 - Sinusoidal Signal (75 Hz)*

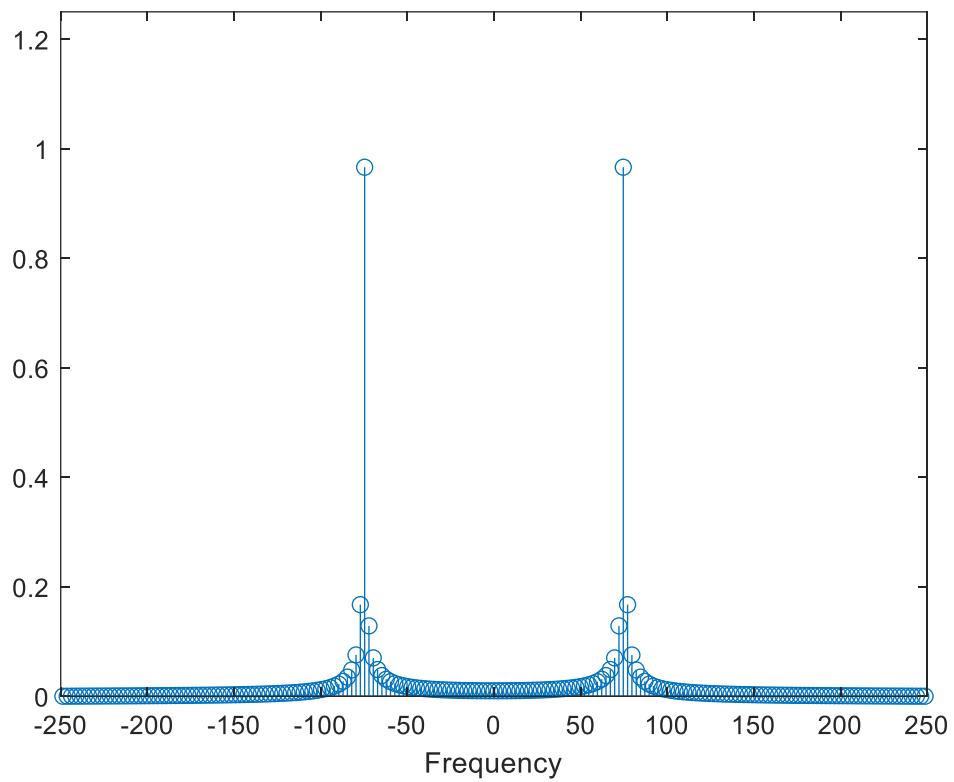


*Figure 3 - Signal (25 Hz + 75 Hz)*



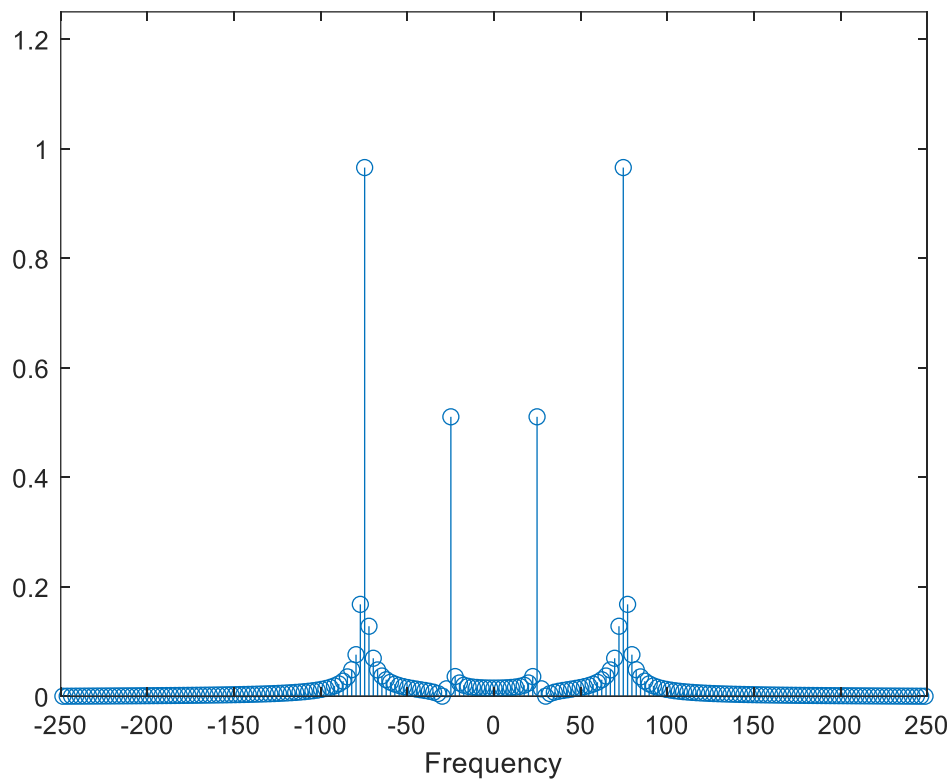
*Figure 4 - Frequency of Sinusoidal Signal (25 Hz)*

The graph obtained in the frequency domain of a sinusoidal signal with a frequency of 25 Hz shows the expected result, with output amplitudes of 0.5 at only -25 and +25 frequency points.



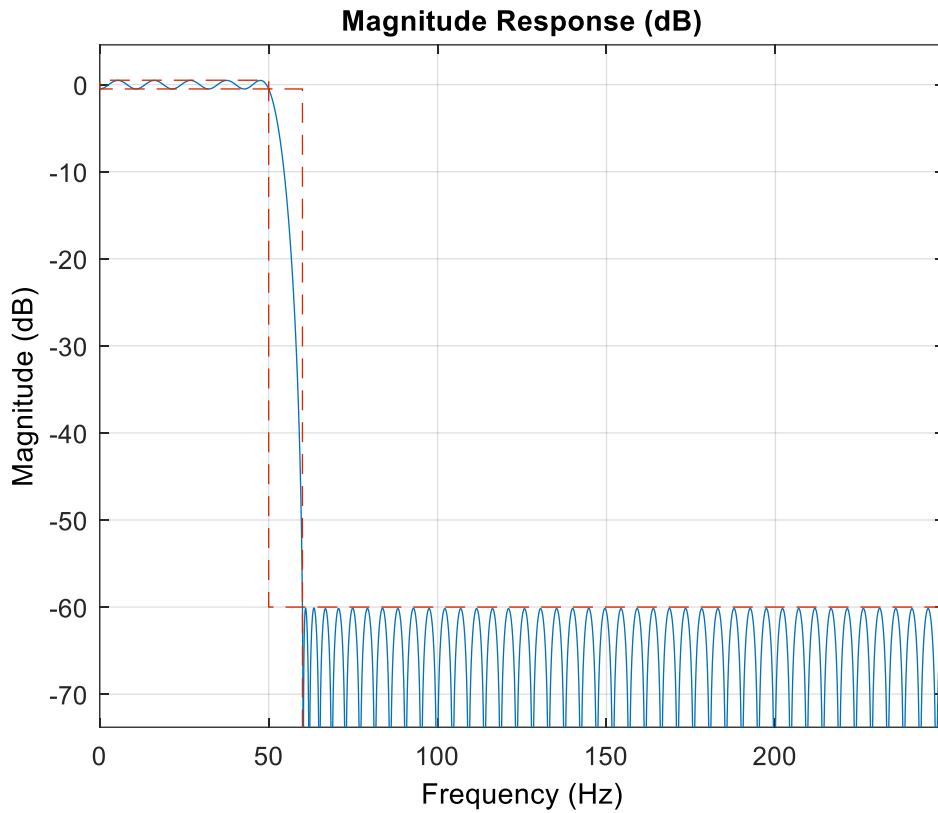
*Figure 5 - Frequency of Sinusoidal Signal (75 Hz)*

The graph obtained in the frequency domain of a sinusoidal signal with a frequency of 75 Hz shows the expected result, with output amplitudes of 1 at only -75 and +75 frequency points.



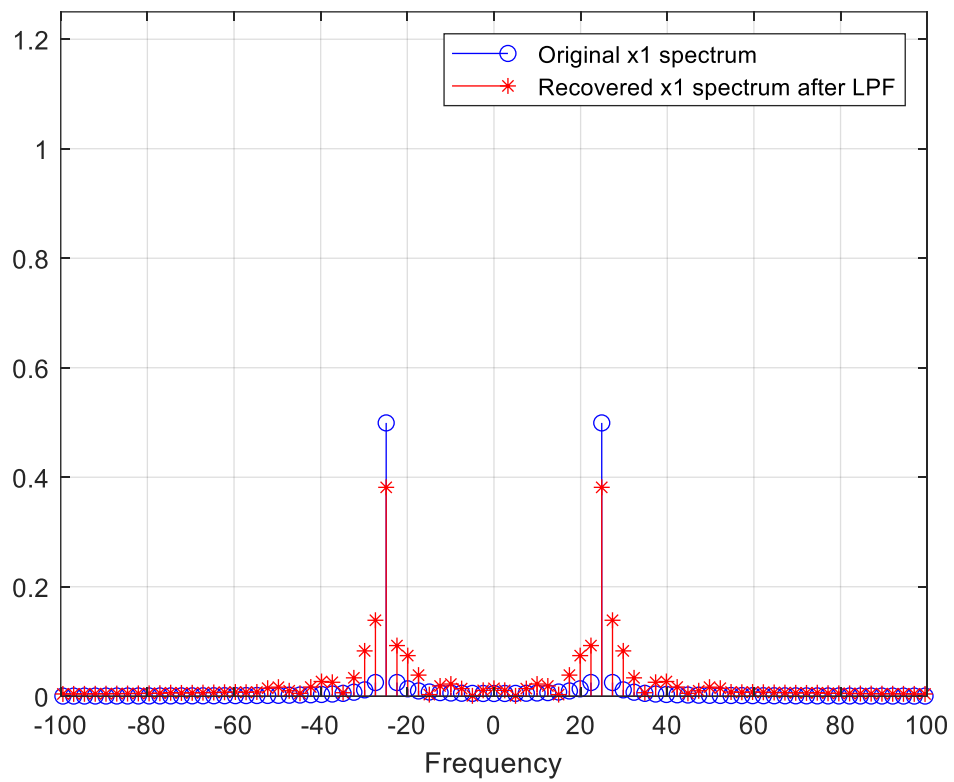
*Figure 6 - Frequency of Signal (25 Hz + 75 Hz)*

The graph obtained in the frequency domain of a sum of 2 sinusoidal signals with a frequency of 25 Hz and 75 Hz shows the expected result, with output amplitudes of 0.5 at only -25 and +25 frequency points and also output amplitudes of 1 at only -75 and +75 frequency points.



*Figure 7 - Low Pass Filter*

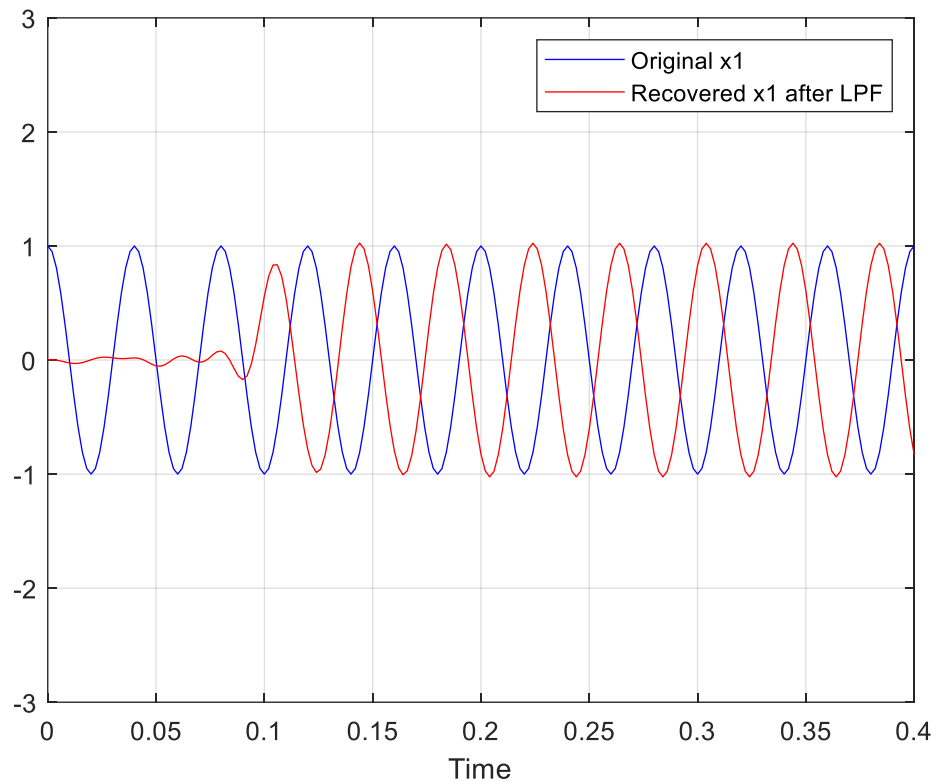
Looking at the obtained result, it can be understood that low-frequency values are passed while high-frequency values are suppressed. This suppression starts from 50 Hz onwards.



*Figure 8 - Frequency of Sinusoidal Signal (25 Hz) and Filtered Signal*

As can be seen from the graph, the output of x1, the 25 Hz sinusoidal signal, which passed through the low-pass filter, continues to be preserved.

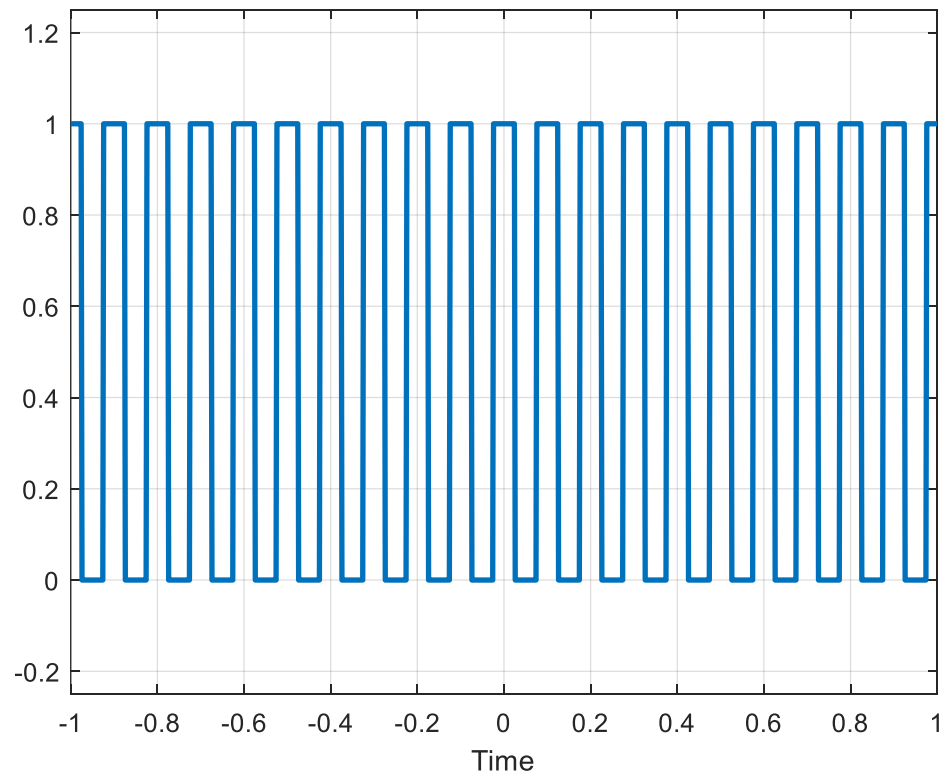




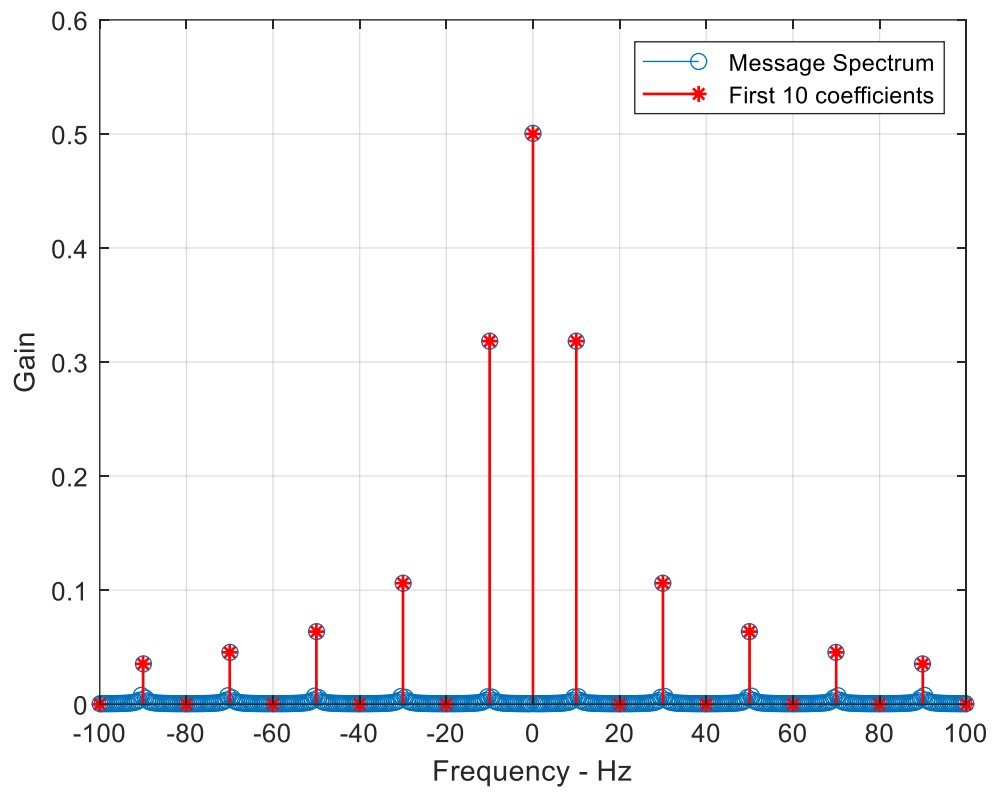
*Figure 9 - Sinusoidal Signal (25 Hz) and Filtered Signal*

During the suppression of the 25 Hz frequency sinusoidal signal over time, the initial moments involve the process of the filter's transition, during which high-frequency components are detected and eliminated. As a result, the original signal cannot be fully recovered at the beginning.

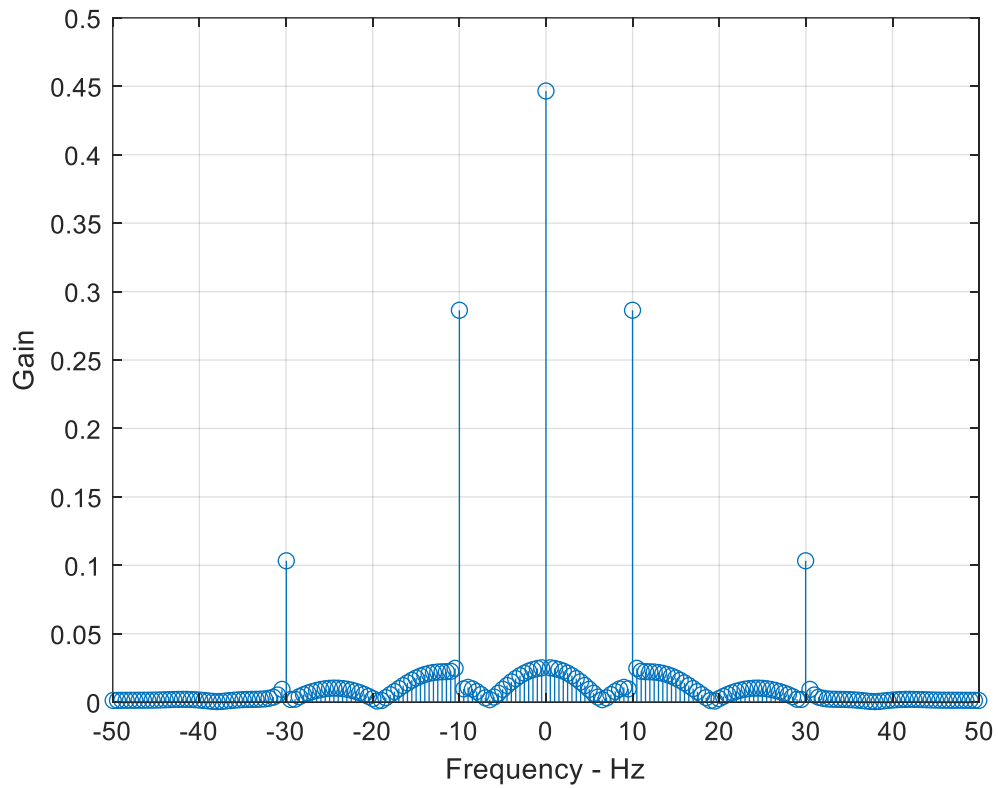
Q2



*Figure 10 - Square Signal (10 Hz)*



*Figure 11 - First 10 Coefficients of Square Signal (10 Hz)*



*Figure 12 - Frequency of Square Signal after Low Pass Filter*

In the original signal, the first 10 coefficients are obtained, while after passing through the low-pass filter, only the first 3 coefficients can be obtained. This results in a decrease in similarity to our original square signal. (Cutoff frequency is 40 and stop frequency is 50.)