Digital Signal Processing Lab (EE 521)

Lab -5 Report

Task:

1. Implement FIR filter using different types of window functions

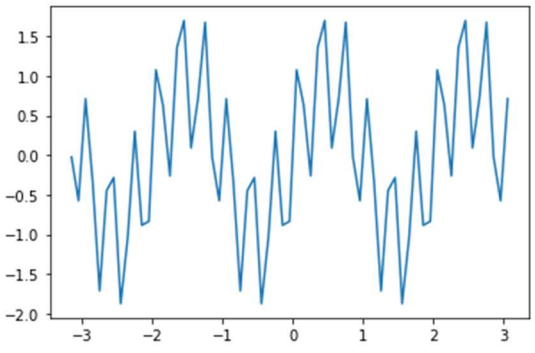
Finite Impulse Response :

$$y(n) = \sum_{k=0}^{M-1} h(k)\, x(n-k)$$

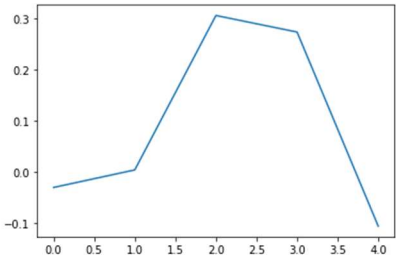
Design methods of FIR filter :

1. Window design method
2. Frequency sampling method
3. Least MSE method
4. Equiripple method

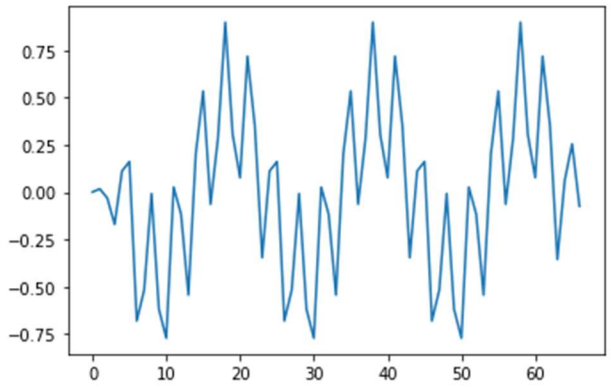
Input Signal :



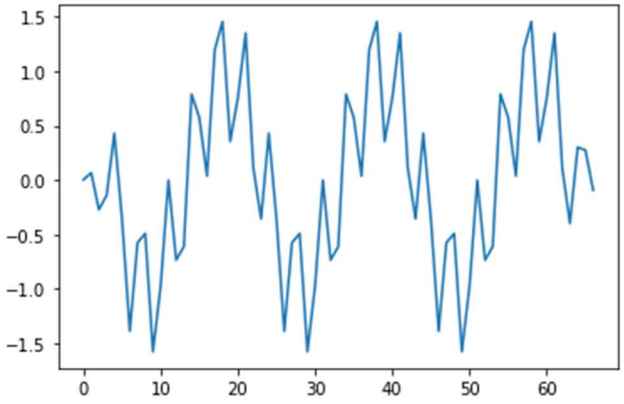
Hamming window :



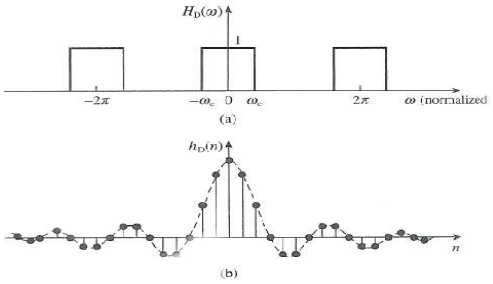
Output with hamming window :



Output with rectangle window FIR filter :



Window design method ideally requires rectangular function which is not practical and hence we truncate the infinite impulse response by multiplying it with finite length window function. The result is finite impulse response filter whose response is modified from that of IIR filter.



Code : https://colab.research.google.com/drive/1M6QU7l-DfOE2r6bMSIh_m-Il3pG2bzFW#scrollTo=VWMLHyez49N-