

UNIT-III- PART B Questions

1. Explain the desirable characteristics of the window function.
2. Draw the Cascade realization using minimum number of multipliers for the system

$$H(Z) = \left(1 + \left(\frac{1}{4}\right)Z^{-1} + Z^{-2}\right)(3 + 0.5Z^{-1} + 3Z^{-2}).$$

3. Design a low pass FIR filter of order 7 with cut off frequency $\frac{\pi}{3}$ rad/sec using Hanning window
4. Explain the different windows used in FIR filter design.
5. Design a FIR Filter for the following

$$H(e^{j\omega}) = e^{-j4\omega} \quad ; \quad 0 \leq |\omega| \leq 0.3\pi$$
$$= 0 \quad ; \quad \textit{elsewhere}$$

in the band 0 to $\frac{\pi}{3}$. Use hamming window.

6. Design and realize a low pass filter using a rectangular window by taking 9 samples of $w(n)$ and with a cutoff frequency of 1.2 rad/sec.
7. Mention the characteristic features of FIR filters
8. Design a FIR filter with

$$H_d(e^{j\omega}) = \begin{cases} e^{-j3\omega}, & -\frac{\pi}{4} \leq \omega \leq \frac{\pi}{4} \\ 0, & \frac{\pi}{4} \leq |\omega| \leq \pi \end{cases}$$

Using Hanning window and $N = 7$

9. Explain Frequency sampling type-I , type-II design