

Q.4. Compute convolution $y(n)$ of the signals.

$$x(n) = \begin{cases} \frac{1}{3^n} & 0 \leq n \leq 6 \\ 0 & \text{else where} \end{cases}$$
$$h(n) = \begin{cases} 1 & -2 \leq n \leq 2 \\ 0 & \text{else where} \end{cases}$$

Q.5. What are the advantages of FIR filters over IIR filters?

Q.6. Discuss linear filtering approach for the computation of DFT.

Section -C

(2x10=20)

Q.7. Write short notes on:

- (a) Magnitude and phase response of FIR filters.
- (b) Goertzel algorithm

Q.8. Discuss basic architecture of TMS series of digital signal processors.

Q.9. Compute the eight-point DFT of a sequence

$$x(n) = \left\{ \frac{1}{2}, \frac{1}{2}, \frac{1}{2}, \frac{1}{2}, 0, 0, 0, 0 \right\}$$

Using in-place radix-2 decimation in time FFT algorithm.

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