

Digital Signal Analysis

QUIZ-1

Answer All Questions

Marks:20

1. State whether the below system is time invariance or linear or causal with explanation. $y(n) = x(n-1) + x(n+1) + y(n+1) + 2$ [6 M]
2. Calculate linear convolution of $x(n) = \{1, 2, 3, 2\}$ and $h(n) = \{2, 3, 2\}$ using circular convolution. [3 M]
3. Calculate Nyquist sampling rate for signal $x(t) = \text{con}(200\pi t) \cdot \cos(400\pi t)$. [2 M]
4. Calculate DFT using Decimation in Time FFT for $x(n) = \{1, 2, 3, 1, 2, 3, 4, 1\}$ [6 M]
5. Calculate DTFT for $x(n) = (\frac{1}{3})^n u(n+3)$. [3 M]

$$\sum_{n=-3}^{\infty} \left(\frac{1}{3}e^{j\omega}\right)^n$$