Set-2

Quiz-1 2024

ROLL NO: 2022101084

Digital Signal Analysis

Answer all questions

1. Let $x_1(n) = \{4, 5, 6\}$ and $x_2(n) = \{1, 2, 3, 4\}$ Calculate Linear Convolution using Circular Convolution. [3M]

2. Let $x(n) = \{1, 0, 1, 0, 1, 0, 1, 0\}$ Calculate DFT. [5M]

3. a) Check whether below system is Causal or not. Justify
$y(n+4) = x(n+3) + x(n+2) + y(n+3) + x(n-4)$ [2M]

b) Check whether below system is LTI or not, Justify [4M]

(i) $y(n) = x(n-2) + y(2n-1)$

(ii) $y(n) = x(n-1) + y(n-1) + 4$

4. A signal has amplitude of -5 to 5. If maximum quantization error should be less than 0.1, how many bits are required for quantization? [3M]

5. State and prove convolution property of Fourier Transform. [3M]

6. a) State whether below signals are periodic or not justify [3 M]

(i) $x(n) = \cos^2(2n + \pi/2)$

(ii) $x(n) = u(n) + u(n-1)$

(iii) $x(n) = \delta(n)$

b) State whether below Signals is Energy or Power or neither [2M]

$x(n) = -a^n u(-n-1)$