

## ICT UTILIZATION SHEET

Target Section : III - I B.Tech  
Academic Year : 2024 - 2025  
Course Name : Digital signal processing  
Source : <https://www.youtube.com/>  
Youtube channel (@kambampati\_Rambabu143)

Date : 4/10/24

Sem : I

Speaker Name & Affiliation

Mr. K. Rambabu  
Asst. Prof, ECE Dept.  
NNRCSI Hyderabad.

Time & Duration: May - 22 - 2025  
(38 mins - 22s)

Faculty Name

K. Thousandthya (A)  
K. Rambabu (B)  
N. Raju (C)

(40 mins - 20s)  
(35 mins - 30s)

### COVERED TOPICS

- 6 problems on Z-transform
- Determine its magnitude and phase response as a function of frequency
- Design of FIR Digital filters

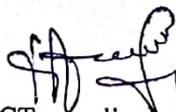
### VENUE AND UTILIZATION TOOLS

- S-27 class room
- projector
- Desktop - PC

Remarks (if any): -

1)   
Signature of the faculty

2)  (K. Rambabu).

  
ICT coordinator

  
HOD

School of Engineering  
Department of Electronics & Communication Engineering

ICT USAGE

The Fourier Series Method of Designing FIR

**UNIT - IV**  
FIR Digital Filters: Characteristics of FIR Digital Filters. Frequency Design of FIR Filters: Fourier Method. Digital Filters using Window Sampling Technique. Comparison of IIR & FIR filters.

The Fourier series method of Designing FIR Filters:

The frequency response  $H(e^{j\omega})$  of a system is periodic in  $\omega$ . For the Fourier series analysis any periodic function can be expressed as a linear combination of exponentials.



Problem on Z-Transform

$\dots H(z) = 1 - \frac{1}{2}z^{-1} \quad |z| > \frac{1}{2}$

(ii)  $x(n) = \left(\frac{1}{3}\right)^n u(-n-1)$

Sol:-  $X(z) = ?$ , ROC = ?

$x(n) = \left(\frac{1}{3}\right)^n u(-n-1)$

$X(z) = \sum_{n=-\infty}^{\infty} x(n) z^{-n}$

$X(z) = \sum_{n=-\infty}^{\infty} x(n) z^{-n}$

$X_1(z) = \sum_{n=0}^{\infty} x(n) z^{-n}$

$X_2(z) =$



3:12 PM

Q. A discrete system is given by the following difference equation

$y[n] = 2x[n] - 4x[n-1] + 2x[n-2]$

Find the magnitude and phase response.



**Description**

Determine its magnitude and phase response as a function of frequency

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