

## 2.16 40107 SIGNAL SYSTEM & PROCESSING

### UNIT-1 CLASSIFICATION AND REPRESENTATION OF CONTINUOUS TIME AND DISCRETE TIME SIGNALS

- 1.1 Signal operations. Continuous Time and Discrete Time Systems
- 1.2 Classification, Properties. Representation
- 1.3 Differential Equation representation of Continuous Time Systems.
- 1.4 Difference Equation Representation of Discrete Systems.
- 1.5 Continuous Time LTI systems and Convolution Integral,
- 1.6 Discrete Time LTI systems and linear convolution.

### UNIT-2 FREQUENCY DOMAIN REPRESENTATION OF CONTINUOUS TIME SIGNALS

- 2.1 Continuous Time Fourier series: Convergence.
- 2.2 Continuous Time Fourier Transform: Properties.
- 2.3 Frequency Domain Representation of Discrete Time Signals-
- 2.4 Discrete Time Fourier Transform: Properties, Sampling Theorem, aliasing, reconstruction filter, sampling of band pass signals,
- 2.5 Relation between Digital Frequency and Analog Frequency of sampled signals.
- 2.6 Fourier Series Representation of Discrete Time Periodic Signals.

### UNIT-3 LAPLACE TRANSFORM

- 3.1 ROC, Inverse transform, properties,
- 3.2 Analysis of Continuous LTI systems using Laplace Transform, unilateral Laplace Transform.
- 3.3 Relation between Fourier and Laplace Transforms.
- 3.4 Z transform, ROC, Inverse transform, properties,
- 3.5 Analysis of Discrete Time LTI systems using Z transforms, unilateral Z transform.
- 3.6 Relation between DTFT and Z-Transform.
- 3.7 Random process - Stationarity, Ergodicity, Correlation, Power spectral density, properties.
- 3.8 Wiener Khinchin Theorem.
- 3.9 Transmission of Random process through a linear Filter. Gaussian process, properties.

#### Reference Books:

1. Simon Haykin: Signals & Systems, John- Wiley, 2003.
2. Simon Haykin: Communication Systems,4/e,John -Wiley. Reference:
3. Alan V. Oppenheim, Alan S.Willsky: Signals and Systems, 2/e, PHI.
4. B P. Lathi: Signal Processing & Linear systems, Oxford Publication,2000.
5. Hwei P.Hsu: Signals and Systems, McGraw Hill,1995.