

**SARDAR PATEL UNIVERSITY**  
**Programme & Subject: M.Sc (Electronics & Communication)**  
**Semester: III**  
**Syllabus with Effect from: June - 2012**

<b>Paper Code: PS03CELC02</b>	<b>Total Credit: 4</b>
<b>Title Of Paper: Digital Signal Processing</b>	

Unit	Description in detail	Weightage (%)
I	Introduction to Discrete-time signals, sequences, Discrete time systems, Block diagram representation, Convolution representation of LTI systems, Analysis of Discrete time systems described by difference equations (except particular solution), Implementation of Discrete Time systems, Correlation of discrete time signals.	20%
II	Review of Z Transform, Properties of Z transform, Inverse Z transform, Analysis of LTI systems in Z domain, Fourier series and Power density spectrum of discrete time periodic signal. Fourier transform and Energy density spectrum of discrete time aperiodic signals. Relationship of the Fourier transform to the Z transform.	20%
III	Discrete time Fourier transform (DTFT), Discrete Fourier transform (DFT), Properties of DFT, Circular convolution, Linear convolution using DFT, Linear filtering methods based on the DFT. IDFT.	20%
IV	The Fast Fourier transform (FFT) algorithms : Decimation in time FFT, Introduction to radix-2FFTs, Decimation in time FFT, Decimation in frequency FFT. Digital Filters - Infinite Impulse Response (IIR) Filters, Finite Impulse Response (FIR) filters	20%

**Basic Text & Reference Books:-**

- Digital Signal Processing: Principles, Algorithms, and Applications: John G Proakis & Dimitris G Manolakis, Prentice Hall India.
- Digital Signal Processing: A computer Based Approach: Sanjit K Mitra, TMH.
- Digital Signal Processing: S Salivahanan, TMH.

