# EX- 601 Communication Engineering

**Unit-1**.
Fourier series, Fourier Transform and its properties, Probability, random variables & their moments, their significance, convolution, auto correlation, cross Correlation & power spectral density, Gaussian & Rayleigh probability density Function, mean, variance & standard deviation, central limit theorem, voltage & Power decibel scales. Signal Processing : Types of signal, deterministic & random, periodic & non Periodic, analog & discrete, energy & power signals, Representation of sinusoid in different forms & their conversion.

**Unit-2**
Need of modulation in a communication system, block schematic of a typical Communication system. AM modulation system, modulation index, generation & detection of AM wave, side bands & power content in an AM wave, DSB-SC, SSB, their methods of generation & detection, vestigial side Band modulation, AM transmitter block diagram, comparison of various AM system, modulation & demodulation circuits. Relationship between phase & freq. modulation, FM wave & its spectrum, phasor diagram of a narrow band FM signal, wide band FM, methods of generation & detection of FM, discriminators, pre-emphasis & de-emphasis, Stereophonic FM broadcasting, FM transmitters.

**Unit-3**
TRF receiver & its limitations, necessity of heterodyning, super heterodyning Receivers, IF amplifiers, selection of intermediate frequency. RF amplifiers, detectors, AGC, AVC, FM receivers, AFC.

**Unit-4**
Nyquist sampling theorem, TDM, pulse modulations & PCM, quantization error, necessity of non linear quantizer, A-law, µ-law, FSK & PSK, QPSK, QAM. Source of noise, noise figure, noise bandwidth, effective noise temperature, performance of AM, FM & digital system in presence of noise.

**Unit-5**
Satellite system block diagram, satellite freq. bands, satellite multiple access Format like TDMA, FDMA, transponders, earth station & satellite eclipses, Link calculation

**References:**

1. Taub & Shilling, Communication System, TMH

2. Singh & Sapre, Communication System, TMH

3. B.P. Lathi, Modern Digital and Analog Communication System

4. Simon Haykins,, Communication System

5. Wayne Tomasi, Advanced Electronic Communication System, PHI Learning

6. Schaum outline Series, Analog and Digital Communication

7. Martin S. Roden, Analog and Digital Communication

8. Frank R. Dungan, Electronic Communication System, Thomas/ Vikas

9. John G. Prokis, Masoud Salehi, Gerhand bBauch, Contemporary Communication Systems using MATLAB, Cengage learning 2004.