ELECTIVE -I EE-5005 (3) COMMUNICATION ENGINEERING

COURSE CONTENTS

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 & deemphasis, 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, no ise 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 ana communication system,
4. Simon Haykins, Communication System. John Willy
5. Wayne Tomasi, Electronic Communication system.
6. Schaum outline Series, Analog and digital communication
7. Martin S. Roden, Analog & Digital Communication System., Discovery Press.
8. Frank R. Dungan, Electronic Communication System, Thomson/Vikas
9. John G. Prokis,Masoud Salehi, Gerhard Bauch, Contemporary communication sytems using MATLAB, Cengage learning 2004.