

3EC07: DIGITAL COMMUNICATION LABORATORY
CREDIT - 1 (LTP: 0,0,2)

Course Objective:

To perform the experiments of analog to digital signal conversion , compandor, various formatting techniques, digital modulation technique and BER analysis of digital demodulation techniques.

Teaching and Assessment Scheme:

Teaching Scheme (Hours per Week)			Credits	Assessment Scheme		Total Marks
L	T	P		C	Practical Marks	
					ESE	CE
0	0	2	1	40	60	100

List of Experiments:

Sr. No	Aim
1	To study and understand sampling and reconstruction of the signal.
2	To study and understand TDM and PAM modulation and demodulation.
3	To study and understand PCM modulation and demodulation.
4	To study and understand Delta modulation and demodulation.
5	To Study and understand: (a) Adaptive Delta Modulation and Demodulation. (b) Continuously variable slope delta Modulation and Demodulation.
6	To study and understand slope overload and increased integrator gain in delta modulation.
7	To study and understand compressor and expander technique.
8	To study and understand various formatting techniques.
9	To study and understand Amplitude Shift Keying (ASK) modulation and demodulation.
10	To study and understand Frequency Shift Keying (FSK) Modulation and Demodulation.
11	To study and understand Phase Shift Keying (PSK) Modulation and Demodulation.
12	(a) Write a MATLAB program to plot SNR v/s BER for BPSK modulation technique using AWGN channel. (b) Write a MATLAB program to plot SNR v/s BER for BPSK modulation technique using Rayleigh channel.
13	(a) Write a MATLAB program to plot SNR v/s BER for QPSK modulation technique

Sr. No	Aim
	using AWGN channel. (b) Write a MATLAB program to plot SNR v/s BER for QPSK modulation technique using Rayleigh channel.
14	(a) Write a MATLAB program to plot SNR v/s BER for QAM modulation technique using AWGN channel. (b) Write a MATLAB program to plot SNR v/s BER for QAM modulation technique using Rayleigh channel.
15	(a) Write a MATLAB program to plot SNR v/s BER for MSK modulation technique using AWGN channel. (b) Write a MATLAB program to plot SNR v/s BER for MSK modulation technique using Rayleigh channel.
16	(a) Write a MATLAB program to plot SNR v/s BER for GMSK modulation technique using AWGN channel. (b) Write a MATLAB program to plot SNR v/s BER for GMSK modulation technique using Rayleigh channel.

List of References :

1. B.P. Lathi, Zhi Ding, “*Modern Digital & Analog Communication Systems*”, Oxford University Press, 4th Edition, 2010.
2. Simon Haykin, “*Digital Communication Systems*”, Wiley Publication, 2nd Edition, 2014.
3. John G. Proakis, Masoud Salehi “*Digital Communications*”, McGraw Hill Higher Education, 5th Edition, 2008.
4. Bernard Sklar, “*Digital Communications — Fundamentals and Applications*”, Pearson Education, 2nd Edition, 2009.

Course Outcomes (COs) :

By learning this course student will be able to ...

1. Convert analog signal into digital signal using various modulation technique.
2. Design the PSD of various line coding technique.
3. Calculate the Mean, Variance, PDF & CDF of various distribution functions.
4. Measure entropy, average word length, efficiency of memory less channel.
5. Generate the code word and correct the errors of various channel coding technique.
6. Compare different digital modulating techniques and measure its bit error rate (BER).