

**Article A : Pre-requisites A-1 to A-10**

Syllabus : Signals, Fourier series and Fourier transform, Power and Energy theorems, Spectral Density Functions, Correlation of energy signals.

A.1	Signals	A-2
A.1.1	Average Normalized Power	A-2
A.1.2	Energy	A-3
A.1.3	Energy and Power Signals	A-3
A.2	Fourier Series and Fourier Transform	A-3
A.2.1	Fourier Series	A-3
A.2.2	Exponential Fourier Series	A-3
A.2.3	Fourier Transform	A-4
A.2.4	Inverse Fourier Transform	A-4
A.2.5	Properties of Fourier Transform	A-4
A.2.6	F. T. of Periodic Signals	A-6
A.2.7	F. T. of Standard Signals	A-6
A.3	Power and Energy Theorems	A-6
A.3.1	Parseval's Power Theorem	A-6
A.3.2	Rayleigh's Energy Theorem	A-7
A.4	Spectral Density Functions	A-7
A.4.1	Energy Spectral Density (ESD)	A-7
A.4.2	Power Spectral Density (PSD)	A-7
A.5	Correlation of Energy Signals	A-7
A.5.1	Auto-Correlation Function for the Energy Signals	A-7
A.5.2	Cross-Correlation of Energy Signals	A-8
A.5.3	Auto-Correlation Function of Power Signals	A-8
A.5.4	Cross-Correlation of Power Signals	A-8
A.6	Sampling Process	A-9
A.6.1	Sampling Theorem	A-9

Module 1**Chapter 1 : Introduction to Digital Communication System 1-1 to 1-10**

Syllabus : Introduction to digital communication system, Significance of AWGN channel, Pulse dispersion in the channel.

1.1	Introduction	1-2
1.2	Sources and Signals	1-2
1.2.1	Analog to Digital Conversion	1-2
1.2.2	Graphical Representation of A/D Conversion Process	1-2

1.3	Digital Communication System (DCS)	1-3
1.4	Significance of Digitization	1-5
1.4.1	Advantages of Digital Communication	1-7
1.4.2	Disadvantages	1-7
1.4.3	Comparison of Analog and Digital Modulation	1-7
1.5	Channels for Digital Communications	1-8
1.6	AWGN Channel	1-8
1.7	Pulse Dispersion in Channel	1-9
	• Review Questions	1-10

Module 1**Chapter 2 : Concept of Probability Theory 2-1 to 2-42**

Syllabus : **Concept of Probability Theory in Communication Systems** : Introduction to probability and sample space, Baye's rule, Conditional probability and statistical independence, Relation between probability and probability density, PDF,CDF. Random variables, Mean and Variance of Random variables and sum of random variables, Definition with examples.

Gaussian, Rayleigh PDF and Rician Distribution, Binomial Distribution, Poisson Distribution, Central-Limit Theorem.

2.1	Introduction	2-2
2.2	Important Definitions	2-2
2.2.1	A Random Experiment	2-2
2.2.2	Sample Space	2-2
2.2.3	Event	2-2
2.2.4	Complement of an Event	2-2
2.2.5	Union of Events	2-3
2.2.6	Intersection of Events	2-3
2.2.7	Disjoint or Mutually Exclusive Events	2-3
2.2.8	Mutually Independent Events	2-3
2.3	Definition of Probability	2-3
2.3.1	Properties of Probability	2-4
2.3.2	Conditional Probability	2-4
2.3.3	Bayes' Rule	2-5
2.3.4	Statistically Independent Events and their Probability	2-5
2.3.5	Bernoulli Trials	2-6
2.3.6	Definitions, Types and rules of probability	2-6
2.4	Random Variables	2-11
2.4.1	Types of Random Variables	2-11
2.4.2	Discrete Random Variables	2-11
2.4.3	Continuous Random Variable	2-12



2.5	Cumulative Distribution Function (CDF)	2-12	3.1	Introduction to Information Theory	3-2
2.5.1	Important Properties of CDF	2-12	3.1.1	Uncertainty and Information	3-2
2.5.2	CDF for Discrete Random Variables	2-13	3.2	Information (Measure of Information)	3-3
2.5.3	Definitions and Properties of CDF	2-13	3.2.1	Properties of Information	3-3
2.5.4	Solved Examples on CDF	2-14	3.3	Types of Sources and their Models	3-5
2.6	Probability Density Function (PDF)	2-18	3.3.1	Analog Information Sources	3-5
2.6.1	Properties of PDF	2-18	3.3.2	Discrete Information Sources	3-5
2.6.2	Relation between Probability and PDF ...	2-19	3.4	Average Information or Entropy	3-5
2.6.3	Definition and Properties of PDF	2-19	3.4.1	Expression for Entropy	3-5
2.6.4	Solved Examples on PDF	2-20	3.4.2	Properties of Entropy	3-6
2.7	Transformation of a Random Variables	2-24	3.4.3	Entropy of a Binary Memoryless Source ...	3-7
2.8	Statistical Averages	2-24	3.5	Information Rate (R)	3-8
2.8.1	Mean Value / Average Value / Expected Value	2-25	3.6	Shannon's First Theorem (Source Coding Theorem)	3-12
2.8.2	Mean Value of a Continuous Random Variable	2-25	3.6.1	Shannon-Fano Code	3-13
2.8.3	n th Moment of Random Variable X	2-26	3.6.2	Shannon - Fano Algorithm	3-13
2.8.4	The Central Moment	2-26	3.6.3	Huffman Coding	3-17
2.8.5	Variance of a Random Variable (σ_x^2)	2-26	3.6.4	Comparison of Shannon Fano and Huffman Coding	3-26
2.8.6	Mean and Variance of the Sum of RVs ...	2-29	3.7	Applications of Source Coding	3-27
2.8.7	Mean of the Product of Independent RVs	2-30	3.8	Channel Capacity	3-27
2.9	Probability Models (Useful PDF and CDFs)	2-30	3.9	Shannon's Theorem on the Channel Capacity (Channel Coding Theorem)	3-27
2.9.1	Need to use Standard Models	2-30	3.10	Shannon Hartley Channel Capacity Theorem	3-30
2.9.2	Binomial Distribution	2-31	3.10.1	Trade-off between B.W. and SNR	3-31
2.9.3	Poisson Distribution	2-33	3.11	Implications of Information Capacity Theorem ..	3-35
2.9.4	Gaussian Distribution (or Normal Distribution)	2-33		• Review Questions	3-37
2.9.5	Uniform Distribution	2-35			
2.9.6	Error Function	2-37			
2.9.7	Complementary Error Function	2-37			
2.9.8	The Q Function	2-37			
2.9.9	Rayleigh's Distribution	2-38			
2.10	Central Limit Theorem	2-39			
	• Review Questions	2-41			

Module 2**Chapter 3 : Information Theory and Source Coding****3-1 to 3-38**

Syllabus : Measure of information, Entropy, Information rate, Channel capacity, Shannon Hartley Capacity theorem and its implications, Shannon fano encoding, Huffman encoding, Code efficiency and redundancy examples and applications of source coding.

Module 3**Chapter 4 : Pulse Shaping for Optimum Transmission****4-1 to 4-30**

Syllabus : Line codes and their desirable properties, PSD of digital data, Baseband PAM transmission : Concept of Inter symbol interference (ISI), Raised Cosine filter, Nyquist Bandwidth. Concept of equalizer to overcome ISI.

4.1	Introduction	4-2
4.2	Baseband System	4-2
4.3	Line Coding	4-2
4.3.1	Classification of Line Codes	4-3
4.3.2	Properties of Line Codes	4-4
4.3.3	Unipolar RZ Line Code	4-5
4.3.4	Unipolar NRZ Format	4-5
4.3.5	Polar RZ Line Code	4-6
4.3.6	Polar NRZ Line Code	4-6



<p>4.3.7 Bipolar NRZ Format (AMI) 4-7</p> <p>4.3.8 Split Phase Manchester Format 4-8</p> <p>4.3.9 Polar Quaternary NRZ Format 4-8</p> <p>4.4 Power Spectra of Line Codes 4-9</p> <p>4.4.1 Data signalling rate 4-9</p> <p>4.4.2 Modulation Rate 4-9</p> <p>4.4.3 Power Spectra 4-9</p> <p>4.4.4 PSD of NRZ Unipolar Format 4-9</p> <p>4.4.5 PSD of NRZ Polar Format 4-10</p> <p>4.4.6 PSD of NRZ Bipolar Format 4-11</p> <p>4.4.7 PSD of the Manchester Format 4-11</p> <p>4.5 Comparison of Line Codes Base on Power Spectra 4-13</p> <p>4.5.1 Comparison of Line Codes 4-13</p> <p>4.5.2 Difference between Channel Coding and Line Coding 4-17</p> <p>4.5.3 Synchronization 4-17</p> <p>4.6 Pulse Transmission through a Band limited Channel 4-18</p> <p>4.7 Inter-symbol Interference (ISI) 4-18</p> <p>4.7.1 Causes of Inter symbol Interference 4-19</p> <p>4.7.2 Effect of ISI 4-20</p> <p>4.7.3 Remedy to Reduce the ISI 4-21</p> <p>4.8 Nyquist Criterion for Distortionless Baseband Binary Transmission 4-21</p> <p>4.8.1 Ideal Solution 4-23</p> <p>4.8.2 Raised Cosine Filter..... 4-23</p> <p>4.9 Eye Diagram 4-24</p> <p>4.10 Equalization 4-26</p> <p>4.10.1 Tapped Delay Line Filter 4-27</p> <p>4.10.2 Decision Feedback Equalizer 4-27</p> <p>4.11 Inter-Channel interference (ICI) 4-28</p> <p>4.11.1 Comparison of ISI and interchannel interference 4-28</p> <p>• Review Questions..... 4-29</p>	<div style="border: 1px solid black; padding: 5px; margin-bottom: 10px;"> <p>Modulation and Demodulation: BFSK, MSK, M-ary FSK, Introduction to spread spectrum modulation, OFDM</p> <p>Comparison of all techniques based on Spectral efficiency, Power efficiency, Probability of error in detection.</p> </div> <p>5.1 Introduction 5-2</p> <p>5.1.1 Hierarchy of Digital Modulation Techniques 5-2</p> <p>5.1.2 Probability of Error (P_e) 5-2</p> <p>5.1.3 Power Spectra 5-2</p> <p>5.1.4 Bandwidth Efficiency 5-2</p> <p>5.2 Pass-band Transmission Model 5-2</p> <p>5.3 Digital to Analog Conversion 5-3</p> <p>5.3.1 Need of Digital Modulation 5-3</p> <p>5.3.2 Types of Digital Carrier Modulation 5-4</p> <p>5.3.3 Analogy with Analog Schemes 5-4</p> <p>5.4 Classification of Digital Modulation 5-4</p> <p>5.5 Binary and M-ary Transmission 5-5</p> <p>5.5.1 Binary transmission 5-5</p> <p>5.5.2 M-ary Transmission 5-5</p> <p>5.6 Binary Amplitude Shift Keying (BASK) 5-5</p> <p>5.6.1 Frequency Spectrum of BASK 5-6</p> <p>5.6.2 Bandwidth of BASK Signal 5-6</p> <p>5.6.3 Coherent Detection of BASK 5-6</p> <p>5.6.4 Noncoherent Detection of ASK 5-7</p> <p>5.6.5 Error Probability of ASK 5-7</p> <p>5.6.6 Constellation Diagram 5-8</p> <p>5.6.7 Constellation Diagram of ASK 5-9</p> <p>5.6.8 Merits and Demerits of ASK 5-9</p> <p>5.7 M-ary Pulse Modulation 5-9</p> <p>5.7.1 Types 5-9</p> <p>5.7.2 Transmission Bandwidth 5-10</p> <p>5.7.3 Price Paid for Reducing the Channel Bandwidth 5-11</p> <p>5.8 Phase Shift Keying (PSK) 5-11</p> <p>5.8.1 Binary Phase Shift Keying (BPSK) 5-11</p> <p>5.8.2 BPSK Generation 5-11</p> <p>5.8.3 Mathematical Representation of BPSK 5-12</p> <p>5.8.4 BPSK Coherent Receiver 5-12</p> <p>5.8.5 Spectrum of BPSK 5-13</p> <p>5.8.6 Bandwidth of BPSK 5-14</p> <p>5.8.7 Geometrical Representation of BPSK 5-14</p>
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Module 4

Chapter 5 : Digital Modulation Techniques 5-1 to 5-74

Syllabus : Concept of Binary and M-ary transmission, Coherent and Non- Coherent reception, Power spectral density of Pass-band signal, Signal space Representation and Euclidian distance.

Pass Band Amplitude modulation and Demodulation: BASK, M-ary PAM, Digital Phase Modulation and Demodulation: BPSK, OQPSK, QPSK, M-ary PSK, QAM, Digital Frequency



5.8.8	Euclidian Distance (D)	5-14	5.12.2	8- PSK System	5-37
5.8.9	Error Probability of BPSK (with Coherent Detection)	5-15	5.12.3	PSD and Bandwidth of M-ary PSK	5-38
5.8.10	Constellation Diagram of BPSK	5-16	5.12.4	M-ary PSK Transmitter	5-38
5.8.11	Advantages of BPSK	5-16	5.12.5	M-ary PSK Receiver	5-39
5.8.12	Disadvantage of BPSK	5-16	5.12.6	Advantages of M-ary PSK	5-40
5.8.13	Applications	5-16	5.12.7	Disadvantages of M-ary PSK	5-40
5.9	Binary Frequency Shift Keying (FSK)	5-17	5.12.8	Probability of Symbol Error for MPSK	5-42
5.9.1	Mathematical Representation of BFSK ...	5-17	5.13	Quadrature Amplitude Shift Keying (QASK) or QAM	5-42
5.9.2	Generation of BFSK	5-17	5.13.1	Geometrical Representation of QASK	5-42
5.9.3	Spectrum of BFSK	5-18	5.13.2	Types of QAM	5-44
5.9.4	Bandwidth of BFSK	5-19	5.13.3	4 QAM and 8 QAM Systems	5-44
5.9.5	BFSK Receiver (Coherent Receiver)	5-19	5.13.4	QASK Transmitter	5-44
5.9.6	Noncoherent BFSK Receiver	5-19	5.13.5	QASK Receiver	5-45
5.9.7	Geometric Representation of Orthogonal BFSK	5-20	5.13.6	PSD and Bandwidth of QASK System	5-46
5.9.8	Advantages of BFSK	5-21	5.13.7	Error Probability of 16 QAM	5-46
5.9.9	Disadvantages of BFSK	5-21	5.13.8	Comparison of QASK and QPSK	5-47
5.9.10	Applications of BFSK	5-21	5.13.9	Comparison of 16 PSK with 16 QASK	5-47
5.9.11	Difference between Orthogonal and Non-orthogonal BFSK	5-21	5.14	M-ary FSK System	5-48
5.10	Comparison of BASK, BFSK, BPSK	5-21	5.14.1	Spectrum of M-ary FSK	5-49
5.11	Quadrature PSK (QPSK)	5-22	5.14.2	Bandwidth of M-ary FSK	5-49
5.11.1	Principle and Waveforms	5-22	5.14.3	Advantage of M-ary FSK	5-49
5.11.2	Mathematical Representation of QPSK ..	5-23	5.14.4	Disadvantages	5-50
5.11.3	Symbol Transmission Rate	5-23	5.14.5	Geometric Representation of M-ary FSK	5-50
5.11.4	Constellation Diagram of QPSK	5-23	5.14.6	Probability of Symbol Error for MFSK (Coherent Detection)	5-50
5.11.5	Offset QPSK (OQPSK) Transmitter	5-24	5.14.7	Comparison of M-ary PSK and M-ary FSK	5-50
5.11.6	Non-offset QPSK Transmitter	5-26	5.15	Minimum Shift Keying (MSK)	5-51
5.11.7	The QPSK Receiver	5-27	5.15.1	Waveforms of MSK	5-51
5.11.8	Signal Space Representation of QPSK	5-28	5.15.2	Expression for MSK Signal	5-52
5.11.9	Conclusions (Euclidian Distance d)	5-30	5.15.3	MSK is called as Shaped QPSK	5-52
5.11.10	Spectrum of QPSK	5-30	5.15.4	To Prove that MSK is FSK	5-53
5.11.11	Bandwidth of QPSK	5-31	5.15.5	Values of f_H and f_L	5-53
5.11.12	Error Probability for QPSK System	5-31	5.15.6	Signal Space Representation of MSK	5-54
5.11.13	Advantages of QPSK	5-32	5.15.7	Phase Continuity in MSK	5-55
5.11.14	Disadvantage	5-33	5.15.8	MSK Transmitter	5-56
5.11.15	Applications	5-33	5.15.9	MSK Receiver	5-57
5.11.16	QPSK is Better than PSK	5-33	5.15.10	Advantages of MSK	5-58
5.11.17	Comparison of BPSK and QPSK	5-33	5.15.11	Disadvantages of MSK System	5-58
5.11.18	Comparison of OQPSK and QPSK	5-34	5.15.12	PSD and Bandwidth of MSK	5-58
5.12	M-ary PSK	5-36	5.15.13	Comparison of QPSK and MSK Spectra ..	5-59
5.12.1	Euclidian Distance (d)	5-37			



6.11	Parity Check Matrix of Block Codes	6-19
6.11.1	Error Detection using Parity Check Matrix	6-20
6.11.2	Relation between H and d_{\min}	6-20
6.12	Decoding LBC using Parity Check Matrix	6-24
6.12.1	Shannon's Limit	6-25
6.13	Syndrome Decoding	6-25
6.13.1	Error Vector (E)	6-25
6.13.2	Syndrome Vector (S)	6-25
6.13.3	Procedure for Syndrome Decoding	6-26
6.13.4	Hamming Bound	6-39
6.14	Syndrome Generator	6-39
6.15	Generalised Decoder of LBC	6-39
6.16	Hamming Codes	6-40
6.16.1	Error Detection and Correction Capabilities of Hamming Code	6-40
	• Review Questions.....	6-43

Module 5**Chapter 7 : Cyclic Codes 7-1 to 7-34**

Syllabus : Cyclic codes : Generator polynomial for Cyclic codes, Systematic cyclic codes, Feedback shift register for Polynomial division.

7.1	Introduction to Cyclic Codes :	7-2
7.1.1	Definition of Cyclic Code	7-2
7.2	Polynomial Representation of Cyclic Codes	7-3
7.3	Generating the Cyclic Codes	7-3
7.3.1	Generator Polynomial	7-3
7.3.2	Generation of Non-systematic Code Words	7-4
7.4	Systematic Cyclic Codes	7-6
7.4.1	Generation of Systematic Code words	7-6
7.5	Matrix Description of Cyclic Codes	7-8
7.5.1	Generator Matrices of the Cyclic Codes	7-8
7.5.2	Use of Generator Matrix to Obtain the Code words	7-8
7.5.3	Systematic Form of Generator Matrix	7-9
7.6	Parity Check Matrix	7-9
7.6.1	Comparison of Systematic and Non-systematic Cyclic Codes	7-10
7.7	Cyclic Redundancy Check (CRC)	7-11
7.7.1	CRC Encoder and Decoder	7-11
7.7.2	Procedure to obtain CRC	7-12
7.7.3	Requirements of CRC	7-12

7.7.4	CRC Generator	7-12
7.7.5	CRC Checker	7-13
7.8	Syndrome Decoding of Cyclic Codes	7-13
7.8.1	Syndrome Polynomial	7-13
7.8.2	Syndrome Decoding	7-14
7.9	Advantages and Disadvantages of Cyclic Codes	7-18
7.9.1	Advantages of Cyclic Codes	7-18
7.9.2	Disadvantages of Cyclic Codes	7-18
7.10	Circuit Implementation of Cyclic Codes	7-18
7.10.1	The Circuit Elements used in Encoder or Decoder	7-18
7.10.2	Encoder for the Cyclic Codes	7-19
7.10.3	Drawing the Encoder Circuit	7-20
7.11	Non-algebraic Decoding of Cyclic Codes	7-28
7.11.1	Syndrome Calculator for the Systematic Cyclic Codes	7-28
	• Review Questions.....	7-34

Module 5**Chapter 8 : Convolution Codes 8-1 to 8-32**

Syllabus : Convolution code : Convolution encoder, Impulse response of encoder, State diagram, Tree diagram, Trellis diagram representations.

8.1	Introduction to Convolution Codes	8-2
8.1.1	Tree Codes and Convolution Codes	8-2
8.1.2	Convolution Encoder	8-2
8.1.3	Word length (k)	8-3
8.1.4	Block length (n)	8-3
8.1.5	Simplified Convolution Encoder	8-3
8.2	Graphical Representation for Convolution Encoding	8-5
8.2.1	State Diagram	8-5
8.2.2	Trellis Diagram	8-5
8.2.3	Encoding using the Trellis Diagram	8-6
8.3	Mathematical Representation of Encoding	8-7
8.3.1	Practical Convolution Encoder	8-7
8.3.2	Definitions For Convolution Codes	8-7
8.3.3	Time Domain Approach (Impulse Response of Encoder)	8-8
8.3.4	Transform - Domain Approach (Polynomial Description of Convolution Codes)	8-10
8.3.5	Graphical Representation	8-11
8.3.6	The Code Tree	8-11
8.3.7	Code Trellis	8-13



8.3.8	State Diagram	8-13	9.6.5	Effect of Gaussian Noise on Bipolar Signals	9-9
8.3.9	Parity Check Matrix	8-15	9.6.6	To Determine the Error Rate of Pulse System	9-10
8.3.10	Syndrom Polynomial Vector	8-15	9.6.7	Error Probability	9-10
8.3.11	Systematic Encoder	8-15	9.6.8	Maximum Likelihood Detector	9-10
8.4	Decoding Methods of Convolution Codes	8-25	9.7	Effect of Noise on Signal	9-11
8.4.1	Viterbi Decoding	8-25	9.7.1	Requirements of a Detection Technique	9-12
8.4.2	Hard-Decision Viterbi Decoding	8-26	9.7.2	Detection Theory	9-12
8.4.3	Metric Diversion Effect	8-28	9.7.3	Detection Techniques	9-13
8.4.4	Decoding Window	8-28	9.8	Integrate and Dump Receiver (Filter)	9-13
8.4.5	Soft Decision Viterbi Decoding	8-29	9.8.1	Signal to Noise Ratio of Integrate and Dump Receiver (Filter)	9-14
8.4.6	Comparison of Convolution Codes and Block Codes	8-32	9.8.2	Probability of Error for Integrate and Dump Receiver	9-16
	• Review Questions.....	8-32	9.9	The Optimum Receiver	9-20
			9.9.1	Probability of Error for an Optimum Filter	9-21
			9.9.2	Optimum Filter Transfer Function $H(f)$	9-22
			9.10	Matched Filter	9-24
			9.10.1	Impulse Response of a Matched Filter ...	9-25
			9.10.2	Probability of Error the Matched Filter ...	9-26
			9.10.3	Signal to Noise Ratio of a Matched Filter	9-27
			9.10.4	Properties of Matched Filter	9-27
			9.11	Coherent Reception (Correlation)	9-31
			9.11.1	Correlator Realization of a Matched Filter	9-32
			9.11.2	Comparison of Matched Filter and Correlator	9-33
			9.12	Maximum-Likelihood Receiver	9-33
			9.13	Correlator Receiver	9-34
			9.14	Gram-Schmidt Procedure	9-35
				• Review Questions	9-36
				• Appendix-A	A-1 to A-2
				• Appendix-B	B-1 to B-1
				• Appendix-C	C-1 to C-1
				• Appendix-D	D-1 to D-2
				• Appendix-E	E-1 to E-1
				• Appendix-F	F-1 to F-1

Module 6**Chapter 9 : Optimum Reception of Digital Signals****9-1 to 9-36**

Syllabus : A baseband signal receiver and its probability of error. The optimum receiver and filter. Matched filter and its probability of error.

9.1	Introduction	9-2
9.1.1	White Gaussian Noise	9-2
9.2	Probability of Error (P_e)	9-2
9.2.1	Detection and Estimation	9-3
9.2.2	Digital Communication System	9-3
9.3	Vector Space Representation of Signals	9-4
9.3.1	Unit Vectors	9-4
9.3.2	Representation of a Vector	9-4
9.3.3	Scalar Product of Vectors	9-4
9.3.4	Independent Vectors	9-4
9.3.5	Basis Vectors	9-5
9.4	Signal as a Vector	9-5
9.4.1	Concept of Signal Space	9-5
9.4.2	Vectors of Orthogonal Signals	9-5
9.5	Geometric Representation of Signals	9-6
9.5.1	Signal Space Representation	9-7
9.5.2	N-dimensional Signal Space	9-7
9.5.3	Detection of Known Signals in Noise	9-8
9.6	Coherent Detection of Binary Signals in Presence of Noise	9-8
9.6.1	Gaussian Noise and its PDF	9-9
9.6.2	Variance and Standard Deviation	9-9
9.6.3	Mathematical Representation of a Gaussian PDF	9-9
9.6.4	How to use the PDF Curves ?.....	9-9