



TABLE OF CONTENTS

I. CERTIFICATION TRAINING OVERVIEW I-1	2. PDF III-23
CRE BODY OF KNOWLEDGE I-6	3. CDF III-27
SIX COGNITIVE LEVELS I-14	4. Hazard Function III-29
CRE QUESTION CONTENT I-16	5. Continuous Distributions III-30
II. RELIABILITY MANAGEMENT II-1	6. Discrete Distributions III-60
A. STRATEGIC MANAGEMENT II-2	7. Sampling Distributions III-72
1. Benefits of Reliability Engineering II-2	D. STATISTICAL PROCESS CONTROL III-78
2. Quality Vs Reliability II-5	E. REFERENCES III-88
3. Role of the Reliability Function II-7	IV. ADVANCED STATISTICS IV-1
4. Reliability in Development II-10	A. STATISTICAL INFERENCE IV-2
5. Failure and Liability Management II-15	1. Point and Interval Estimates IV-2
6. Life Cycle Cost Planning II-18	2. Statistical Interval Estimates IV-7
7. Customer Needs Assessment II-25	3. Hypothesis Testing IV-12
8. Project Management II-32	4. Bayesian Technique IV-46
B. RELIABILITY PROGRAM MANAGEMENT II-47	B. DOE/ANOVA/REGRESSION IV-50
1. Terminology II-47	1. Design of Experiments IV-50
2. Reliability Program Elements II-62	2. Anova IV-89
3. Product Life Cycle and Costs II-64	3. Regression IV-99
4. Design Evaluation II-69	C. REFERENCES IV-112
5. Requirements Management II-72	V. RELIABILITY IN DESIGN V-1
6. Reliability Training Programs II-75	A. RELIABILITY DESIGN TECHNIQUES V-2
C. PRODUCT SAFETY AND LIABILITY II-80	1. Use Factors V-4
1. Roles and Responsibilities II-80	2. Stress-Strength Analysis V-6
2. Ethical Issues II-82	3. FMEA/FMECA in Design V-8
3. System Safety Program II-85	4. Fault Tree Analysis in Design V-15
D. REFERENCES II-121	5. Tolerance/Worst-Case Analyses V-16
III. BASIC STATISTICAL CONCEPTS III-1	6. Robust Design Approaches V-19
A. STATISTICAL TERMS III-2	7. Human Factors Reliability V-35
B. BASIC PROBABILITY CONCEPTS III-10	8. Design for X (DFX) V-39
1. Additive Law III-14	B. PARTS AND SYSTEMS MANAGEMENT V-47
2. Multiplicative Law III-15	1. Parts Selection V-47
3. Permutations III-16	2. Material Selection and Control V-52
4. Combinations III-17	3. Derating Principles V-54
C. PROBABILITY DISTRIBUTIONS III-18	4. Establishing Specifications V-60
1. Expectation III-21	C. REFERENCES V-62

VI. MODELING AND PREDICTION	VI-1	IX. DATA COLLECTION AND USE	IX-1
A. RELIABILITY MODELING	VI-2	A. DATA COLLECTION	IX-2
1. Sources of Reliability Data	VI-2	1. Types of Data	IX-2
2. Block Diagrams	VI-7	2. Data Sources	IX-6
3. Simulation Techniques	VI-34	3. Collection Methods	IX-7
B. RELIABILITY PREDICTION	VI-40	4. Data Management	IX-11
1. Parts Count Predictions	VI-40	B. DATA USE	IX-17
2. Advantages and Limitations	VI-42	1. Data Summarization	IX-17
3. Prediction Methods	VI-48	2. Preventive and Corrective Action ...	IX-25
4. Apportionment/Allocation	VI-50	3. Measures of Effectiveness	IX-34
C. REFERENCES	VI-54	C. DATA AND FAILURE ANALYSIS TOOLS	IX-40
VII. RELIABILITY TESTING	VII-1	1. FMEA/FMECA	IX-40
A. RELIABILITY TEST PLANNING	VII-2	2. FTA/STA	IX-43
1. Reliability Test Plan Elements	VII-3	3. FRACAS	IX-48
2. Testing Types and Applications	VII-7	D. REFERENCES	IX-52
3. Test Environment Considerations ...	VII-13	X. APPENDIX	X-1
B. DEVELOPMENT TESTING	VII-16	A. TABLES	X-2
1. Accelerated Life Tests	VII-16	B. SUPPLEMENT	X-16
2. Step-Stress Testing	VII-21	C. CALCULUS REVIEW	X-18
3. Reliability Growth Testing	VII-24	D. AUTHOR/NAME INDEX	X-27
4. Software Testing	VII-32	E. FORMULAS INDEX	X-28
C. PRODUCT TESTING	VII-38	F. SUBJECT INDEX	X-31
1. Qualification Testing	VII-38	G. QUESTION ANSWERS	X-43
2. Product Acceptance Testing	VII-56		
3. Stress Screening	VII-58		
4. Attribute Testing	VII-68		
5. Degradation Testing	VII-79		
6. Software Testing	VII-83		
D. REFERENCES	VII-92		
VIII. MAINTAINABILITY AND AVAILABILITY	VIII-1		
A. MANAGEMENT STRATEGIES	VIII-2		
1. Planning	VIII-2		
2. Maintenance Strategies	VIII-7		
3. Apportionment and Allocation	VIII-14		
4. Availability Tradeoffs	VIII-17		
B. ANALYSES	VIII-25		
1. Maintenance Time Distributions ...	VIII-26		
2. Preventive Maintenance Analysis ..	VIII-33		
3. Corrective Maintenance Analysis ..	VIII-38		
4. Testability	VIII-41		
5. Spare Parts Strategy	VIII-45		
C. SOFTWARE MAINTAINABILITY	VIII-51		
D. REFERENCES	VIII-55		