

Contents

Chapter 1. <i>Introduction</i>	1
Notes	5
Chapter 2. <i>Required Background in Set Theory</i>	7
2.1. Set Inclusion and Characteristic Function	7
2.2. Operations on Sets	9
2.3. Classes of Sets	15
2.4. Atoms and Holes	22
2.5. S -Compact Spaces	28
2.6. Relations, Posets, and Lattices	30
Notes	34
Exercises	34
Chapter 3. <i>Fuzzy Measures</i>	39
3.1. Fuzzy Measures and Semicontinuous Fuzzy Measures	39
3.2. λ -Fuzzy Measures	42
3.3. Quasi-measures	50
3.4. Belief Measures and Plausibility Measures	54
3.5. Possibility Measures and Necessity Measures	62
3.6. Properties of Finite Fuzzy Measures	66
Notes	68
Exercises	69
Chapter 4. <i>Extensions</i>	73
4.1. Extension of Quasi-Measures and λ -Fuzzy Measures	73
4.2. Extension of Semicontinuous Fuzzy Measures	78
4.3. Absolute Continuity and Extension of Fuzzy Measures ...	81
4.4. Extension of Possibility Measures and Necessity Measures	84
Notes	91
Exercises	91

Chapter 5. <i>Structural Characteristics for Set Functions</i>	95
5.1. Null-Additivity	95
5.2. Autocontinuity	97
5.3. Uniform Autocontinuity	106
5.4. Structural Characteristics of Monotone Set Functions	107
5.5. Fuzzy Measures on S -Compact Spaces	110
Notes	111
Exercises	111
Chapter 6. <i>Measurable Functions on Fuzzy Measure Spaces</i>	115
6.1. Measurable Functions	115
6.2. "Almost" and "Pseudo-Almost"	117
6.3. Relation Among Convergences of Measurable Function Sequence	120
6.4. Convergences of Measurable Function Sequence on Possibility Measure Spaces	126
Notes	128
Exercises	128
Chapter 7. <i>Fuzzy Integrals</i>	131
7.1. Definition	131
7.2. Properties of the Fuzzy Integral	135
7.3. Convergence Theorems of the Fuzzy Integral Sequence ...	143
7.4. Transformation Theorem for Fuzzy Integrals	152
7.5. Fuzzy Measures Defined by Fuzzy Integrals	154
7.6. Fuzzy Integrals with Respect to a Nonnegative Monotone Set Function	157
Notes	159
Exercises	160
Chapter 8. <i>Pan-Integrals</i>	163
8.1. Pan-Additions and Pan-Multiplications	163
8.2. Definition of Pan-Integral	164
8.3. Properties of Pan-Integral	168
8.4. A Transformation Theorem	170
Notes	173
Exercises	173

Chapter 9. <i>Applications</i>	175
9.1. <i>General Remarks</i>	175
9.2. <i>Dempster-Shafer Theory</i>	176
9.3. <i>Possibility Theory</i>	181
9.4. <i>Fuzzy Measures and Fuzzy Integrals</i>	184
9.5. <i>Fuzzy Convolution of Fuzzy Distributions</i>	190
Notes	192
References	195
Appendix A. <i>Some Concepts and Results Regarding Classical Measures</i>	203
Appendix B. <i>Some Concepts and Results Regarding Fuzzy Sets</i>	209
Appendix C. <i>Glossary of Key Concepts</i>	219
Appendix D. <i>Glossary of Symbols</i>	227
Appendix E. <i>New Directions in Fuzzy Measure Theory</i>	231
Appendix F. <i>Representative Applications of Fuzzy Measure Theory</i>	285
Author Index	343
Subject Index	347