

# Contents

Editor's Preface . . . . .	xi
Preface . . . . .	xiii
List of Symbols . . . . .	xvii
Chapter I: Introduction . . . . .	1
Chapter II: Elementary Theory of Orthomodular Lattices . . . . .	28
1. Ortholattices . . . . .	28
2. Commutativity . . . . .	37
3. Orthomodular lattices . . . . .	40
4. Properties of commutativity in orthomodular lattices . . . . .	49
5. Characteristic properties of orthomodular lattices . . . . .	52
6. Interval algebra . . . . .	55
Exercises . . . . .	66
Chapter III: Structure of Orthomodular Lattices . . . . .	70
1. Skew operations . . . . .	70
2. Free orthomodular lattice $F_2$ . . . . .	75
3. Introduction to Hilbert spaces . . . . .	94
4. Projection lattice of a Hilbert space . . . . .	109
Exercises . . . . .	115
Chapter IV: Amalgams . . . . .	118
1. Amalgams of posets . . . . .	118
2. Amalgams of lattices . . . . .	132
3. Amalgams of orthomodular lattices . . . . .	136
4. Atomic amalgams of Boolean algebras . . . . .	142
Exercises . . . . .	158

Chapter V: Generalized Orthomodular Lattices . . . . .	162
1. Orthogonality relation . . . . .	162
2. Janowitz's embedding . . . . .	169
3. Congruence relations . . . . .	174
4. Congruence relations and p-ideals . . . . .	182
5. Commutators . . . . .	192
Exercises . . . . .	197
Chapter VI: Solvability of Generalized Orthomodular Lattices . . . . .	199
1. Reflective and coreflective congruences . . . . .	199
2. Projective allelomorph . . . . .	214
3. Commutator sublattices . . . . .	219
4. Solvability in equational classes of lattices . . . . .	228
Exercises . . . . .	232
Chapter VII: Special Properties of Orthomodularity . . . . .	235
1. Commutators of $n$ elements . . . . .	235
2. Finitely generated orthomodular lattices . . . . .	246
3. Formulas for orthomodular lattices . . . . .	257
4. Exchange theorems . . . . .	262
5. Center of an orthomodular lattice . . . . .	267
6. Identities and operations . . . . .	270
7. Analogues of Foulis-Holland Theorem . . . . .	277
Exercises . . . . .	286
Chapter VIII: Application . . . . .	289
1. Orthomodularity and experimental propositions . . . . .	289
2. Compatibility . . . . .	304
3. Dimension theory . . . . .	312
4. Orthologics . . . . .	325
Exercises . . . . .	338



Answers to Exercises . . . . .	342
Solutions to Exercises of Chapter II . . . . .	342
Solutions to Exercises of Chapter III . . . . .	346
Solutions to Exercises of Chapter IV . . . . .	349
Solutions to Exercises of Chapter V . . . . .	354
Solutions to Exercises of Chapter VI . . . . .	357
Solutions to Exercises of Chapter VII . . . . .	362
Solutions to Exercises of Chapter VIII . . . . .	367
References . . . . .	375
Subject Index . . . . .	390