

Contents

Terminology and notation	1
<i>Chapter I. Finite joins and meets</i>	
§ 1. Definition of Boolean algebras	3
§ 2. Some consequences of the axioms	6
§ 3. Ideals and filters	11
§ 4. Subalgebras	13
§ 5. Homomorphisms, isomorphisms	15
§ 6. Maximal ideals and filters	17
§ 7. Reduced and perfect fields of sets	20
§ 8. A fundamental representation theorem	23
§ 9. Atoms	27
§ 10. Quotient algebras	29
§ 11. Induced homomorphisms between fields of sets	32
§ 12. Theorems on extending to homomorphisms	35
§ 13. Independent subalgebras. Products	39
§ 14. Free Boolean algebras	42
§ 15. Induced homomorphisms between quotient algebras	45
§ 16. Direct unions	50
§ 17. Connection with algebraic rings	51
<i>Chapter II. Infinite joins and meets</i>	
§ 18. Definition	54
§ 19. Algebraic properties of infinite joins and meets. (m, n) -distributivity	59
§ 20. m -complete Boolean algebras	65
§ 21. m -ideals and m -filters. Quotient algebras	74
§ 22. m -homomorphisms. The interpretation in Stone spaces	81
§ 23. m -subalgebras	91
§ 24. Representations by m -fields of sets	97
§ 25. Complete Boolean algebras	105
§ 26. The field of all subsets of a set	110
§ 27. The field of all Borel subsets of a metric space	114
§ 28. Representation of quotient algebras as fields of sets	115
§ 29. A fundamental representation theorem for Boolean σ -algebras, m -representability	117
§ 30. Weak m -distributivity	127
§ 31. Free Boolean m -algebras	131
§ 32. Homomorphisms induced by point mappings	136
§ 33. Theorems on extension of homomorphisms	141
§ 34. Theorems on extending to homomorphisms	144
§ 35. Completions and m -completions	152
§ 36. Extensions of Boolean algebras	165
§ 37. m -independent subalgebras. The field m -product	172
§ 38. Boolean (m, n) -products	175

Appendix

§ 39. Relation to other algebras	191
§ 40. Applications to mathematical logic. Classical calculi	194
§ 41. Topology in Boolean algebras. Applications to non-classical logic	198
§ 42. Applications to measure theory	201
§ 43. Measurable functions and real homomorphisms	204
§ 44. Measurable functions. Reduction to continuous functions	206
§ 45. Applications to functional analysis	207
§ 46. Applications to foundations of the theory of probability	208
§ 47. Problems of effectivity	210
Bibliography	212
List of symbols	231
Author Index	232
Subject Index	235