

CONTENTS

Introduction	11
1. Fundamental Concepts	13
1.1. Universal Algebra	13
1.2. Algorithm Theory	20
2. The Algebra of Sequential Functions	26
2.1. Sequential Functions, Automata, Logical Nets	26
2.2. Composition of Sequential Functions	40
2.3. Examples of Subalgebras of \underline{P}_k	43
3. Functions over a Finite Set	50
4. The Completeness Problem in \underline{P}_k	56
4.1. Generation of \underline{P}_k and Its Subalgebras	56
4.2. Maximal Subalgebras	68
4.3. The Undecidability of Completeness	73
5. Modifications of the Completeness Problem	80
5.1. Metric Completeness	80
5.2. Kleene-Completeness	87
5.3. Delayed Completeness	98
5.4. Strongly Connected Input Divided Automata	100
5.5. I-Completeness	104
6. The Semigroup \underline{P}_k^1	110
7. Further Completeness Concepts	116
7.1. Delayed Functions	116
7.2. The Ceitin Algebra	128
7.3. Completeness in Abstract Automata Theory	132
Bibliographical and Historical Notes	136
References	139
Index	146