



CONTENTS

TITLE PAGE	i
HALAMAN JUDUL	ii
HALAMAN PENGESAHAN	iii
DECLARATION PAGE	iv
HALAMAN PERNYATAAN	v
TRIBUTE	vi
MOTTO PAGE	vii
PREFACE	viii
CONTENTS	x
LIST OF SYMBOLS	xii
ABSTRACT	xiv
INTISARI	xv
I INTRODUCTION	1
1.1. Topic's Background	1
1.2. Formulation of The Problems	2
1.3. Research Purposes	2
1.4. Literature Review	2
1.5. Research Methodology	4
1.6. Overview of the Thesis	5
II PRELIMINARIES	7
2.1. Poset	7
2.1.1. Poset	7
2.1.2. Directed-complete Poset (DCPO)	14
2.1.3. Monotone Function	17
2.1.4. The Way-below Relation	21
2.2. Topology	28
2.2.1. Topological Spaces	28
2.2.2. Neighbourhoods, Interiors, and Closures	32
2.2.3. Topological Subspace	38
2.2.4. Continuous Function	40
2.3. Axiom of Choice and Its Variations	43
III THE SCOTT-TOPOLOGY AND CONTINUITY OF POSETS	45
3.1. Scott-topology	45



3.2. Isomorphism Between Posets	53
3.3. Basis, Embedded Basis, and Abstract Basis	55
3.4. Continuous Lattices	60
3.5. Continuous Poset and Sobriety	69
3.6. Supercontinuous and Superalgebraic Lattices	81
IV DCPO-COMPLETION OF POSETS	87
4.1. Ideal Completion	87
4.2. D-completion of Posets	91
4.3. The Scott-closed Set Lattice of D-completion	98
4.4. Invariant Properties Under the D-completion	100
4.4.1. Meet-continuity	100
4.4.2. Continuity	104
4.4.3. Algebraicity	105
V SUMMARY	106
REFERENCES	108