Contents

PREFACE		xi
Chapter 1	APPLIED LOGIC: WHAT WE HOPE TO ACCOMPLISH	. 1
1-0	Summary 1	
1-1	The Nature of Logic 1	
1-2	Talking About Words 2	
1-3	Speech Acts 3	
1-4	A Language is a Complex System 4	
1-5	Logically Important Semantic Features 5	
1-6	Applied Logic 7	
1-7	Philosphy of Logic 8	
Chapter 2	SOME PRELIMINARY MATTERS	9
2-0	Summary 9	
2-1	Definitions (Opt) 9	
2-2	Inferences and Arguments 15	
2-3	Informal Fallacies (Opt) 19	
Chapter 3	SENTENCES ABOUT INDIVIDUALS	25
- 3-0	Summary 25	
3-1	Looking Ahead 25	

	3-2 3-3 3-4	Individuals 26 Quantified Phrases 29 Universal Sentences 31	
	3-5 3-6	Some Other Universal Sentences 35 Singular Sentences 37	
Chapte	er 4	THE ARTIFICAL-LANGUAGE STRATEGY	39
	4-0	Summary 39	
	4-1	Artificial Languages 39	
	4-2	Logical Form 41	
	4-3	Evaluation 43	
	4-4	The Languages to be Developed 44	
Chapte	er 5		47
	5-0	Summary 47	
	5-1	Categorical Sentences 47	
	5-2	Semantics 49	
	5-3	Logical Form 51	
	5-4	The Complement of an Expression 33	
	0-0 5 4	Some Syntactic Relations 54	
	57	Logical Trith 62	
	J-7 5_8	Venn Diagrams 62	
	5-9	Incompatibility 68	
	5-10	Syllogisms 71	
	5-11	The Categorical Deductive System 75	
	5-12	Proving Incompatibility 83	
	5-13	Venn Diagrams for Many-Place Relations 86	
	5-14	Formal Fallacies (Opt) 93	
Chapte	er 6	APPLYING AN ARTIFICIAL LANGUAGE	99
	6-0	Summary 99	
	6-1	What We Want in a Translation 99	
	6-2	The Features We Test For 100	
	6-3	Negative Outcomes 102	
Chapte	ər 7	APPLYING THE CATEGORICAL LANGUAGE TO ENGLISH	105
	7-0	Summary 105	
	7-1	Translating English Sentences 105	
	7-2	Expressing Existential Force 114	
	/-3	Detecting Semantic Features of Existence Claims 116	
	/-4 7 r	Evaluating English Sentences and Arguments 118	
	/-5 7 ∡	Achieving Comparable Translations 123	
	7-0 7-7	Incorporating semantic regiutes in Logical Form 124 Enthymemes 128	
	,-, 7-8	What Comes Next 132	
	/ 0		

Chapter 8	THE EXTENDED CATEGORICAL LANGUAGE	133
8-0 8-1 8-2 8-3 8-4 8-5 8-5 8-6 8-7 8-8	Summary 133 The Changes We Want 133 What We Will Keep 134 Small Change 135 The Sign of Negation 141 Reasoning with Negative Sentences 150 Translating Negated Sentences 155 Singular Sentences 159 Reasoning with Singular Sentences 164	
Chapter 9	THE PROPOSITIONAL CONNECTIVE LANGUAGE	173
9-0 9-1 9-2 9-3 9-4 9-5 9-6	Summary173A Mixed Language173The Syntax and Semantics of the PC Language174Variables and Formulas179Evaluating Sentences of the PC Language186Two-Place Relations189Many-Place Relations193	
9-7 0-8	Indirect Tests 195 The Quick Method of Determining if a Formula is a Tautology	407
9-0	The suick method of belefinining if a rothlaid is a radiology	177
Chapter 10		207
10-0 10-1 10-2 10-3 10-4 10-5 10-6 10-7 10-8 10-9 10-10 10-11 10-12 10-13 10-14 10-15	A Deductive System 207 Proofs from Hypotheses 208 The Easy Rules 209 More Rules 213 Proofs within Proofs 217 Properties of the PC System 221 Proofs without Hypotheses 223 Metatheorems and Derived Rules 224 Our First Metatheorems (Opt) 225 More Metatheorems (Opt) 227 Still More Metatheorems (Opt) 229 Rules to Shorten Proofs 230 Proving Incompatibility 235 Refutation 236 What to do Next 238 THE ORIGINAL AND DERIVED RULES OF THE PC DEDUCTIVE SYSTEM 240	
Chapter 11	APPLYING THE PC LANGUAGE TO ENGLISH	245
11-0 11-1 11-2 11-3	Summary245Translations within a Single Language245Translating with the Negation Sign246Translating with `&'247	

11-4 11-5 11-6 11-7 11-8 11-9 11-10 11-11 11-12 11-13 11-14 11-15	Translations with V 251 Translations with the Horseshoe 253 Some Additional Translations 258 The Scope of a Connective 260 Identifying Sentences 261 A Further Look at the Difference Between Ordinary Conditional Sentences and Horseshoe Sentences (Opt) 264 Testing for Analyticity 268 Incompatibility 269 Entailment and Validity 270 An Important Exception 272 Incorporating Semantic Features in Logical Form 276 Enthymemes 280	
Chapter 12	THE FIRST-ORDER LANGUAGE2	:85
12-0 12-1 12-2 12-3 12-4 12-5 12-6 12-7	Summary 285 A Purely Artificial Language 285 The Truth Conditions of Atomic Sentences 287 New Varieties of Variables 289 Quantifiers 290 Multiple Quantification 293 Restricted Domains 294 A More Careful Description of the First-Order Language 295	
Chapter 13	THE FIRST-ORDER DEDUCTIVE SYSTEM	301
13-0 13-1 13-2 13-3 13-4 13-5 13-6 13-7 13-8 13-7 13-8 13-9 13-10 13-11 13-12 13-13	Summary 301 Adapting the PC System 301 Some Derived Rules 303 A Notation for Substitution 304 An Additional Notation 305 Change of Bound Variables 306 Universal Quantifier Elimination 307 Universal Quantifier Introduction 309 Existential Quantifier Introduction 310 Existential Quantifier Elimination 312 Identity Rules 313 More Derived Rules 315 Refutation 318 Incompatibility 322 RULES AND DERIVED RULES OF THE FIRST-ORDER DEDUCTIVE SYSTEM 324	
Chapter 14	APPLYING THE FIRST-ORDER LANGUAGE TO ENGLISH3	129
14-0 14-1 14-2 14-3	Summary329The Expressive Power of the First-Order Language329Predicates and Singular Terms330Quantified Phrases in English334	

14-4	Indefinite Sentences	337		
14-5	Universal Sentences	341		
14-6	Only 346			
14-7	Another Use of 'Any'	347		
14-8	Generalized Conditior	nals 349		
14-9	Analytic Sentences	352		
14-10	Incompatibility 353	3		
14-11	Entailment and Validity	[,] 355		
14-12	Comparable Translatic	ons 358		
14-13	Supplementing Our Tro	Inslations	363	
AFTERWOR	D: REFLECTIONS ON L			370
ANSWERS T	O STARRED QUESTION	NS		373
				469