CONTENTS

1

6

138

141

INTRODUCTION: BACKGROUND SET THEORY

1. RELATIONAL STRUCTURES

REFERENCES

INDEX

1.1 Definitions and examples	6
1.2 The first order language associated with a relational structure	16
1.3 Interpretations	23
2. A FORMAL SYSTEM FOR THE PREDICATE CALCULUS	40
2.1 Axioms and rules for the predicate calculus	40
2.2 Consistency	48
2.3 Language and metalanguage	52
2.4 Further metatheory	54
2.5 First order theories with equality	58
3. THE COMPLETENESS THEOREM AND ITS COROLLARIES	67
3.1 Definitions and outlines of the proof	68
3.2 Completeness for countable languages	71
3.3 Countable languages $L_{ m E}$ with equality	77
3.4 Completeness for uncountable languages	80
3.5 Applications of the compactness theorem	86
3.6 Completeness for the propositional calculus	93
4. BEGINNING MODEL THEORY	97
4.1 The Löwenheim-Skolem theorems	97
4.2 Completeness and categoricity	100
4.3 Elementary embeddings and model completeness	113
4.4 Completeness and decidability	135
FURTHER READING	137