INTRODUCTION

In this thesis, we study various classes of algebras, namely, classes of algebraic lattices and classes of commutative groupoids.

The preliminaries concepts and results have been summerized in Chapter I. These are the bases of the relationship between the classes of algebraic lattices and the classes of commutative groupoids.

In Chapter II, we study commutative groupoids with other properties, and their lattices of subalgebras. And give a definition of the representation of a class of algebraic lattices by a class of commutative groupoids. Then by using the construction in theorem in Chapter I, we prove representation theorems for various classes of algebraic lattices, namely,

i) K is the class of algebraic lattices $\mathcal{L}$ which have the property that each compact element contains only countably many compact elements,

ii) K_0^m is the class of algebraic lattices $\mathcal{L}$ in K which have m minimal elements,

iii) K_1 is the class of algebraic lattices $\mathcal{L}$ in K which are chains,

iv) K_2 is the class of algebraic lattices $\mathcal{L}$ in K which have the greatest compact element,

v) K_3^m is the class of algebraic lattices $\mathcal{L}$ in K which $L = \cup\{C_i\}_{i\in I, |I|\geq 1}$, where C_i is a finite chain of length m, and $0_i = 0_j$, $1_i = 1_j$, for $i \neq j$, $C_i \cap C_j = \{0_i, 0_j\}$,

vi) K_4 is the class of algebraic lattices $\mathcal{L}$ in K which are complemented lattices, and have the various classes of commutative groupoids to represent the various classes of algebraic lattices.

In Chapter III, we define the notion of Mal'cev varieties, and show whether the various classes of algebras studied in Chapter II are Mal'cev varieties.