

## ABSTRACT

Class field theory characterizes abelian extensions of number fields. Both local and global class field theory involve a canonical one to one correspondence between abelian field extensions  $L/K$  and certain subgroups of a corresponding module  $A_K$  associated with the field  $K$ . At the heart of this correspondence lies a reciprocity law, which is a canonical isomorphism of the abelianization of the Galois group  $Gal(L/K)$  of the extension  $L/K$  and the "norm residue group",  $A_K/NL_KA_K$ , where  $NL_KA_K$  is the subgroup of  $A_K$  mentioned above. In this thesis, this theory has been studied and presented in utmost generality. A purely group theoretic machinery, which culminates in Tate's theorem, is described in the first chapter. This involves the study of cohomology of finite groups. The next chapter deals with the development of the notion of class formation. This is the main criterion which, when combined with Tate's theorem, yields the general reciprocity law or the main theorem of abstract class field theory. Following this, the class formation of unramified extensions of  $p$ -adic number fields is described, which provides a simple yet concrete instance where this theory holds.