ABSTRACT

In this thesis, I will discuss the first three chapters of the \Galois Groups and Fundamental Groups" by Tamas Szamuely([Sza]). Chapter 1 deals with basics of field theory, Galois theory and contains an introduction to Etale algebras. We will prove the categorical anti-equivalence of continuous left Gal(k)-sets with finite etale algebras over k. Chapter 2 deals with certain results from algebraic topology using which we obtain a categorical equivalence between category of left-Pi1(X; x) sets and category of covers of X. In Chapter 3 study Riemann surfaces and holomorphic map. The covers over Riemann surfaces create a link between field theory and theory of covers. We show that the category of finite covers of X outside a finite discrete set of points is equivalent to the category of Riemann surfaces equipped with holomorphic maps onto X. Further, in this chapter, we establish that every finite group occurs as Galois group of some finite Galois extension of C(t).