

# Abstract

The study of derivations and reverse derivations provided many important and interesting results which are discussed in our work. Throughout this work  $R$  is a ring,  $\delta$  is a reverse derivation and  $\Delta$  is a generalized reverse derivation. Many algebraists studied derivation and generalized derivation on ring.

Some algebraist like M. Samman [1] studied both derivation and reverse derivation on ring. The purpose of this thesis is to introduce some new results of reverse derivations and generalized reverse derivations through Jordan ideals and prime rings. Moreover, we extend some results of derivations in ring theory to reverse derivations with independent calculations, which are useful to inject commutativity of rings. This thesis consists of five chapters.

Chapter 1, which is of introductory nature, provides basic definitions and results, which are needed for the next chapters.

In Chapter 2, we review the papers of Samman [1] and Herstein[18], in which they analysed how derivation and reverse derivations are same.

In Chapter 3, some results of reverse derivations are proved regarding Jordan ideals of a 2-torsion free prime ring, commutativity of prime ring and some are related to commuting reverse derivation.

In Chapter 4, some results of generalized reverse derivations are