PREFACE

The thesis consists of five chapters. **Chapter 1** is preliminaries which are the collection of definitions and basic results used in the subsequent chapters.

In **Chapter 2**, we introduce the notion of *principally quasi-dual-Baer modules (in short PQ-dual-Baer modules)*, which dualizes the notion of *principally quasi-Baer modules*. We study some properties of PQ-dual-Baer modules. We find some conditions for which the direct sum of arbitrary copies of PQ-dual-Baer modules is PQ-dual-Baer. We also study the ring of endomorphisms of PQ-dual-Baer modules.

In **Chapter 3**, we dualize the concept of Σ-Rickart modules as Σ-dual-Rickart modules. We prove that each cohereditary module over the Noetherian ring is a Σ-dual-Rickart module. We introduce the notion of strongly cogenerated modules and characterize Σ-dual-Rickart modules in terms of strongly cogenerated modules. We show when a Σ-Rickart module is a Σ-dual-Rickart module and vice-versa. We also study some properties of Σ-dual-Rickart modules and find their connections with semisimple Artinian rings, von Neumann regular rings, semi-hereditary rings and FP-injective modules. Further, we study endomorphism rings of Σ-dual-Rickart modules.

In **Chapter 4**, we introduce the notion of finite Σ-dual-Rickart modules, which generalizes the notion of Σ-dual-Rickart modules. We characterize von Neumann regular rings, hereditary rings, semi-hereditary rings and semisimple Artinian rings in terms of finite Σ-dual-Rickart modules. We examine connections between finite Σ-Rickart modules and finite Σ-dual-Rickart modules. Also, we study endomorphism rings of finite Σ-dual-Rickart modules.

In **Chapter** 5, we study several properties of purely extending modules and introduce the notion of purely essentially Baer modules. A module M is said to be a purely essentially Baer if the right annihilator in M of any left ideal of the endomorphism ring of M is essential in a pure submodule of M . We study some properties of purely essentially Baer modules and characterize von Neumann regular rings in terms of purely essentially Baer modules.