ABSTRACT

STRONGLY CLEAN MODULES

by

DHEVA UFIZ 'ALIYAH
NIM. 24010123410008
Magister of Mathematics, Faculty of Science and Mathematics,
Universitas Diponegoro

Let R be a ring and M be an R-module. On ring R, the cleanness concept is known. A clean ring is a ring whose every element can be represented as the sum of an idempotent and a unit element. Then, the concept is added with the condition that the multiplication operation between the idempotent and the unit elements is commutative, is called a strong clean ring. On the other hand, the concept of clean ring is generalized to the modules, motivated by the isomorphic relationship between the ring R and the ring $End_R(R)$. An R-module M is called a clean module if its endomorphism ring is clean. Therefore, by adding the commutative property to the composition operation between a unit elements and an idempotent elements in the clean ring $End_R(M)$, a concept known as a strong clean module is introduced. The research results of the Thesis are presented in the form of theories related to strong clean modules, including definitions, properties, proofs of necessary and sufficient conditions for strongly clean modules, along with their relationship to the underlying structure of the concept of strong clean modules.

Keyword: clean rings, strongly clean rings, clean modules, strongly clean modules.