

SOME TOPICS IN THE STRUCTURE OF NEAR-RINGS

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This paper deals with the structure of near-ring and near-ring module. In this thesis the author generalized the direct sum, splitting exact sequence, direct projective and direct injective modules in near-ring modules. Furthermore we obtained characterizations of regular near-rings, π -regular near-rings, and also investigated properties of the reflexive inverse of a semi-direct product of two near-rings. As the main result the author proves: (1). If a zero-symmetric near-ring N with identity contains no non-zero nilpotent elements, then N is regular (π -regular) if and only if every principal left N -subgroup generated by a (a^n for some integer n) is a right annihilator of an element of N . (2). Let A and B be two left near-rings with identities e_A and e_B respectively. And let $\bar{\alpha}: B \rightarrow \text{End}(A)$ be a given semigroup homomorphism which is determined by the action α of B on A . The semi-direct product $A \times_{\bar{\alpha}} B$ has reflexive inverse if and only if (a) A and B have reflexive inverses and (b) for every $a \in A$ and $b \in B$, there exists an idempotent $e = e^2$ in B such that $bB = eB$ and $a \in A\bar{\alpha}(e)a$.

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Thesis submitted to Kyungpook University, December 1984. Degree approved February 1985. Supervisor: Professor Young Soo Park