



Some Basic Properties of Completely Prime Ideals in Near Rings

Pairote Yiarayong

Department of Mathematics, Faculty of Science and Technology,
Pibulsongkram Rajabhat University, Phitsanuloke 65000, Thailand
Email: pairote0027@hotmail.com

Abstract. In this investigation we studied completely prime, weakly completely prime, quasi completely prime and weakly quasi completely prime ideals in near-rings. Some characterizations of completely prime and weakly completely prime ideals were obtained. Moreover, we investigated relationships between completely prime and weakly completely prime ideals in near-rings. Finally, we obtained necessary and sufficient conditions for a weakly completely prime ideal to be a completely prime ideal.

Keywords: *completely prime ideal; near-ring; quasi completely prime; weakly completely prime ideal; weakly quasi completely prime.*

1 Introduction

Throughout this paper, by a near-ring N we mean a zero-symmetric near-ring with identity 1. For basic definitions in near-rings one may refer to [1]. In 1970 W.L.M. Holcombe introduced the notion of $(0, 1, 2)$ -prime ideals of a near-ring [2]. In 1977 G. Pilz introduced the notion of prime ideals of a near-ring [1]. In 1988 N.J. Groenewald introduced the notion of completely (semi) prime ideals of a near-ring [3]. In 1991 N.J. Groenewald introduced the notion of 3-(semi) prime ideals of a near-ring [4]. In [5] D.D. Anderson and E. Smith defined weakly prime ideals in commutative rings; an ideal P of a ring R is weakly prime if $0 \neq ab \in P$ implies $a \in P$ or $b \in P$.

In 2012 H.H. Abbass and S.M. Ibrahim introduced the concept of a completely semi prime ideal with respect to an element of a near-ring and the completely prime ideals in near-rings with respect to an element of a near-ring [6].

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