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ON 2-ABSORBING IDEALS IN COMMUTATIVE $\Gamma-$ SEMIRINGS

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Abstract: In this paper, our aim is to study the results of 2-absorbing ideals and weakly 2-absorbing ideals in a commutative $\Gamma-$ semirings which is a generalization of prime ideals of a commutative $\Gamma-$ semirings. Finally, we prove a characterization theorem for 2-absorbing and weakly 2-absorbing ideals in terms of k- extension of an ideal in a commutative $\Gamma-$ semiring.

Keywords and Phrases: k-ideals, strong ideal, Q-ideal, 2-absorbing ideals, weakly 2-absorbing ideals.

2020 Mathematics Subject Classification: 16Y60, 46J20, 12K10.

1. Introduction

The concept of semiring was first introduced by Vandiver [16] in 1934. After that, various studies have been done and it plays a prominent role in various branches of mathematics as well as in diverse areas of applied science. Several authors have used this concept in various disciplines in many ways. The structure of prime ideals in semiring theory has gained importance and many mathematicians have exploited its usefulness in algebraic systems. Badawi [1] and Badawi and Darani [2] introduced the concept of 2-absorbing and weakly 2-absorbing ideals of a commutative ring with non-zero unity, which are generalizations of prime and weakly prime ideals in a commutative ring. Darani [4] has examined these concepts in commutative semirings and characterized several results in terms of 2-absorbing and weakly 2-absorbing ideals in commutative semirings. The concept