J. of Ramanujan Society of Mathematics and Mathematical Sciences Vol. 12, No. 1 (2024), pp. 83-92 DOI: 10.56827/JRSMMS.2024.1201.7 ISSN (Online):

ISSN (Online): 2582-5461 ISSN (Print): 2319-1023

PRIMARY IDEALS IN Γ -SEMIRINGS

Tilak Raj Sharma

Department of Mathematics, Himachal Pradesh University, Regional Centre Khaniyara Dharamshala - 176218, Himachal Pradesh, INDIA

E-mail : trpangotra@gmail.com

(Received: Aug. 20, 2024 Accepted: Dec. 23, 2024 Published: Dec. 30, 2024)

Abstract: From an algebraic point of view, Γ - semirings provide the most natural generalization of the theory of semirings. In this paper, we summarize the semiring theoretic results concerning the primary ideals and their radicals to noncommutative Γ - semirings.

Keywords and Phrases: Noetherian Γ -semirings, prime ideal, semiprime ideal and primary ideal.

2020 Mathematics Subject Classification: 16Y60, 16U40.

1. Introduction

As a generalization of Γ -rings, the idea of Γ - semiring was presented by Rao [7]. Later it was discovered that Γ - semiring additionally gives an algebraic home to the set of rectangular matrices over a semiring. Dutta and Sardar [2] presented the thought of operator semiring of a Γ - semiring in 2002 and by utilizing the connection between the operator semiring and the Γ - semiring, they enriched the theory of Γ - semiring and demonstrated the outcomes regarding prime ideals and prime radicals of a Γ - semiring via its operator semirings which incorporates various characterizations of prime ideals and prime radicals.

The motivation of this paper is [8] where Sharma et.al received a substitute way to generalize primary ideals from commutative semirings to non-commutative semirings by replacing the role of elements with ideals. In this paper, we define