South East Asian J. of Mathematics and Mathematical Sciences
Vol. 19, No. 1 (2023), pp. 257-266

DOI: 10.56827/SEAJMMS.2023.1901.21 **ISSN (Online): 2582-0850**

ISSN (Print): 0972-7752

E-SUPPLEMENT IN A RING

Prajnan Kumar Bhagawati, Diksha Patwari* and Helen K. Saikia*

Department of Mathematics,
Nowgong Girls' College,
Nagaon - 782002, Assam, INDIA

E-mail : bhagawatipu@gmail.com

*Department of Mathematics,
Gauhati University,
Guwahati - 781014, Assam, INDIA

E-mail : dikshapatwarimc@gmail.com, hsaikia@yahoo.com

(**Received:** *Dec. 29, 2021* **Accepted:** *Apr. 08, 2023* **Published:** *Apr. 30, 2023)*

Abstract: Let R be an associative ring with unity. Two new concepts namely "e-small" and "e-supplement" in R are introduced and many of its properties are discussed in this paper.

Keywords and Phrases: e-small, e-supplement, Goldie dimension.

2020 Mathematics Subject Classification: 16D25, 16D60, 16D99.

1. Introduction

The dualization concept of Goldie dimension was first coined by Patrick Fleury by introducing a new class of modules with finite spanning dimension in [4]. A module M is said to have finite spanning dimension if every infinite, strictly decreasing chain of sub modules is ultimately small in M i.e. for any infinite chain $N_0 \supsetneq N_1 \supsetneq N_2 \supsetneq$ ..... of sub modules of M, there exists $j \in N$ such that N_j is small in M for every $i \geqslant j$ [4].

In the study of Goldie Dimension, there is a very important role of uniform modules, essential extensions and so on. A sub module K of an R-module M is said to be essential if the intersection of K with any non-zero sub module is non zero.