Title: Contribution to the study special kinds of hyperideals in ordered semihyperrings

Author: S. Omidi B. Davvaz

PII: S1658-3655(16)30068-1
DOI: http://dx.doi.org/doi:10.1016/j.jtusci.2016.09.001
Reference: JTUSCI 328

To appear in:

Received date: 21-3-2016
Revised date: 21-8-2016
Accepted date: 6-9-2016

Please cite this article as: S. Omidi, B. Davvaz, Contribution to the study special kinds of hyperideals in ordered semihyperrings, *<![CDATA[Journal of Taibah University for Science]]>* (2016), http://dx.doi.org/10.1016/j.jtusci.2016.09.001

Contribution to the study special kinds of hyperideals in ordered semihyperrings

S. Omidi and **B. Davvaz**

Department of Mathematics, Yazd University,
Yazd, Iran
omidi.saber@yahoo.com
davvaz@yazd.ac.ir

Abstract

In the present paper, we introduce the notion of k-hyperideals on ordered semihyperrings. Then, we investigate some fundamental properties of k-hyperideals of ordered semihyperrings. Indeed, we define (m,n)-hyperideals and (m,n)-bi-hyperideals in ordered semihyperrings and investigate some of their related properties. Moreover, we introduce and analyze the notion of prime (m,n)-bi-hyperideal of an ordered semihyperring.

Keywords: ordered semihyperring, hyperideal, k-hyperideal, (m,n)-hyperideal, prime (m,n)-bi-hyperideal.

AMS Mathematics Subject Classification: 16Y99.

1 Introduction and prerequisites

The notion of quasi-ideals was introduced by Steinfeld for rings [1] and semigroups [2] as a generalization of the one-sided ideals. A short review of the theory of quasi-ideals appears in [3]. Good and Hughes [4] introduced the notion of bi-ideals of semigroups. Quasi-ideals are a particular case of bi-ideals. Lajos [5, 6] introduced and studied the notion of (m,n)-ideals of semigroups as a generalization of bi-ideals. Ansari et al. [7] worked on (m,n)-quasi-ideals of semigroups. Shabir and Kanwal [8] studied prime bi-ideals of semigroups. In [9], Sanborisoot and Changphas introduced the notion of (m,n)-ideals in ordered semigroups.

The notion of semirings introduced by Vandiver [10] in 1934, which is a generalization of rings. Semirings are very useful for solving problems in graph theory, automata theory, coding theory, analysis of computer programs, and so on. We refer to [11] for the information we need concerning semiring theory. In 1992, Sen and Adhikari [12] studied k-ideals in semirings. In [13, 14], quasi-ideals of semirings are studied and some properties and related results are given. To see more about (m,n)-quasi-ideals in semirings, we refer the reader to [15]. In 2011, Gan and Jiang [16] considered and