South East Asian J. of Mathematics and Mathematical Sciences
Vol. 15, No. 3 (2019), pp. 01-10

ISSN (Online): 2582-0850

ISSN (Print): 0972-7752

ON MULTISET RELATIONS AND FACTOR MULTIGROUPS

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(**Received:** *Aug. 13, 2019* **Accepted:** *Nov. 14, 2019* **Published:** *Dec. 31, 2019)*

Abstract: Crisp congruence relations on groups are very well known. This paper attempts to define factor multigroups by using the proposed multiset relations in this study and prove some basic properties.

Keywords and Phrases: Multiset, multiset relation, multiset congruence, factor multigroup.

2010 Mathematics Subject Classification: 54A40, 03E72, 20N25, 06D72.

1. Introduction

The notion of multisets was formulated by N. G. Bruijn in a private communication to Knuth [19] as a mathematical structure that violates basic set conditions. It is a collection of objects in which repetition is significant. Since then, multisets have been applied to various fields of mathematics and computer science. Nazmul et al. [20] introduced the concept of multigroups with multiset settings different from the earlier definitions given by [3] and [21] and obtained equivalents of some basic results in group theory. This has been investigated further by [1],[2],[4],[5],[6],[7],[8],[9],[10],[11],[16],[17] and [18]. In [22], a new fashion of multigroups was developed with some properties considered. The concept of multiset relations on set was defined by Girish and John [12]. They have also generalized the concept by considering multiset relations on multisets and developed multiset topologies (see [13]). In [14], multiset relations are applied to consider rough multiset relations.