Some Results of a Gamma Group-I

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Abstract. We study the concept of Γ −group, Γ −Subgroup, Normal Γ −Subgroup, Γ −cosets and study their properties. We prove some of the basic results such as if G be a Γ −group G with zero element 0 and for $x \neq 0, x\alpha y = x\alpha z$, where $x, y, z \in G, \alpha \in \Gamma$ implies $y = z$, then G is commutative. Further if G be a commutative strong multiplicative Γ −idempotent Γ −group.. Then$(a\gamma b)\gamma(a\gamma b) = (a\gamma a)\gamma(b\gamma b) = a\gamma b$, for all $a, b \in G$ and $\gamma \in \Gamma$. Again if P is a Normal Γ-Subgroup of Γ −group G if and only if $N(\Gamma P) = G$.

Keywords. Semi group, Γ −Group, Normal Γ −subgroup, Γ −coset.

INTRODUCTION

As a speculation of ring, the notion of a Γ −ring was introduced by Nobusawa [9] in 1964. The notion of a ternary algebraic system was introduced by Lehmer [1] in 1932. In 1995, Rao [2-4] introduced the notion of a Γ −semiring as a generalization of Γ −ring, ring, ternary semiring and semiring. Rao [7-8] introduced the notion of field Γ −semiring and Γ −field. Semi group, as the basic algebraic structure was used in the areas of theoretical computer science as well as in the solutions of graph theory, optimization theory and in particular for studying automata, coding theory and formal languages. The formal study of semi groups begins in the early 20th century. In 1981, Sen [11] introduced the notion of a Γ −semigroup as a generalization of semigroup. Rao [5] studied ideals of Γ −semirings, semirings, semigroups and Γ −semigroups.

The motivation of this paper is [6] where in Rao received a substitute way to generalize notion of Γ −group, regular Γ −group and study their properties. In this paper, we study the concept of a Γ −group as a generalization of group. Further we prove some basic results regarding Γ-Subgroup, Normal Γ-Subgroup, Γ-cosets etc. and study some of the properties of a Γ −group.

PRELIMINARIES

Definition2.1. [6] "A semigroup is an algebraic system $(G, .)$ consisting of a non-empty set G together with an associative binary operation'.'".

Definition 2.2. [6] "An algebraic system $(G, .)$ consisting of a non-empty set G together with an associative binary operation '.' is called a group if it satisfies the following:

(I) there exists $e \in G$, such that $x. e = e. x = x$, for all $x \in G$.

(ii) if for each $x \in G$ there exists $y \in G$, such that $x. y = y. x = e$ ".

RESEARCH ARTICLE

Strong Gamma Group

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3 Department of Mathematics, Himachal Pradesh University, Regional Center, Khaniyara, Dhramshala (HP), India

Abstract

Objectives: The primary goal of this study is to present the concept of a strong $\Gamma-$ *group* as a generalization of $\Gamma-$ *group*. **Methods and Findings:** We have investigated some of the properties of the $\Gamma-$ *group* and extended it to introduce the idea of a strong $\Gamma-$ *group*. **Novelty:** Every strong $\Gamma-$ *group* is a $\Gamma-$ *group*, but not all $\Gamma-$ *groups* are strong $\Gamma-$ *groups*. Further if G is a non-empty $\Gamma-$ *semigroup* and for all $a, b \in G$, the equations $a\alpha x = b$ and $y\alpha a = b$ for all $x, y \in G$ and for all $\alpha \in \Gamma$ have unique solutions in G, then G is a strong $\Gamma-$ *group*. Also, we characterize that non-empty subset H of a strong $\Gamma-$ *group* G is a strong $\Gamma-$ *subgroup* if and only if for all $a, b \in H, a\alpha c \in H$ for all $\alpha \in \Gamma$ where c is strong inverse of b in G. Finally, we prove that the intersection of two strong $\Gamma-$ *subgroups* is again a strong $\Gamma-$ *subgroup* and the center of strong $\Gamma-$ *group* $C(G)$ is also a $\Gamma-$ *subgroup*.

Keywords: Semigroup; Strong $\Gamma-$group; Strong $\Gamma-$subgroup; Centre of $\Gamma-$group

1 Introduction

The notion of a ternary algebraic system was introduced by Lehmer in 1932. As a speculation of ring, the notion of a $\Gamma-$ *ring* was introduced by N Nobusawa in 1964. In 1981, M. K. Sen introduced the notion of a $\Gamma-$ *semigroup* as a generalization of semigroup. In 1995, Rao[1] introduced the notion of a $\Gamma-$ *semiring* as a generalization of Γ ring. The formal study of semi groups begins in the early 20th century. Rao studied ideals of $\Gamma-$ *semirings*, semirings, semigroups and $\Gamma-$ *semigroup*. In this paper, we study the concept of a strong $\Gamma-$ *group* as a generalization of $\Gamma-$ *group*. Further, we prove some basic results regarding strong $\Gamma-$ *subgroup*, centre of strong $\Gamma-$ *group* etc. and study some fundamental properties of a strong $\Gamma-$ *group*.

1.1 Preliminaries

We include some necessary preliminaries from[1-3] for the sake of completeness.

Definition 2.1. A semigroup is an algebraic system $(G, .)$ consisting of a non-empty set G together with an associative binary operation'.'

On Some Results of Strong Γ-Subgroups of a Strong Γ −Group

Vikram Singh Kapil[1], Anil Kumar[2] and Tilak Raj Sharma[3]

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Abstract

In this paper, we study the concept of strong Γ −group, strong Γ −subgroup and their properties viz: Γ −cosets, Normal Γ −subgroups, one-to-one correspondence between any two strong Γ −left(right) cosets of a strong Γ −subgroup in a strong Γ −group etc. Further if H and K be two strong Γ −subgroups of a strong Γ − group G. Then $H\Gamma K$ is a strong Γ −subgroup of a strong Γ −group G if and only if $H\Gamma K = K\Gamma H$.

Keywords: Strong Γ −group, Strong Γ −subgroup, Γ −cosets, Normal Γ −subgroups.

1. INTRODUCTION

The notion of a ternary algebraic system was introduced by Lehmer [1] in 1932.As a speculation of ring, the notion of a Γ−ring was introduced by Nobusawa [7] in 1964. In 1981, Sen [8] introduced the notion of a Γ−semigroup as a generalization of semigroup. In 1995, Rao [2-5] introduced the notion of a Γ−semiring as a generalization of Γ−ring, ring, ternary semiring and semiring. Rao [6] introduced the notion of field Γ−semiring and Γ−field. Semi group, as the basic algebraic structure was used in the areas of theoretical computer science as well as in the solutions of graph theory, optimization theory and in particular for studying automata, coding theory and formal languages. The formal study of semi groups begins in the early 20th century. Rao [5] studied ideals of Γ−semirings, semirings, semigroups and Γ−semigroups. Kumar [13] introduced the

Collaboration for Internship/On Job Training

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District. Bilaspur H.P. 174021
mail-id: gcghumarwin-hp@nic.in., Phone No. 01978-255551 , Website : www.gcghumarwin.ac.in

No: EDN-SVGC /2021 –   Dated:

Memorandum Of Understanding
Between
S.V. Government College Ghumarwin
And
Reliance Trends Ghumarwin

- Students will follow rules and regulations prescribed by the organization during the course of OJT.
- Students will work according to the pre-defined job role by the college administration on NOC of the student.
- It will be the responsibility of the organization to ensure the safety and security of the students during on-the-job internship at their respective place.
- Any issue related to health will be addressed by the organization itself during OJT at workplace.
- Working hours of students during OJT will be according to the prescribed laws by the government of India i.e., 40-45 hours per week.
- It is responsibility of the organization to address any issue of misconduct and harassment on trainees during OJT.
- Students will be given week off.
- In case of anymajor health related issue college Administration must be informed.
- Special emphasis must be given to ILM (Internship learning Map) provided to students by college administration while planning daily activity for the students.
- Students must not be indulged in any activity impertinent to OJT.
  The MOU is effective from 15 June 2022 to 30 July 2023.

Swami Vivekanand College Ghumarwin
Himachal Pradesh
174021
Principal
S.V. Govt. Degree College
Ghumarwin, Distt. Bilaspur (H.P.)

Principal
SVGC Ghumarwin

Organization Name
....

Village, Ghumarwin Dist., Bilaspur, Ghumarwin,
Himachal Pradesh - 174021

Official Signature
Date....................

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Aurelia W & Madame Ghumarwin

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Principal
S.V. Govt. Degree College
Ghumarwin, Distt. Bilaspur (H.P.)

Principal .
SVGC Ghumarwin

Organization Name
....

Nikhil Enterprises

Proprietor
Official Signature
Date.....................

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174021
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Principal
S.V. Govt. Degree College
Ghumarwin, Distt. Bilaspur (H.P.)
Principal   Proprietor
SVGC Ghumarwin   **Official Signature**
                                                   Date.....................

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And
....John Player & Wild Craft.......

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174021
Principal   **Nikhil Enterprises**
S.V. Govt. Degree College
Ghumarwin, Distt. Bilaspur (H.P.)

Principal   Proprietor
SVGC Ghumarwin   Official Signature
                                                       Date.....................

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................................Monte Carlo Ghumarwin...

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174021   **Nikhil Enterprises**

Principal   Nikhil chadael
S. V. Govt. Degree College
Ghumarwin, Distt. Bilaspur (H.P)   Proprietor

Principal   **Official Signature**
SVGC Ghumarwin   Date.....................

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Ghumarwin, Distt. Bilaspur (H.P.)

Principal
SVGC Ghumarwin

Organization Name
.... Nikhil Enterprises ..

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174021   **Nikhil Enterprises**

Principal   *Nikhil c*
S.V. Govt. Degree College
Ghumarwin, Distt. Bilaspur (H.P.)   **Proprietor**
Principal .   **Official Signature**
SVGC Ghumarwin   Date.....................

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.... Him Charm Apparels Ghumarwin ....

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Himachal Pradesh   ....
174021   **Nikhil Enterprises**

Principal   Nikhilchand
S.V. Govt. Degree College
Ghumarwin, Distt. Bilaspur (H.P.)   Proprietor
Principal
SVGC Ghumarwin   Official Signature
                                                Date....................

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Memorandum Of Understanding

Between

S.V.Government College Ghumarwin

And

...... Nikhil ENTERPrises ....

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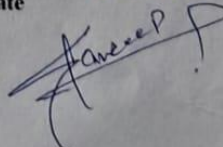
The MOU is effective from 1 July 2022 to 30 June 2023

Swami Vivekanand College Ghumarwin
Himachal Pradesh
174021,

Nodal Officer
SVGC Ghumarwin

Organization Name
Nikhil ENTERPrise

Nikhil Enterprises
Official Signauture

Proprietor
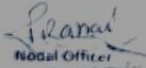Date

S.V.G College Ghumarwin Distt. Bilaspur (H.P.)

TO WHOM IT MAY CONCERN

This is to certify that the following students are regular students of Swami Vivekananda Government College Ghumarwin, Distt. Bilaspur (H.P.) and are enrolled under course B.Voc (Retail Management Level 4). Edubridge Learning Pvt.Ltd has arranged their 23 hours of on-the-job training at your reputed Reliance Trends at Ghumarwin. Also, you need to provide experience certificates to the each student after they complete on-the-job training in your store.

The training will start from 5th December till 4th January 2023. Retail Management students will join on 5th December 2022

The list of students/place of training is attached below.

1. Neha Kumari
2. Aryan Sharma
3. Bhawna Chandel
4. Avinash Patiyal
5. Sakshi Kaushal
6. Priya Devi

7. Kamna
8. Kangna
9. Riya Kumari
10. Sanjana
11. Aanchal
12. Sakshi Thakur

Nodal Officer
SVGC, Ghumarwin

SVGC, Ghumarwin

# S.V.G College Ghumarwin Distt. Bilaspur (H.P.)

TO WHOM IT MAY CONCERN

This is to certify that the following students are regular students of Swami Vivekananda Government College Ghumarwin, District Bilaspur (H.P) and are enrolled under course B.Voc (Retail Management Level-4) . Edubridge Learning Pvt Ltd has arranged their 210 hours of on-the-job training at your reputed Octave, Aurelia and Numero Uno at Ghumarwin. Also, you need to provide experience certificates to the each student after they complete on-the-job training in your store.

The training will start from 5th December till 4th January 2023.Retail Management students will join on 5th December 2022.

The list of students/place of training is attached below.

1. Neha Kumari
2. Anshul Kumar
3. Nikita Kumari
4. Vishal Kumar
5. Shiva Daroch
6. Manish Kumar

Nodal Officer
SVGC Ghumarwin
SVGC, Ghumarwin

s. V. Govt. 30/12/2022
Ghumarwin,
SVGC, Ghumarwin
Distt. Bilaspur (H.P.)

OFFICE ORDER

Office Copy (Retail Management) OJT

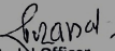# S.V.G College Ghumarwin Distt. Bilaspur (H.P.)

TO WHOM IT MAY CONCERN

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The list of students/place of training is attached below.

1.Aman Kumar

2.Neeraj Soni

Nodal Officer
Nodal Officer
SVGC, Ghumarwin

Pricipal
S. V. Govt. Degree 05/12/202
Principal
SVGC, Ghumarwin
Distt. Bilaspur (H.P.)