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**CHARACTERIZATION OF COMPLETELY REGULAR ELEMENTS
IN Γ -SEMGROUPS**

RUKCHART PRASERTPONG

**A Thesis Submitted to the Graduate School of Naresuan University
in Partial Fulfillment of the Requirements
for the Master of Science Degree in Mathematics
May 2011
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This thesis entitled “Characterization of completely regular elements in Γ -semigroups” submitted by Rukchart Prasertpong in partial fulfillment of the requirements for the Master of Science Degree in Mathematics is hereby approved.

Sorasak Leeratanavalee

.....Chair

(Associate Professor Sorasak Leeratanavalee, Dr. rer. nat.)

Manoj Siripitukdet

.....Committee

(Assistant Professor Manoj Siripitukdet, Ph.D.)

Chaiwat Namak

.....Committee

(Assistant Professor Chaiwat Namnak, Ph.D.)

Suphawan Janphaisaeng

.....Committee

(Suphawan Janphaisaeng, Ph.D.)

Approved

K. Papatwibul

.....
(Assistant Professor Kanungnit Papatwibul, Ph.D.)

Dean of the Graduate School

May 2011

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Rukchart Prasertpong

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Author	Rukchart Prasertpong
Advisor	Assistant Professor Manoj Siripitukdet, Ph.D.
Co-Advisor	Suphawan Janphaisaeng, Ph.D.
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ABSTRACT

In this research, we establish the following results on a Γ -semigroup structure. Firstly, we introduce the concepts of a completely regular Γ -semigroup, and consider and study the relationship between \mathcal{H} -class and completely regular elements in a Γ -semigroup. Secondly, we consider and study subgroups of a Γ -semigroup, and we also consider the properties of completely regular elements which are related to the structure of Green's relations on semigroups to Γ -semigroups. Thirdly, we introduce concepts of $(\mathcal{L}, \mathcal{R}, \mathcal{H})$ -inverses in a Γ -semigroup and study the properties of these inverses. Moreover, we study relationships between such inverse and a completely regular element.

LIST OF CONTENTS

Chapter	Page
I INTRODUCTION.....	1
II PRELIMINARIES	3
III COMPLETELY REGULAR ELEMENTS	
IN Γ -SEMIGROUPS.....	5
\mathcal{H} -class and Completely Regular Elements	
in a Γ -semigroup	5
The Relationship between Completely Regular Elements,	
Green's relations and Subgroups in Γ -semigroups	10
$(\mathcal{L}, \mathcal{R}, \mathcal{H})$ -inverses in Γ -semigroups.....	18
IV CONCLUSIONS.....	31
REFERENCES.....	33
BIOGRAPHY	36