



شبكة المعلومات الجامعية

بسم الله الرحمن الرحيم



شبكة المعلومات الجامعية
@ ASUNET



شبكة المعلومات الجامعية التوثيق الالكتروني والميكروفيلم



شبكة المعلومات الجامعية

جامعة عين شمس

التوثيق الالكتروني والميكروفيلم

قسم

نقسم بالله العظيم أن المادة التي تم توثيقها وتسجيلها
علي هذه الأفلام قد أعدت دون أية تغيرات



يجب أن

تحفظ هذه الأفلام بعيدا عن الغبار

في درجة حرارة من ١٥-٢٥ مئوية ورطوبة نسبية من ٢٠-٤٠%

To be Kept away from Dust in Dry Cool place of
15-25- c and relative humidity 20-40%

بعض الوثائق الأصلية تالفة

بالرسالة صفحات لم ترد بالاصل



Ain Shams University
Faculty of Science
Department of Mathematics

On The Relation Between Graded Injective Modules and Graded Frobenius Rings

A Thesis

Submitted for the degree of Master of Science As a Partial fulfillment for requirements of the Master of Science
(Pure Mathematics)

by

Manar El-Badry Tabarak Ibrahim

Department of Mathematics, Faculty of Science,
Ain Shams University

Supervised by

Prof.Dr.

Salah El-Din Sayed Hussein

Professor of Pure Mathematics
Department of Mathematics,
Faculty of Science,
Ain Shams University

alahayed

Dr.

Essam Ahmed Soliman El-Seidy

Assistant Professor of Pure Mathematics
Department of Mathematics,
Faculty of Science,
Ain Shams University

Essam El Seidy

Dr.

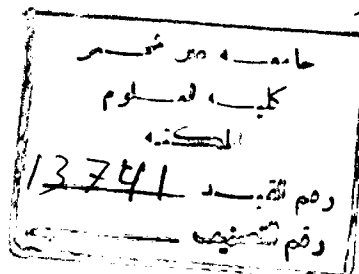
Samir Sayed Mahmoud Mohamed

Lecturer of Pure Mathematics
Department of Mathematics,
Faculty of Science,
Ain Shams University

To

Department of Mathematics, Faculty of Science,
Ain Shams University
Cairo, Egypt
2015

Top



512.4
M.E

ACKNOWLEDGEMENT

I humbly acknowledge the blessings of **Almighty, Compeller and Subdeur Allah**, without **Whose** mercy and guidance this work never has been started nor completed. May **Allah** prays on Mohamed "peace Be Upon Him" the prophet and the Messenger of **Allah**.

I would like to express my deep gratitude to **Prof.Dr. Salah El-Din Sayed Hussien , Dr. Essam Ahmed Soliman El- Seidy, and Dr.Samir Sayed Mahmoud Mohamed** , Department of Mathematics , Faculty of Science, Ain Shams University for their patience, criticism, advice and much help. I am grateful for their careful review of the manuscript. I do not forget their encouragement, advice in reading the background material for this work and for giving so generously of their time to complete this thesis in final form.

I wish to record my gratitude to the staff of Department of Mathematics, Faculty of Science, Ain Shams University, for facilities extended to me and giving me opportunity of further my education.

Many thanks also go to all my colleagues, in my department whom wished for me a good luck, wishing for them all the best in the life.

To my family, I offer my sincere gratitude for their love and support and giving me opportunity of further my education.

CONTENTS

Abstract.....	i
Summary.....	1
Chapter 1. Preliminaries.	
1.1 Projective and Injective Modules.....	4
1.2 Graded Rings and Modules.....	16
Chapter 2. Graded Injective Modules and Separable Functors.	
2.1 Graded Injective Modules.....	29
2.2 Separable Functors and Injectivity.....	38
Chapter 3. Generalizations of Graded Injective Modules and Quasi-Frobenius Rings.	
3.1 Extension of Graded Injectivity.....	49
3.2 Graded Quasi-Frobenius Rings.....	62
References.....	68
Arabic Summary	





Abstract

Abstract

The main objective of this thesis is twofold. First, we aim to study some extended injectivities of graded modules, such as F-injectivity, P-injectivity, and mininjectivity. Second, we aim to investigate the structure of graded quasi-Frobenius rings. Actually, we provide characterizations of graded quasi-Frobenius rings in terms of extended graded injectivities of graded rings.

