جامعة الإمام محمد بن سعود الإسلامية كلية العلوم		قسم الرياضيات والإحصاء ماجستير العلوم في الرياضيات

نموذج (1): مقترح المشروع البحثي ريض 699

Research Project Proposal MAT 699

Second Semester, 1438–1439 (2017–2018) **Date**: 15.11.2018		الفصل / العام الدراسي **Semester/Year**
Signature التوقيع	أ.د. محمد القاضي الإسم	المشرف **Supervisor**
Galois Theory and insolvability of quantic equation		عنوان المشروع المقترح **Title of the project**
Algebra		مجال المشروع البحثي **Area of research project**
MAT624		المتطلبات **Prerequisites**
In this research project the student is introduced to the important subject of Galois Theory and its crucial role in proving the impossibility of solving the general quantic (i.e. the fifth degree) equation in one unknown in a closed algebraic formula (i.e. by radicals).		الملخص **Abstract**
1- In addition to the student background in field theory given in MAT624, he will be taught (In 4 weeks' period) more on field theory and in group theory to be ready to deal with the subject of this research project. 2- After that the student will proceed in studying Galois Theory and how it used to prove the famous long-standing problem of the insolvability by radicals of the quantic equation in one unknown (In 3 weeks). 3- In the remaining 4 weeks, the student will write the material of this project, edit it and polish it in the final shape.		**الخطة التفصيلية للمشروع** **Detailed Plan of the Project**

جامعة الإمام محمد بن سعود الإسلامية كلية العلوم		قسم الرياضيات والإحصاء ماجستير العلوم في الرياضيات

نموذج (1): مقترح المشروع البحثي ريض 699

Research Project Proposal MAT 699

Year; 1439–1440, Semester: 2 **Date: 19.11.2018**		الفصل / العام الدراسي **Semester/Year**
Signature التوقيعِ	أحمد جاسم الخلف الإسم	المشرف **Supervisor**
Class of Frobenius Group		عنوان المشروع المقترح **Title of the project**
Group Theory		مجال المشروع البحثي **Area of research project**
		المتطلبات **Prerequisites**
We will study class of groups which satisfies conditions of Frobenius group in finite case and using these conditions to find another classes of groups		الملخص **Abstract**
1) Studing p-groups 2) Semidirect Product 3) Group with generation property 4) Group with basis property 5) Class groups satisfying Frobenius Properties		**الخطة التفصيلية للمشروع** **Detailed Plan of the Project**

جامعة الإمام محمد بن سعود الإسلامية كلية العلوم		قسم الرياضيات والإحصاء ماجستير العلوم في الرياضيات

نموذج (1): مقترح المشروع البحثي ريض 699

Research Project Proposal MAT 699

Second Semester, 1439-1440 (2018-2019) Date: 15.11.2018	الفصل / العام الدراسي Semester/Year
الإسم: د. براهيم شورار	المشرف Supervisor
التوقيع Signature شورار	
Combinatorial Optimization Problems in Series Parallel Graphs	عنوان المشروع المقترح Title of the project
Combinatorial Optimization	مجال المشروع البحثي Area of research project
Basics of Combinatorial Optimization	المتطلبات Prerequisites
Series parallel graphs form a special class of planar graphs. Most Combinatorial Optimization problems have been studied in series parallel graphs. The first category of authors focuses on providing a polynomial time algorithm for the considered problem when it is NP-complete in general graphs. The second one provides proofs for the hardness of the problem in series parallel graphs and then justifies the approach by approximation algorithms and heuristics for those problems. The last category provides an improvement in the running time complexity when it is already polynomial for series parallel graphs. The main objective of this project is to survey these problems in this class of graphs.	الملخص Abstract
1) Introduction and preliminaries. 2) Graphical Properties of Series Parallel Graphs. 3) Polynomial Problems in Series Parallel Graphs. 4) NP-Complete Problems in Series Parallel Graphs. 5) Fast Algorithms for Problems in Series Parallel Graphs. 6) Conclusion.	الخطة التفصيلية للمشروع Detailed Plan of the Project

جامعة الإمام محمد بن سعود الإسلامية كلية العلوم		قسم الرياضيات والإحصاء ماجستير العلوم في الرياضيات

نموذج (1): مقترح المشروع البحثي ريض 699

Research Project Proposal MAT 699

Second Semester, 1438–1439 (2017–2018) **Date**: 15.11.2018		الفصل / العام الدراسي **Semester/Year**
Signature التوقيع	**Name**: **Faryad Ali**	المشرف **Supervisor**
Irreducible Representations of Symmetric Groups		عنوان المشروع المقترح **Title of the project**
Algebra (Computational Group Theory)		مجال المشروع البحثي **Area of research project**
MAT628 **Note: A sound knowledge of group representation theory would be mandatory.**		المتطلبات **Prerequisites**
Representation of a group is in fact action of a group G on some vector space and this type of actions arises naturally in many areas of Natural Sciences. One of the main applications of representation theory is to study group symmetries. Note that set of all symmetries forms a group and thus understanding of these symmetries and their representations is always an interesting problem. The Cayley theorem says that every finite group can be embedded in a permutation group S_n for some n. Due to this relationship, the study of symmetric groups is of great importance and researchers are always interested in the study of symmetric groups and their representations. In the present project, we study the irreducible representations of the symmetric groups and investigate		الملخص **Abstract**

their further properties via the Young diagrams and tableaux. We will also determine the character table the symmetric group S_n.	

جامعة الإمام محمد بن سعود الإسلامية كلية العلوم		قسم الرياضيات والإحصاء ماجستير العلوم في الرياضيات

نموذج (1): مقترح المشروع البحثي ريض 699

Research Project Proposal MAT 699

Year; 1439–1440, Semester: 2 **Date: 4.11.2018**		الفصل / العام الدراسي **Semester/Year**
Signature التوقيعِ	**Name: Dr. Said Manjra**	المشرف **Supervisor**
Abelian Categories and Diagram Chasing Lemmas		عنوان المشروع المقترح **Title of the project**
Category Theory		مجال المشروع البحثي **Area of research project**
Algebra 2		المتطلبات **Prerequisites**
We use the technique of pseudo-elements in the abelian categories to prove the basic diagram chasing Lemmas in the homological algebra.		الملخص **Abstract**
-Brief introduction to category theory (3 weeks) -Additive Categories (2 weeks) -Abelian categories (2 weeks) -Pseudo-elements in categories and their properties (1 weeks) - Basic diagram chasing Lemmas (2 weeks) -Writing the project (4)		**الخطة التفصيلية للمشروع** **Detailed Plan of the Project**

جامعة الإمام محمد بن سعود الإسلامية كلية العلوم		قسم الرياضيات والإحصاء ماجستير العلوم في الرياضيات

نموذج (1): مقترح المشروع البحثي ريض 699

Research Project Proposal MAT 699

Year; 1439–1440, Semester: 2 **Date: 8.11.2018**		الفصل / العام الدراسي **Semester/Year**
Signatureالتوقيع	**Name: Maged Z. Youssef:**	المشرف **Supervisor**
Odd prime labeling of graphs **الترقيم الفردي الأولي للرسوم**		عنوان المشروع المقترح **Title of the project**
Theory of graphs **AMS Subject Classification (2010) : 05C78**		مجالالمشروع البحثي **Area of research project**
A graduate course in Graph Theory or Discrete Mathematics		المتطلبات **Prerequisites**
The notion of a prime labeling originated with Entringer and was introduced in a paper by Tout, Dabboucy, and Howalla [TDH] in 1982. A graph of order n is said to have a prime labeling if its vertices are labeled with distinct integers 1,2,…,n such that for each edge the labels assigned to its end vertices are relatively prime. The graph which admits prime labeling is called a prime graph. In this project we introduce some variations on the definition of prime labeling. One variation is to allow to label the vertices by odd integers and we will call this labeling the odd prime labeling.		الملخص **Abstract**

جامعة الإمام محمد بن سعود الإسلامية كلية العلوم		قسم الرياضيات والإحصاء ماجستير العلوم في الرياضيات

1- We collect the basic definitions and important results in graph theory that we will used in the project. 2- We give the definition of the prime labeling and we give the proofs of some of the known results in prime labeling. 3- We introduce the notion of odd prime labeling. 4- We give classification for some families of graphs which are odd prime like as: Complete graphs, cycle graphs, trees, wheels, etc... 5- We find the maximum number of edges in an odd prime graph of order n.	**الخطة التفصيلية للمشروع** **Detailed Plan of the Project**