المستخلص

الهدف الرئيسي لهذه الأطروحة هي أيجاد اس ارتن للزمر الخطية الخاصة المنتهية الناتج من الزمر الجزئية الدائرية لاي شواخص اختيارية من هذه الزمر الخطية ونرمز له:

$$a(SL(2, p))$$

اي عدد اولي بحيث يكون اكبر او يساوي5 وقد وجدنا ان اس ارتن pحيث ان لهذه الزمرة مساويا الى 2

INTRODUCTION

For a finite group G, let R (G) denoted the finitely generated abelian group of rational valued character of G under the operation of pointwise addition, and T (G) denoted the normal subgroup of R (G) by the rational valued characters induced from cyclic subgroups of G. A well-known theorem due to Artin asserted that T (G) has a finite index in R (G) i.e. [R (G): T (G)] is a finite. Artins induction theorem says that any rational-valued character of a finite group is a rational linear combination of the induced principal characters of its cyclic subgroups.

In (1968), **Lam [5]** proved a sharp form of Artins theorem, he determined the least positive integer A (G) such that A (G) χ is an integral linear combination of induced principal characters of cyclic subgroups, for all rational valued characters χ of G.

In (1978), **David Gluix [13]** considered integral linear combinations of any arbitrary characters induced from the cyclic subgroups of G, he determined a (G) χ is an integral linear combination of characters induced from cyclic subgroups, for all χ of G.

In the present work, the group G under consideration is SL (n, p) which is a special linear group, where the variable is fixed to n = 2, and p be any prime number such that: $p \geq 5$.

The problem of finding the Artin exponent for any arbitrary characters of finite special linear groups a(SL(n, p)) and we have found in this work that a (SL (n, p)) = 2.

The presented work is described by the three chapters as follows:

Chapter one: in this chapter is described and illustrate some of the important definitions and basic examples of Representation theory of finite groups over arbitrary fields, character table, and the character of finite abelian group.

Chapter two: this chapter gives describe straightforward definitions of restricted and induced characters. In addition, this chapter includes some of the important definitions and basic examples of Artin character and Artin exponent of a finite group.

Chapter three: in this chapter is devoted to study with an important part of groups which is finite special linear group SL(n, p) and the conjugacy class of this group and we presented the method to find Artin character and Artin exponent of induced any arbitrary characters from cyclic subgroup of these special linear group. This is denoted by:

$$a\,(SL\,(n, p))$$

Where $n = 2$ and p is any prime numbers such that: $p \geq 5$

ABSTRACT

The main purpose of this work is to find the Artin exponent of finite special linear groups from any arbitrary characters of cyclic subgroups of these special linear groups and denoted by:

$$a\,(SL(2, p))$$

Where p is any prime such that $p \geq 5$, and we found that a (SL (2, p)) is equal to 2