

The conjugacy classes of a subgroup

$$S_n^m : C_m \text{ of } S_{mn}$$

K. Zimba

Vaal University of Technology
kennethz@vut.ac.za

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Let n, m be positive integers. Let S_n^m be the direct product of m copies of the symmetric group S_n of degree n . Then S_n^m is a subgroup of the symmetric group S_{mn} of degree $m \times n$. Let $g \in S_{mn}$, of type $[m^n]$ where each m -cycle contains one symbol from each set of symbols in that order on which the copies of S_n act. Let $C_m = \langle g \rangle$ of order m . The wreath product of S_n with C_m is a split extension of S_n^m by C_m , denoted by $S_n^m : C_m$. Indeed $S_n^m : C_m$ is a subgroup of the symmetric group S_{mn} . In [1], a method for constructing the conjugacy classes of the groups $S_n^m : C_m$ where m is prime, is given. In this paper that method is extended to any positive integer m .

References

- [1] K. Zimba and M. Raboshakga, *The conjugacy classes of a subgroup $S_n^m : C_m$ of S_{mn} , prime m* , IJAC, 18(4) 2008, 705–717.