Some Structures on Inverse Graphs of a Finite Group

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Abstract

Let \((G, *)\) be a finite group and \(S\) be a possibly empty subset of \(G\) containing non-selfinvertible elements. The Inverse graphs \(G_S(G)\) of a group is a graph with vertex set as the elements of \(G\) such that two distinct vertices \(u\) and \(v\) are adjacent if and only if either \(u * v \in S\) or \(v * u \in S\). In the paper, we investigate Inverse Graphs for Direct product of groups. Also, we characterize the necessary and sufficient condition for the graphs to be regular or the graph to be Eulerian. Finally, we bring out the chromatic number of Inverse graphs.

Keywords: Planar, Regular, Inverse, Invertible, Domination.