A STUDY OF INVERSE, MIXED BLOCK DOMINATION AND RELATED CONCEPTS IN GRAPHS

ABSTRACT
It is proved that every graph is a block tree. Varieties of block degrees and block-regular graphs have been defined. Expressions for the sum of block degrees are obtained. Several bounds for number of blocks and number of cutvertices in a graph are obtained. Using block distance we defined the central tendencies of a block, like B-radius and B-diameter of a graph. It is proved that block center of any graph is B-complete. Expressions for number of edges in the newly defined graphs are derived.

Various block domination parameters are defined. A vertex \( v \in V \) and a block \( b \in B(G) \) is said to block dominate (b-dominate) each other if \( v \) is incident on the block \( b \). A set \( D \subseteq V \) is said to be a vertex-block dominating set (VBD set) if every block in \( G \) is b-dominated by some vertex in \( D \). The vertex - block domination number \( \gamma_{vb}(G) \) is the cardinality of a minimum block dominating set of \( G \). We initiate a study of these new varieties of mixed block domination in graphs.

We define another parameter called inverse independence number of a graph. Extending the same concept for edge independent sets inverse matching number of a graph is defined. Using minimum clique number \( \theta(G) \), independent domination number of complement of any graph \( G \) is obtained. Finally in the last section, various inverse block domination parameters are defined and initiated the study of properties of inverse block domination.