

On the Clar number of benzenoid graphs

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A benzenoid graph is a 2-connected planar graph in which all inner faces are hexagons (and all hexagons are faces), such that two hexagons are either disjoint or have exactly one common edge, and no three hexagons share a common edge. A Clar set of a benzenoid graph B is a maximum set of independent alternating hexagons over all perfect matchings of B . The Clar number of B , denoted by $Cl(B)$, is the number of hexagons in a Clar set of B . It turns out that if the benzenoid graph B is catacondensed (has no inner vertices of degree 3), then $Cl(B)$ equals the independence number of an associated subcubic tree. A sharp upper bound on the Clar number of catacondensed benzenoid graphs will be provided together with the characterization of the graphs that attain this bound.