

Maximum degree minimum covering graphs

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For a graph G with vertex set $V(G) = \{v_1, v_2, \dots, v_n\}$, let S be the covering set of G having the maximum degree over all the minimum covering sets of G . Let $N_S[v] = \{u \in S : uv \in E(G)\} \cup \{v\}$ be the closed neighborhood of the vertex v with respect to S . We define a square matrix $A_S(G) = (a_{ij})$, by $a_{ij} = 1$, if $|N_S[v_i] \cap N_S[v_j]| \geq 1, i \neq j$ and zero, otherwise. The graph G^S associated with the matrix $A_S(G)$ is called the maximum degree minimum covering graph (MDMC-graph) of the graph G . In this paper, we give conditions for the graph G^S to be bipartite and Hamiltonian. We obtain a bound for the number of edges of the graph G^S in terms of the structure of G . Further we obtain an upper bound for covering number (independence number) of G^S in terms of the covering number (independence number) of G .

References

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