

On the spectral radius of bi-block graphs with given independence number α

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Abstract

A connected graph is called a bi-block graph if each of its blocks is a complete bipartite graph. Let $\mathcal{B}(\mathbf{k}, \alpha)$ be the class of bi-block graph on \mathbf{k} vertices with given independence number α . It is easy to see that every bi-block graph is a bipartite graph. For a bipartite graph G on \mathbf{k} vertices, the independence number $\alpha(G)$ satisfies $\lceil \frac{\mathbf{k}}{2} \rceil \leq \alpha(G) \leq \mathbf{k} - 1$. In this article, we prove that the maximum spectral radius $\rho(G)$ among all graphs G in $\mathcal{B}(\mathbf{k}, \alpha)$, is uniquely attained for the complete bipartite graph $K_{\alpha, \mathbf{k}-\alpha}$.