

SPECTRA OF R -VERTEX JOIN AND R -EDGE JOIN OF TWO GRAPHS

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Abstract

The R -graph $\mathcal{R}(G)$ of a graph G is the graph obtained from G by introducing a new vertex u_e for each $e \in E(G)$ and making u_e adjacent to both the end vertices of e . In this paper, we determine the adjacency, Laplacian and signless Laplacian spectra of R -vertex join and R -edge join of a connected regular graph with an arbitrary regular graph in terms of their eigenvalues. Moreover, applying these results we construct some non-regular A -cospectral, L -cospectral and Q -cospectral graphs, and find the number of spanning trees.

Keywords: spectrum, cospectral graphs, R -vertex join, R -edge join.

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