RECIPROCAL COMPLEMENTARY DISTANCE POLYNOMIAL AND ENERGY OF JOIN OF TWO GRAPHS

HARISHCHANDRA S. RAMANE AND DANESHWARI D. PATIL

ABSTRACT. For a connected graph G with diameter D, the reciprocal complementary distance matrix is defined as, $RCD(G) = [rc_{ij}]$ in which $rc_{ij} = \dfrac{1}{1 + D - d_{ij}}$ if $i \neq j$ and 0 otherwise, where d_{ij} is distance between the vertices v_i and v_j. In literature, RCD-polynomial has been studied for the join of two regular graphs when both the graphs are of diameter less than or equal to 2. In the present work, we study the RCD-polynomial for join of any two graphs and hence construct a pair of RCD-equienergetic graphs by joining a regular graph (which is among a pair of RCD-equienergetic graphs of same order and degree) with a non regular graph. Further, RCD-eigenvalues for these structures are studied in terms of adjacency eigenvalues of G_1 and G_2 when both of them are regular.

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Karnatak University
Department of Mathematics
Dharwad – 580003, India
E-mail address: hsramane@yahoo.com

Karnatak University
Department of Mathematics
Dharwad – 580003, India
E-mail address: daneshwarip@gmail.com