

On z -cycle factorizations with two associate classes where z is in $\{4, 4a\}$ with even parameters

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Let $K = K(a, p; \lambda_1, \lambda_2)$ be the multigraph with: the number of vertices in each part equal to a ; the number of parts equal to p ; the number of edges joining any two vertices of the same part equal to λ_1 ; and the number of edges joining any two vertices of different parts equal to λ_2 . The existence of C_4 -factorizations of K has been settled when a is even; when $a \equiv 1 \pmod{4}$ with one exception; and for very few cases when $a \equiv 3 \pmod{4}$. The existence of C_z -factorizations of K has been settled when $a \equiv 1 \pmod{z}$ and λ_1 is even; when $a \equiv 0 \pmod{z}$; and when $z = 2a$ where both a and λ_1 is even. In this paper, we give a construction for C_z -factorizations of K for $z \in \{4, 4a\}$ when a is even.

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