

Cube factorizations of complete and complete multipartite graphs

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Abstract

In this study, we will present our results on factorizations of complete and complete multipartite graphs into cubes. Those results are:

Theorem 1. *There exists a Q_4 -factorization of $\lambda K_{x(m)}$ (complete x partite graph with parts of size m) if and only if $mx \equiv 0 \pmod{16}$ and $\lambda m(x-1) \equiv 0 \pmod{4}$.*

Theorem 2. *There exists a Q_4 -factorization of λK_n if and only if $n \equiv 0 \pmod{16}$ and $\lambda(n-1) \equiv 0 \pmod{4}$.*

Theorem 3. *There exists a Q_n -factorization of nK_x if and only if $x \equiv 0 \pmod{2^n}$.*

Keywords: graph decomposition, resolvable decomposition, cubes

MSC: 05C51, 05B30, 05C70