

G-Designs for the Tadpole Graphs

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For a subgraph G of the complete graph K_n , a G -decomposition of K_n (or a G -design of order n) is a partition of the edge set of K_n into edge-disjoint copies of G . A tadpole $T(m, n)$ is a unicyclic simple graph consisting of an m -cycle glued to an end vertex of the path with $n - m$ edges. In this article, we show that a $T(m, n)$ -design of order N exists whenever $N \equiv 0$ or 1 (mod $2n$). Furthermore, if n is a prime power, these conditions are necessary.

Keywords: G -decomposition, G -design, ρ -tripartite labeling, tadpoles, unicyclic graphs