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Edge and modular edge irregularity strength of some path related graphs

A.I. Almazaydeh

Abstract. For a simple, connected and undirected graph $G(V, E)$ the mapping $\phi : V(G) \longrightarrow \{1, 2, \ldots, k\}$ that is defined from the vertex set $V(G)$ of the graph G to positive integers is called a *vertex k-labelling*. Let x and y be two vertices in $V(G)$, the *weight of the edge* xy -denoted by $w(xy)$- is defined to be the sum of the label of the vertex x and the label of the vertex y. That is $w_\phi(xy) = \phi(x) + \phi(y)$.

An *edge irregular k-labelling* of a graph G is defined to be a vertex k-labelling in which the weights of two distinct edges are not equal. The *edge irregularity strength*, denoted by $es(G)$, is an edge irregular k-labelling where k is the smallest such that the weights of the edges are distinct. If, by using some k-labelling where k is as above, the weight of each edge is divided by modulo the total number of the edges of the graph G, and the answers are all distinct, then that k-labelling is called a *modular edge irregularity strength*.

Haryeni et al. in [8] found that the edge irregularity strength of fan graphs F_n where $n \in \{2, 3, 4, 5, 6\}$ is $n + 1$. In this paper, we generalise this result for $n = 2, 3, 4, \ldots$. Also we state the edge irregularity strength and modular edge irregularity strength for some lollipop graphs.

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