

## Vertex (edge) irregular total labelings

The weight of a vertex  $x$  under a total labeling  $\delta : V \cup E \rightarrow \{1, 2, \dots, k\}$  is

$$wt(x) = \delta(x) + \sum_{xy \in E} \delta(xy),$$

and the weight of the edge  $xy$  is

$$wt(xy) = \delta(x) + \delta(xy) + \delta(y).$$

For a graph  $G = (V, E)$  we define a labeling  $\delta : V \cup E \rightarrow \{1, 2, \dots, k\}$  to be an *edge irregular total  $k$ -labeling* of the graph  $G$  if for every two different edges  $e$  and  $f$  of  $G$  there is

$$wt(e) \neq wt(f),$$

and to be the *vertex irregular total  $k$ -labeling* of  $G$  if for every two different vertices  $x$  and  $y$  of  $G$  there is

$$wt(x) \neq wt(y).$$

The minimum  $k$  for which the graph  $G$  has an edge irregular total  $k$ -labeling is called the *edge total irregularity strength* of the graph  $G$ ,  $tes(G)$ . Analogously, we define the *vertex total irregularity strength* of  $G$ ,  $tvs(G)$ , as the minimum  $k$  for which there exists a vertex irregular total  $k$ -labeling of  $G$ .

In the next papers are investigated the properties of edge total irregular labelings and vertex total irregular labelings.

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- Ahmad, A. - Bača, M.: *Edge-irregular total labeling of certain family of graphs*, **AKCE J. Graphs. Combin.** 6, No.1 (2009), 21-29.
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