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On Status Coindex Distance Sum and Status Connectivity Coindices of Graphs

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Abstract: The status of a vertex u in a connected graph G, denoted by $\sigma(u)$ is defined as the sum of the distance between u and all other vertices of a graph G. Let G be a connected graph of order $n \geq 3$ and size m. The first and second status coindices distance sum of graph G, denoted by $S_1^d(G)$ and $S_2^d(G)$, are defined as

$$S_1^d(G) = \sum_{uv \notin E(G)} [\sigma(u) + \sigma(v)]d(u,v),$$

$$S_2^d(G) = \sum_{uv \notin E(G)} [\sigma(u)\sigma(v)]d(u,v)$$

respectively. In this paper the first and second status coindex distance sum of some graphs are obtained. Status connectivity coindices of some standard graphs are computed. The bounds of the first and second status coindex distance sum and status connectivity coindices are established.

Key Words: Distance, status of a vertex, status coindex distance sum, status connectivity coindices.

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§1. Introduction

Let G be a connected graph with n vertices and m edges. Let $V(G)$ and $E(G)$ be its vertex and edge sets, respectively. The edge joining the vertices u and v is denoted by uv. The complement $\overline{G}$ of the graph G is the graph with vertex set $V(G)$ in which two vertices are adjacent if and only if they are not adjacent in G. The *degree* of a vertex u in a graph G is the number of edges joining to u and is denoted by $d(u)$ or d_u. The *distance* between the vertex u and v is the length of the shortest path joining u and v and is denoted by $d_G(u,v)$ [6]. For well known graph and terminology, we refer the books [6], [17].

The *status* of a vertex $u \in V(G)$, denoted by $\sigma_G(u)$ is defined as [8],

$$\sigma_G(u) = \sum_{v \in V(G)} d(u,v).$$

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