



## RANDIĆ STATUS INDEX 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  $G$ . In this paper we have defined Randić status index of graphs ( $\chi_s(G)$ ) and obtained the bounds for it. Further Randić status index of some graphs are obtained. Also the regression analysis of the boiling point of Paraffins with  $\chi_s(G)$  index is carried out.

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### 1. Introduction

In theoretical chemistry, the graph theoretic models can be used to study the properties of molecules. One of the known graph parameter is the Wiener index which was used to study the chemical properties of paraffins [19].

Many distance and degree based indices of a graph such as status connectivity indices [16], geometric arithmetic status index [11], Wiener index [19], peripheral wiener index [12,13], Zagreb indices [5,18], Randić index [17] and families of temperature indices [8-10], have been appeared in the literature. In this paper we introduce and study the new index called Randić status index  $\chi_s(G)$ . Throughout this paper, let  $G$  be a simple connected graph with  $n$  vertices and  $m$  edges. Let  $V(G)$  and  $E(G)$  be its vertex set and edge set, respectively. The *degree* of a vertex  $u$  denoted by  $d(u)$  or  $d_u$  is the number of edges incident to it. Let  $\delta$  and  $\Delta$  denote minimum and maximum degree of a graph  $G$  respectively. The *distance* between the vertex  $u$  and  $v$  is the length of the shortest path joining  $u$  and  $v$  and is denoted

  
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