

## ECCENTRIC CONNECTIVITY POLYNOMIALS AND THEIR TOPOLOGICAL INDICES OF JAHANGIR GRAPHS

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**Abstract:** Let  $G = (V, E)$  be a simple and connected graph. The degree of a vertex  $u$  and its eccentricity of a graph  $G$  is denoted as  $d(u)$  and  $e(u)$  respectively. The eccentric connectivity polynomial  $\xi^c(G, x)$  of a graph  $G$  is defined as  $\xi^c(G, x) = \sum_{u \in V(G)} d(u)x^{e(u)}$  and the modified eccentric connectivity polynomial  $\xi_c(G, x)$  of a graph  $G$  is defined as  $\xi_c(G, x) = \sum_{u \in V(G)} M(u)x^{e(u)}$ , where  $M(u) = \sum_{v \in N_G(u)} d(v)$  i.e., sum of the neighbouring vertices of  $u \in V(G)$ . The first derivative of these polynomials evaluated at  $x = 1$  generates eccentric connectivity index  $\xi^c(G)$  defined as  $\xi^c(G) = \sum_{u \in V(G)} d(u)e(u)$  and modified eccentric connectivity index  $\xi_c(G)$  defined as  $\xi_c(G) = \sum_{u \in V(G)} M(u)e(u)$  respectively. In this paper, we present the generalized results for eccentric connectivity polynomial, modified eccentric connectivity polynomial and their respective indices for Jahangir graph  $J_{n,m}$  with  $n \geq 2$  and  $m \geq 3$ .

**Keywords and Phrases:** Eccentric connectivity indices, eccentric connectivity polynomials, Jahangir graph.

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### 1. Introduction

Let  $G = (V, E)$  be a simple and connected graph with  $V(G)$  as the vertex set and  $E(G)$  as the edge set. The degree of a vertex  $u$  in a graph  $G$  is denoted as  $d(u)$  and is defined as the number of edges of a graph  $G$  incident with vertex  $u$  [5]. The