

A STUDY OF MIXED TREE DOMINATION POLYNOMIALS IN  
SOME CLASS OF GRAPHS

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(Received: Jul. 10, 2019 Accepted: Dec. 12, 2019 Published: Dec. 31, 2019)

**Abstract:** The mixed tree domination polynomial of a connected graph  $G$  of order  $n$  is the polynomial  $P(G, x) = \sum_{i=0}^{2n-1} p(i)x^i$ , where  $p(i)$  is the number of mixed tree dominating sets of  $G$  of cardinality  $i$  and  $\gamma_{mt}(G)$  is the mixed tree domination number of  $G$ . We analyse the specifications of the polynomial. Also  $P(G, x)$  is determined for cycles, complete graphs and stars, and the roots of  $P(G, x)$  are studied.

**Keywords and Phrases:** Domination, Mixed tree domination, domination polynomial, Mixed tree domination polynomial (*mtd*- polynomial).

**2010 Mathematics Subject Classification:** 05C69.

## 1. Introduction

The domination polynomial of a graph is introduced by Saeid Alikhani and Yee-hock Peng in [5]. Preethi and Raji introduced the concept of mixed tree dominating set in connected graph [2, 3, 4]. While imitating the concept of domination polynomial in view of mixed tree dominating set, we came across with many interesting relations with the coefficients of the polynomial and the graph parameters.