South East Asian J. of Math. & Math. Sci. **ISSN : 0972-7752**
Vol.14, No.1 2018, pp. 95-102

ON THE STABILITY OF COMMON NEIGHBOR POLYNOMIAL OF SOME GRAPHS

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(Received: January 04, 2018)

Abstract: Let $G(V, E)$ be a simple graph of order n with vertex set V and edge set E. Let (u, v) denotes an unordered vertex pair of distinct vertices of G. The i-common neighbor set of G is defined as $N(G, i) := \{(u, v) : u, v \in V, u \neq v \text{ and } |N(u) \cap N(v)| = i\}$, for $0 \leq i \leq n-2$. The polynomial $N[G; x] = \sum_{i=0}^{(n-2)} |N(G, i)|x^i$ is defined as the *common neighbor polynomial* of G. A root of the polynomial $N[G; x]$ is defined as the *common neighbor root* of the graph G. In this paper we study the stability of common neighbor polynomial of some graphs.

Keywords and Phrases: Common neighbor polynomial, common neighbor root.

2010 Mathematics Subject Classification: 05C31, 05C39.

1. Introduction

Let $G(V, E)$ be a simple graph of order n with vertex set V and edge set E. Let (u, v) denotes an unordered pair of distinct vertices of G. The i-common neighbor set of G is defined as $N(G, i) := \{(u, v) : u, v \in V, u \neq v \text{ and } |N(u) \cap N(v)| = i\}$, for $0 \leq i \leq n-2$. The polynomial $N[G; x] = \sum_{i=0}^{(n-2)} |N(G, i)|x^i$ is defined as the *common neighbor polynomial* of G [3]. In [3] the present authors introduced the common neighbor polynomial of graphs and derived the common neighbor polynomial of some well known graphs. Moreover, the common neighbor polynomial of some graph operations were discussed in [4]. A zero of the polynomial $N[G; x]$ is