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SKEW CHROMATIC INDEX OF 2−ROOTED SIBLING TREES AND CYCLIC SNAKE GRAPHS

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Abstract: A skew edge coloring of a graph G is defined as a set of two edge colorings such that no two edges are assigned the same unordered pair of colors. The skew chromatic index $s(G)$ is the minimum number of colors required for a skew edge coloring of G. In this article, we develop an algorithm for skew edge coloring of 2−rooted sibling trees and cyclic snake graphs. The minimum number of colors k which is known as the skew chromatic index is determined depending upon the number of edges of G. Furthermore, it is proved that the bound on the skew chromatic index $s(G) \geq max\{\Delta(G), k(|E(G)|)\}$ is sharp for the family of graphs considered for skew edge coloring.

Keywords and Phrases: Skew edge coloring, skew chromatic index, 2−rooted sibling tree, cyclic snake graphs, NP−complete.

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1. Introduction

Edge coloring problem is one of the fundamental problems on graphs, which appears in various scheduling problems like file transfer problems on computer networks. It has wide variety of applications like job scheduling, timetable designing, and assignment of frequencies in wireless communications etc. They are well studied in both computer science and mathematics [9]. Let $G = (V, E)$ be a finite, simple, connected undirected graph with vertex set V and edge set E. A proper edge coloring of a graph G is an assignment of colors to the edges of G so that no