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Notice for the PhD Viva Voce Examination

Ms Anu Joseph (Registration Number: 1942066), PhD scholar at the School of Sciences, CHRIST (Deemed to be University), Bangalore will defend her PhD thesis at the public viva-voce examination on Saturday, 16 September 2023 at 10.30 am in Room No. 044, Ground Floor, R & D Block, CHRIST (Deemed to be University), Bengaluru - 560029.

Title of the Thesis	:	**On the Maximization of Some Graph Coloring Problems**
Discipline	:	**Mathematics**
External Examiner (Outside Karnataka)	:	**Dr Reji T** Associate Professor Department of Mathematics Government College, Chittoor, Palakkad Kerala
External Examiner (Within Karnataka)	:	**Dr Soner Nandappa D** Professor Department of Mathematics University of Mysore Mysuru - 570006 Karnataka
Supervisor	:	**Dr Charles Dominic** Assistant Professor Department of Mathematics School of Sciences CHRIST (Deemed to be University) Bengaluru - 560029 Karnataka

The members of the Research Advisory Committee of the Scholar, the faculty members of the Department and the School, interested experts and research scholars of all the branches of research are cordially invited to attend this open viva-voce examination.

Registrar

Place: Bengaluru

Date: 06 September 2023

ABSTRACT

There have been a few studies that have endured in a distinct area of the literature where the number of colors used in a graph coloring problem is maximized under certain conditions. Some of these works have applications in network sciences. The concerned study focuses on the maximization of three different edge coloring concepts, viz., the vertex induced k−edge coloring, vertex incident k−edge coloring, and edge incident 2−edge coloring of a simple connected graph G, where $k \geq 2$. The number of colors assigned to the edges of the graph G has been maximized under certain conditions. Furthermore, the concept of the achromatic sum of a graph G has also been introduced here. This concept is to find the greatest possible coloring sum of the graph G in an improper edge coloring using natural numbers. An extensive study on three achromatic sums, namely the vertex induced 2−edge coloring sum, the vertex incident 2−edge coloring sum, and the edge incident 2−edge coloring sum are carried out.

A few bounds for these parameters on a simple connected graph G and the exact values for some elementary graph classes have been investigated. A few comparative results between some of these parameters have also been obtained. The optimal edge coloring number and the greatest edge coloring sum of certain graph classes, derived graphs, and graph products have been established.

Keywords: Vertex induced 2−edge coloring, vertex induced 2−edge coloring number, vertex incident 2−edge coloring, vertex incident 2−edge coloring number, edge incident 2−edge coloring, edge incident 2−edge coloring number, vertex induced 2−edge coloring sum, vertex incident 2−edge coloring sum, edge incident 2−edge coloring sum.

Publications:

1. **A Joseph**, C Dominic, "Vertex induced 2−edge coloring and vertex incident 2−edge coloring of some graph products", Palestine Journal of Mathematics, vol 11, no. 3, pp 86–95, 2022.
2. **A Joseph**, C Dominic, "Vertex Neighborhood Restricted Edge Achromatic Sums of Graphs", Discrete Mathematics, Algorithms and Applications, https://doi.org/10.1142/S1793830922501695, 2022.