

**CHRIST**(DEEMED TO BE UNIVERSITY)
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Notice for the PhD Viva Voce Examination

Ms Divya Bankapur, Registration Number: 2170213, PhD Scholar at the Department of Mathematics, School of Sciences, CHRIST (Deemed to be University), will defend her PhD thesis at the public viva-voce examination on Monday, 21 September 2026, at 02.00 pm in Room No. 044, Ground Floor, R & D Block, CHRIST (Deemed to be University), Bengaluru - 560029, Karnataka, India.

Title of the Thesis	:	A Study on Some Algebraic Signed Graphs and Digraphs
Discipline	:	Mathematics
External Examiner - I	:	Dr Nagesh H M Associate Professor Department of Science and Humanities PES University, Electronic City Campus Hosur Road, Electronic City Bengaluru - 560100 Karnataka
External Examiner - II	:	Dr Narendra P Shrimali Professor Department of Mathematics Gujarat University Navrangpura Ahmedabad - 380009 Gujarat
Supervisor	:	Dr Sudev N K 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 (Academics)**Place:** Bengaluru**Date:** 12 September 2026

ABSTRACT

In this study, algebraic graphs are constructed from finite groups, and a detailed investigation is made of the obtained graphs. The first chapter discusses conjugacy graphs and their signed graphs. The structure of the conjugacy graph is utilized to interpret several classical results from group theory in graph-theoretical terms. The conjugacy signed graphs associated with various finite groups are examined with respect to signed graph properties. This study also introduces a color-induced signed graph known as $L(2, 1)$ -color induced signed graph on algebraic graphs, order sum graphs and non-inverse graphs. Concepts of pseudoplanarity, pseudochordality, matching number, circumference and girth with respect to signed graphs are introduced and are investigated on the obtained $L(2, 1)$ order sum signed graphs and $L(2, 1)$ non-inverse signed graphs. Further, this study introduces digraphs emerging from cyclic subgroups of finite groups, called cyclic inclusion digraphs. The structural characteristics of these digraphs are investigated in detail.

Keywords: $L(2, 1)$ -coloring, color induced signed graphs, conjugacy signed graphs, line signed graphs, cyclic inclusion digraph.

Publications:

1. **D. Bankapur** and S. Naduvath, "On $L(2, 1)$ Order Sum Signed Graph of a Finite Group," *Discussiones Mathematicae, General Algebra and Applications*, 2025.
2. **D. Bankapur** and S. Naduvath, "On $L(2, 1)$ -Non-Inverse Signed Graph of a Finite Group," *Acta Universitatis Sapientiae, Informatica*, 17(7), 2025.
3. **D. Bankapur**, S. A. Choudum, and S. Naduvath, "A Study on Conjugacy Graphs," *South East Asian Journal of Mathematics and Mathematical Sciences*, 21(1), pp. 1–10, 2025.