



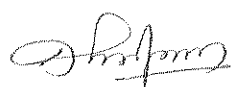
Notice for the PhD Viva-Voce Examination

Ms Annie Alex, Registration Number: 2071514, 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, 10 November 2025 at 11:00 am in Room No. 628, 6th Floor, R&D Block, CHRIST (Deemed to be University), Bengaluru – 560029, Karnataka, India.

Title of the Thesis	:	Study on Secure Equitable Domination in Graphs
Discipline	:	Mathematics
External Examiner - I	:	Dr Satyanarayana Reddy Associate Professor Department of Mathematics Shiv Nadar University NH91, Tehsil Dadri Greater Noida - 201314 Uttar Pradesh
External Examiner - II	:	Dr Yamuna M Professor Department of Mathematics Vellore Institute of Technology Katpadi, Vellore - 632014 Tamil Nadu
Supervisor	:	Dr Sangeetha Shathish Associate 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.

Place: Bengaluru
Date: 03 November 2025


Registrar (Academics)

ABSTRACT

Let v be a node of the graph G that is not in D , where D is a subset of $V(G)$. If every node $v \in G$ has at least one neighbour in D , then the set D is known as the dominating set (DS) of G . Every other node outside of D is protected by the nodes in D , which is regarded as a set of guards. Suppose D is a DS that holds the properties of both a secure dominating set (SDS) and an equitable dominating set (EDS). In that case, D is considered the secure equitable dominating set (SEDS). Let z be any node of S , where S is a set of dominating nodes of a graph G . If there exists a node w such that $w \in S$, $(S - z) \cup \{w\}$ is also a dominating set and $|\deg(w) - \deg(z)| \leq 1$, then set S is a SEDS. The secure equitable domination number (SEDN) of any graph G is the fewest count of nodes that are required to set up a secure equitable dominating set of G . We studied the SEDN of certain basic classes of graphs and obtained a few refined bounds of the SEDN of this parameter. We also include SEDN bounds based on degree, girth, and diameter. Further, we acquired the bounds of SEDN of the graph operations: the join and the corona. We investigated the limits of SEDN for both the Cartesian and the Kronecker product of graphs.

We began our investigation on the se-subdivision number of a graph. We established the se-subdivision number and the se-multi subdivision number of certain specific classes of graphs.

Additionally, we introduced the concepts of se-subdivision stable graphs and se-subdivision critical graphs. The ideas of the secure domination integrity (SDI) and the secure equitable domination integrity (SEDI) in a graph were explained. Several applications of the concept of secure equitable domination in graphs were discussed. Furthermore, we established the bounds of the parameter for certain chemical structures.

Keywords: *Secure domination number, Equitable domination number, Secure equitable domination number, Secure equitable subdivision number, Secure Domination Integrity, Secure Equitable Domination Integrity, Join of graphs, Corona of graphs, Silicate structures, Benzoid networks.*

Publications:

1. **A. Annie**, V. Sangeetha, Secure equitable subdivision number of graphs, Gulf Journal of Mathematics. DOI: <https://doi.org/10.56947/gjom.v17i2.2049>
2. **A. Annie**, V. Sangeetha, Secure Equitable Domination in Cartesian Product of Graphs, Discrete Mathematics, Algorithms and Applications. DOI: <https://doi.org/10.1142/S1793830925501289>
3. **A. Annie**, V. Sangeetha, On the Secure Equitable Domination in Graphs, TWMS J. App. Eng. Math. DOI: <https://jaem.isikun.edu.tr/web/images/articles/vol.15.no.9/01.pdf>
4. **A. Annie**, V. Sangeetha, Secure Equitability in Chemical Networks, Book title: Graph Theory for Computer Science