ST. XAVIER'S COLLEGE (Autonomous),
PALAYAMKOTTAI – 627 002.
(Recognized as "College with Potential for Excellence" by UGC & Accredited at A⁺⁺ Grade with a
CGPA of 3.66 out of 4 in IV Cycle by NAAC)

Annual Report 2024 - 2025

MATHEMATICS RESEARCH CENTRE (2003)

The **Mathematics Research Centre,** established in **2003,** is committed to fostering innovation through collaborative research. With **four Research Supervisors** and **14 Research Scholars,** the Centre actively explores diverse fields, including **Graph Theory, Algebraic Graph Theory, Functional Analysis, Algebra, and Fuzzy Logic.** Its dedication to academic excellence is reflected in the completion of Ph.D. research, new registrations, conference engagements, and impactful publications.

During the academic year **2024-2025,** 64 research scholars successfully defended their Ph.D. dissertations. Under the guidance of **Dr. A. Lourdusamy**, **Mrs. P. Aruna Rukmani, Mr. I. Dhiviyanandam, Ms. S. Kitheri Ammal, and Ms. F. Joy Beaula** completed their research, while **Mr. S. Sahayaraj Joseph Nirmalkumar**, supervised by **Dr. S. Sujith**, also achieved his Ph.D. milestone. Additionally, four new scholars have registered for doctoral research under the mentorship of **Dr. Y. Therese Sunitha Mary, Dr. S. Nithya, and Dr. S. Sujith,** further strengthening the Centre's research community.

The Centre has actively engaged in academic events, hosting and participating in **conferences and workshops** to encourage knowledge dissemination and collaboration. The **International Conference on Graphs from Algebraic Structures (ICGA 2024),** conducted on **September 11-12, 2024,** attracted **133 participants** and featured eminent speakers such as **Dr. T. Tamizh Chelvam (CSIR Emeritus Scientist, Manonmaniam Sundaranar University), Dr. M. R. Pournaki (Professor, Sharif University of Technology, Iran), Dr. T. Asir (Associate Professor, Pondicherry University), and Dr. T. Kavaskar (Assistant Professor, Central University of Tamil Nadu).** A **special session on Research Advances in Domination in Graph Theory** was organized on **October 10, 2024**, engaging **52 students** in advanced mathematical discussions. The Centre also conducted a **Two-Day Intra-Collegiate Workshop on Problem Solving in Algebra and Analysis** for **PG students** on **February 18-19, 2025,** with **75 students** participating. Furthermore, the **Rev. Dr. A. Antonysamy Golden Jubilee Endowment Lecture**, held on **January 27, 2025,** benefited **92 attendees**, with **Dr. R. Sundareswaran (Associate Professor, SSN College of Engineering, Kalavakkam)** delivering an insightful talk on **Vulnerability Parameters in Graphs.**

The research team has made significant contributions to academia through **publications in reputed journals,** including **Scopus, Web of Science, and UGC-CARE**. Notable works include studies on **domination parameters, metric dimensions, probabilistic neural networks, and zero divisor graphs.** Among these, key papers were published in journals such as **Proyecciones, Discrete Mathematics, Algorithms, and Applications, Journal of Computational Analysis and Applications, and Indian Journal of Natural Sciences.** Additionally, 20 research papers were presented at **national and international conferences**, covering topics like **domination integrity, transformation graphs, and detour domination in hypercube networks,** showcasing the Centre's interdisciplinary research scope. The **Mathematics Research Centre** continues to foster a dynamic and intellectually stimulating research environment, making notable contributions to **mathematical sciences** through high-impact **publications, conferences, and academic collaborations**. With a strong commitment to advancing knowledge, mentoring scholars, and expanding interdisciplinary research, the Centre aspires to enhance its scholarly impact and global research outreach in the years to come.