



ST. XAVIER'S COLLEGE, MAPUSA GOA

Report of Activity conducted in the Academic Year 2025-26

Name of Activity	Guest Lecture on "Pigeonhole Principle and its Applications"
Date/ Duration	01 day, 4 th October 2025, 11:00 am – 12:30 pm
Venue	Room No. 405, St. Xavier's College, Mapusa – Goa
Name of organizing Department/Cell	Department of Mathematics
In collaboration with	
Name/s of Faculty Co ordinator	Mr. Gajanan Parab
Stratum of Event	College
Name & details of Resource Person/s if any	Dr. Shiv Parsad Associate Professor Department of Mathematics Indian Institute of Technology (IIT), Goa
Report	<p>The Department of Mathematics organized a guest lecture on the topic "Pigeonhole Principle and its Applications" for students of FY/SY/TY. The resource person for the session, Dr. Shiv Parsad, Associate Professor, IIT Goa, was welcomed by the Dr. B. C. Nair, Head, Department of Mathematics of the college.</p> <p>The Resource Person delivered an engaging and insightful session on the Pigeonhole Principle, a fundamental concept in combinatorics. The principle was first explained in layman's terms and then properly expounded upon in its mathematical form along with a proof for it. Dr. Parsad also gave a brief historical overview of the early origins of the principle and its prominent usage in various branches of mathematics.</p> <p>He explained the principle in its simplest form — if $n+1$ objects are placed into n boxes, then at least one box must contain more than one object. This intuitive yet powerful idea was then extended to its generalized version, showing its utility in diverse problem-solving situations.</p> <p>The session highlighted practical applications of the principle, such as:</p> <ul style="list-style-type: none"> Proving the existence of repeated elements in sets.

	<ul style="list-style-type: none"> • Applications in number theory (e.g., proving that in any group of people, at least two must share a birthday month). • Problem-solving in computer science, such as hashing and data storage. • Establishing results in graph theory and Ramsey theory. • Problem on sphere and triangle <p>The speaker emphasized that the true strength of the Pigeonhole Principle lies in its ability to demonstrate existence results, even when constructive solutions are not immediately obvious. Through several examples and puzzles, he showed how simple reasoning could lead to deep mathematical insights.</p> <p>Overall, the session was interactive, thought-provoking, and well-received by the participants, leaving them with a deeper appreciation of how a basic principle can have wide-ranging applications across mathematics and beyond.</p> <p>40 students attended the guest lecture.</p>
Brochure/Poster	https://xavierscollegegoa.ac.in/wp-content/uploads/2025/11/Pigeonhole-Principleand-its-Applications-poster.pdf
Photographs	https://xavierscollegegoa.ac.in/wp-content/uploads/2025/11/Pigeonhole-Principle-and-its-Applications-images.pdf
List of participants with signatures	https://xavierscollegegoa.ac.in/wp-content/uploads/2025/11/Pigeonhole-Principle-and-its-Applications-Attendance.pdf
Certificate	Not applicable