

## St. Philomena's College (Autonomous), Mysuru Post Graduate Studies and Research Centre Department of Mathematics

# A Report on Interactive Session on "Combinatorics in Routing Networks and Drug Design" Date: 3<sup>rd</sup> April, 2024.

The interactive session on "Combinatorics in Routing Networks and Drug Design" was successfully conducted at PG Department of Mathematics, St. Philomena's College, Mysore. The event aimed to provide M.Sc. Mathematics students with insights into the intersection of combinatorics, routing networks, and drug design, with a focus on research inclination towards practical applications and interdisciplinary perspectives.

## **Objectives:**

The session was designed with the following objectives in mind:

- ➢ To introduce M.Sc. Mathematics students to the foundational concepts of combinatorics and its applications in routing networks and drug design.
- To explore the role of combinatorial optimization techniques in solving routing problems in networks.
- To discuss combinatorial algorithms and their significance in drug design and discovery processes.
- To provide a platform for interactive discussions and knowledge exchange among students and experts in the field.

## **Outlines of the Session:**

### 1. Introduction to Combinatorics and Its Applications:

Prof. Veena Mathad clarified the doubts on the fundamental concepts of combinatorics and its diverse applications, laying the foundation for the subsequent research discussions.

### 2. Combinatorial Optimization in Routing Networks:

Focusing on the application of combinatorial optimization techniques in solving routing problems in networks Prof. Veena Mathad gave few insights into the algorithms and methodologies used to optimize network routes efficiently.









#### 3. Combinatorial Algorithms in Drug Design:

Prof. Mathad discussed the role of combinatorial algorithms in drug design and discovery processes. Students presented various case studies to clarify on how combinatorial approaches are utilized to explore chemical space and identify potential drugs.

#### 4. Interactive Session: Q&A and Discussions:

The session concluded with one-to-one interaction where students engaged in discussions, raised queries, and exchanged ideas with Prof. Mathad. This session facilitated a deeper understanding of the concerned topics and Prof. Mathad posed many research ideas in order to culminate research articles in various reputed national and international journals.

### **Conclusion:**

The interactive session on "Combinatorics in Routing Networks and Drug Design" provided M.Sc. Mathematics students with valuable insights into the interdisciplinary applications of combinatorics. Through informative insights, case studies, and interactive discussions, students gained a deeper understanding of the practical relevance of combinatorial techniques in solving real-world problems in routing networks and drug discovery.

#### Acknowledgment:

We extend our heartfelt gratitude to Prof. Veena Mathad for her time and expertise to enlighten our students with her profound knowledge of combinatorics and its applications. Further, we extend our sincere gratitude to our Management and the Director for their invaluable support and encouragement in organizing this session. Their commitment to academic excellence and their vision for promoting interdisciplinary learning initiatives have been instrumental in the success of this event. We deeply appreciate their continuous support and guidance in facilitating enriching academic experiences for our students.