

Report on Two-Day Workshop on Aspects of Fundamental Mathematics
Organized Jointly by Vidyasagar Metropolitan College & St. Paul's Cathedral Mission
College, Kolkata

The poster features a dark background with a grid pattern. At the top left is the ISI logo, and at the top right is the St. Paul's Cathedral Mission logo. The main title is in large, bold, yellow and white text. Below the title, a yellow speech bubble contains the organizing institutions. Three circular portraits of the speakers are arranged horizontally. Below each portrait is their name and affiliation. The schedule is listed on the left, and the dates and venue are on the right. A yellow button at the bottom says 'Register Now!' with a 'REGISTER' link below it. Contact information is at the very bottom.

**TWO DAYS WORKSHOP
ON ASPECTS OF
FUNDAMENTAL MATHEMATICS
2023**

Organized jointly by
Vidyasagar Metropolitan College
and **St. Paul's Cathedral Mission College**

PROF AMARTYA K. DUTTA
*Theoretical Statistics
and Mathematics Unit
ISI, Kolkata*

PROF SUDIP K. ACHARYA
Department of Pure Mathematics,
University of Calcutta

PROF SANDIP JANA
Department of Pure Mathematics,
University of Calcutta

SCHEDULE
Day 1-Prof Sandip Jana
Day 2 - Prof Amartya K. Dutta and
Prof Sudip K. Acharya

**15 - 16
MAY 2023** start from 12 pm - 4pm

VENUE: VIDYASAGAR
METROPOLITAN COLLEGE
39, Sankar Ghosh Lane, Kol-6

Register Now!

REGISTER

Phone : +919674082827,9804106028 | Email : maths1969.vmc@gmail.com

Date: 15th & 16th May, 2023

Venue: Vidyasagar Metropolitan College, Kolkata

The Department of Mathematics of **Vidyasagar Metropolitan College** and **St. Paul's Cathedral Mission College**, Kolkata, jointly organized a two-day workshop titled **"Aspects of Fundamental Mathematics"** on **15th and 16th May, 2023**. The event aimed to strengthen the conceptual understanding of fundamental areas of mathematics among students and teachers and to provide a platform for academic enrichment and collaborative learning. The workshop commenced with a formal inaugural session in the presence of the **principals of both colleges**, along with senior faculty members and students. The principals welcomed all participants and emphasized the importance of such collaborative academic engagements in enhancing the quality of undergraduate mathematics education.



The workshop featured eminent speakers from reputed institutions:

- **Prof. Sudip Acharya**, Former Professor of Pure Mathematics
- **Prof. Sandip Jana**, Department of Pure Mathematics, University of Calcutta
- **Prof. Amartya Dutta**, Indian Statistical Institute, Kolkata

Each speaker delivered thought-provoking lectures focused on different foundational aspects of mathematics. Their sessions covered a wide range of topics, blending both theory and application, and were designed to challenge and inspire the participants. The workshop saw active participation from **teachers and students of both institutions**. The interactive nature of the lectures and discussions encouraged meaningful exchanges between the speakers and participants, thereby creating a lively academic atmosphere. The two-day workshop concluded with a note of appreciation to all the speakers, organizing team members, and participants. Feedback received from the attendees reflected a deep sense of learning and intellectual satisfaction. The successful conduct of this workshop reinforced the value of inter-college academic collaboration in building a vibrant and robust educational environment.

$x \rightarrow a \Rightarrow f(x) \rightarrow l$
 $\forall \epsilon > 0, \exists \delta > 0, 0 < |x-a| < \delta \Rightarrow l-\epsilon < f(x) < l+\epsilon$
 $f(x) \in (l-\epsilon, l+\epsilon)$

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$\exists a \in A$ subset a neighborhood containing A
 neighbourhood $U = \bigcup_{i=1}^n (a_i, b_i)$, $a_i, b_i \in A$
 set of open sets: B, then neighbourhood $U_{a_i} = \bigcup_{i=1}^n (a_i, b_i)$
 topology = B $\subseteq \bigcup_{i=1}^n (a_i, b_i)$
 by definition A \rightarrow with each $a \in A$, neighbourhood U_{a_i} is candidate.
 Now $\{U_{a_i} : a \in A\} \rightarrow$ topology = $\bigcup_{i=1}^n (U_{a_i})$ - a candidate.

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FACT 2 - If A is an uncountable set, then $\exists a \in A$ such that a is a limit point of A .

Lemma If U is open in \mathbb{R} , then we can write $U = \bigcup_{i=1}^{\infty} (a_i, b_i)$, $a_i, b_i \in \mathbb{Q}$.

\Rightarrow If $\{G_\alpha : \alpha \in I\}$ is a family of open sets in \mathbb{R} , then we can write $\bigcup_{\alpha \in I} G_\alpha = \bigcup_{i=1}^{\infty} G_{\alpha_i}$.

\Rightarrow If $B \subset \bigcup_{\alpha \in I} G_\alpha$ (each G_α open) $\Rightarrow B \subseteq \bigcup_{i=1}^{\infty} G_{\alpha_i}$.

\Rightarrow If B is finite set then $\exists a \in A$ has a family containing $A \Rightarrow$ With each $a \in A$, we can associate an open set W_a such that $W_a \cap A$ is countable. Now $\{W_a : a \in A\} \rightarrow$ cover of A .

$\Rightarrow A \subseteq \bigcup_{i=1}^{\infty} W_{a_i} \Rightarrow A = \bigcup_{i=1}^{\infty} (A \cap W_{a_i}) \rightarrow$ countable.

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