

**Proceedings of One day National Seminar on the theme Science, Technology & Innovation Efforts to Address COVID-19**

**Organized by: All Science Departments, Sanatan Dharma College, Ambala Cantt**

Approved by: Directorate of Higher Education , Haryana

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## FOREWORD

The COVID-19 pandemic has underscored the pressing need for countries to focus more on elevating science, technology and innovation(STI) in both policy and practical terms. All of a sudden in March 2020, the entire world stagnated due to unprecedented outbreak of the COVID-19 disease, affecting human lives globally and thus changing our national priorities. The transfer of knowledge, skills and solutions in the science and technology fields can have a profound and lasting impact on the development trajectories of nations and peoples. The world cannot develop or advance - nor can we achieve the Sustainable Development Goals - without modern technology and new solutions to old problems.

We need more research, collaboration, data and knowledge sharing to cope with the immediate impacts of the coronavirus crisis and go beyond it. Some research work presented by delegates at National Seminar on the theme “**Science, Technology & Innovation Efforts to Address COVID-19**” held at Sanatan Dharma College, Ambala Cantt on March 30, 2022 has been compiled in this proceeding.

One day national seminar on the theme Science, Technology & Innovation Efforts to Address COVID-19” is the output of tremendous efforts put by the organising committee. It has been organised by all Science Departments of the College in collaboration with Directorate of Higher Education, Haryana. It gives me immense pleasure to know that participants and resource persons across the country have come together on a platform to discuss Innovation Efforts to Address COVID-19”. The relevance of the theme of the seminar has drawn a huge response in terms of research papers and participants.

I would like to congratulate the Editors along with their dedicated organising committee for success of the seminar.

I wish this seminar proceedings will be of immense use for the readers and would stimulate further research in the concerned domain.

**(Dr Rajinder Singh)**  
Principal

## **PREFACE**

One day national seminar on the theme Science, Technology & Innovation Efforts to Address COVID-19” was organised on March 30, 2022 by Department of Sciences in collaboration with Directorate of Higher education, Haryana. The main objective of this seminar was to provide a platform for the academicians, professionals and research scholars to discuss and understand the role of “Science, Technology & Innovation Efforts to Address COVID-19”.

The one-day Seminar aims to provide a platform for discussing the issues, challenges, opportunities and findings of research on role of “Science, Technology & Innovation Efforts to Address COVID-19”. Hopefully, it will also spark innovative ideas, foster research relations or partnership between the various institutions. The year 2020 and the COVID pandemic brought a changed context for higher education all over of the world. One notable change in the educational landscape occurred during the past year: transition from traditional in-class lessons to online versions. We are highly grateful to the Directorate of Higher education, Haryana for sponsoring the One day national seminar on the theme Science, Technology & Innovation Efforts to Address COVID-19”.

The editors hope that this publication will provide the reader a broad overview of the latest practices, and that it will be a valuable reference source for further research. The editors would like to express their sincere appreciations and thanks to all the authors for their contributions to this publication. We would also like to extend our thanks to the members of the organizing team for their hard work.

## ACKNOWLEDGMENT

All of a sudden in March 2020, the entire world stagnated due to unprecedented outbreak of the COVID-19 disease, affecting human lives globally and thus changing our national priorities. The transfer of knowledge, skills and solutions in the science and technology fields can have a profound and lasting impact on the development trajectories of nations and peoples. The world cannot develop or advance - nor can we achieve the Sustainable Development Goals - without modern technology and new solutions to old problems. In this context, One day Online National Seminar on the theme **“Science, Technology & Innovation Efforts to Address COVID-19”** held at Sanatan Dharma College, Ambala Cantt on March 30, 2022. We are highly grateful to Directorate of Higher Education, Haryana for their timely assistance, guidance and motivation in organisation of the Seminar. We acknowledge the active participation from faculty members, research scholars, industry experts and students that has brought the ideas and concepts related to **Science, Technology & Innovation Efforts to Address COVID-19”**. We feel indebted to the Managing Society of the college for giving us an opportunity to invite the academicians across the country for the fruitful deliberations on the themes of the seminar. Perpetual motivation and support from the honourable principal of the college enabled us to organise a seminar and compile the proceedings of the seminar in form of a book. The tireless efforts of organising team of the event have helped us to compile research articles contributed to the seminar to a book for which they are thanked and appreciated. With the hope of organising many more such intellectual events in future, we would like to thank all the individuals whose direct and indirect efforts have led this day to come.