



Prabandhan Guru प्रबन्धन गुरु

(A Peer Reviewed Journal of Multi Disciplinary Research)

ISSN 2321-4295

RNI No. UPENG/2010/38376

Special Issue

October 2023

PROCEEDINGS OF ONE DAY NATIONAL CONFERENCE ON

Recent Advances in IT, Mathematics and Management (RAIMM-2023)

Prabandhan Guru
Special Issue
October 2023

Shri Ram Group of Colleges
Muzaffarnagar, U.P. (INDIA)

Coordinator
IQAC, Shri Ram College
Muzaffarnagar

Chairman
IQAC, Shri Ram College,
Muzaffarnagar

Prabandhan Guru

Editorial Board

Patron – in – Chief

Dr. S. C. Kulshreshtha

: Chairman, Shri Ram Group of Colleges, Muzaffarnagar

Patron

Er. Sankalp Kulshreshtha

: Secretary, Shri Ram Group of Colleges, Muzaffarnagar

Advisory Board

Dr. Poonam Sharma

: President, Shri Ram College, Muzaffarnagar.

Dr. Deepankar Sharma

: Professor & Executive Director, Dr. K. N. Modi Foundation, Modinagar.

Dr. Lokesh Jain

: Professor, Rural Management and Study Centre, Gujrat Vidyapeeth, Ahmedabad.

Dr. Peeyush Vats

: Professor, Department of Mechanical Engineering, Poornima College of Engineering, Jaipur.

Dr. Noel Parge

: Vice Principal, Dept. of Commerce, Ahmednagar College, Ahmednagar, Maharashtra.

Dr. Hitesh Parmar

: Asst. Prof., Dept. of Business Management, Sardar Patel University, Vallabh Vidyanagar, Gujrat.

Dr. Aditya Gautam

: Principal, Hariom Saraswati PG College, Dhanauri, Roorkee.

Dr. Ashok Kumar

: Director, Shri Ram College, Muzaffarnagar.

Dr. Purna Mittal

: Principal, Shri Ram College, Muzaffarnagar.

Dr. N. K. Sharma

: Director, Ch. Harchand Singh College, Khurja, Bulandshahar.

Dr. Girendra Kumar Gautam

: Founder & Secretary General, Pesots, New Delhi.

Dr. Anju Walia

: Professor, Shri Ram College, Muzaffarnagar.

Dr. Ashwani Kumar

: Principal, Shri Ram Polytechnic, Muzaffarnagar.

Dr. Punam

: Principal, Shri Ram College of Law, Muzaffarnagar.

Editor-in-Chief

Prof. (Dr.) Pragati Saxena

: Director, Hierank Business School, Noida

Managing Editor

Dr. Ashfaq Ali

: Head, Department of Commerce, Shri Ram College, Muzaffarnagar

Associate Editors

Dr. Ravindra Pratap Singh

: Director Research, CHS-SRGC; Principal, CHS College of Law, Khurja, Bulandshahar.

Dr. Vinit Kumar Sharma

: Dean Academics SRC & Professor, Dept. of Basic Sciences, Shri Ram College, Muzaffarnagar.

Dr. Suchitra Tyagi

: Associate Professor, Department of Chemistry, Shri Ram College, Muzaffarnagar.

Mr. Atul Raghuvanshi

: Assistant Professor, Faculty of Management Studies, Shri Ram Group of Colleges, Muzaffarnagar.

Editorial Members

Dr. Pramod Kumar

Dr. Ritu Pundir

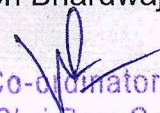
Dr. Anu Devi

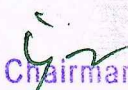
Dr. Shadab Khan

Dr. Anjali Jakhar

Mohd. Danish

Dr. Rishabh Bhardwaj


Co-ordinator
IQAC, Shri Ram College
Muzaffarnagar


Chairman
IQAC, Shri Ram College,
Muzaffarnagar

About SRC

Shri Ram College is renowned for its academic excellence in Sciences, Management Studies, Commerce, Computer Application, Education, Physical Education, Journalism and many more. We offer a wide spectrum of programmes at Undergraduate & Post Graduate level in Management, Computer Application, Fine Arts, Journalism and Mass Communication, Education, Physical Education, Commerce and Bioscience.

Our main goal at Shri Ram College is to strive relentlessly for providing quality education and in challenging fields, so as to empower our students to develop real life situations.

To cater to the needs of professional education, highly qualified academicians, prestigious bureaucrats and renowned industrialists under the leadership of the eminent educationist Dr. S.C. Kulshreshtha have formed "Shri Ram Charitable Trust" with an aim at promoting quality education at affordable fees.

About the Department

Information Technology has been the greatest agent of transportation of technology and advancement of global economy. It will definitely be having a bigger role to play in the coming years. It is changing every aspect of human life, be it communication, trade, manufacturing, services, culture, entertainment, education, research, defense or global security. IT covers a wide spectrum of issues. It includes telecommunication, finance, banking revenue, commerce, electronics, human resources development, defense and rural development. It also addresses critical national needs in the areas of information infrastructure, internet access, software development and exports, hardware manufacture, electronic commerce, research in IT, manpower training and education.

The Department offers Bachelors course in Computer Application to provide advanced knowledge and skills to enable students to embark readily and successfully in their chosen careers as IT professionals and managing modern organizations through diversified application of computers and create a sound foundation and academic base required for further studies.

Shri Ram College
Muzaffarnagar

Chief Patron
Dr. S.C. Kulshreshtha
Founder Chairman
Shri Ram Group of Colleges, Muzaffarnagar

Patron
Dr. Ashok Kumar
Director
Shri Ram College, Muzaffarnagar
Dr. Perna Mittal
Principal
Shri Ram College, Muzaffarnagar

Advisory Committee
Dr. S.N. Chauhan
Director
SRGC(IC), Muzaffarnagar
Dr. Mohd. Arif
Assistant Professor
Govt. PG College, Deoband, Saharanpur
Dr. Poonam Sharma
Assistant Professor
Jain Kaniya Pathshala (PG) College, Muzaffarnagar

Organizing Committee
Convener
Dr. Nishant Kumar Rathi
Dean, Computer Application
Shri Ram College, Muzaffarnagar
Coordinator
Dr. Himanshu Hora
Assistant Professor, Computer Application
Shri Ram College, Muzaffarnagar



Shri Ram College
Muzaffarnagar

NAAC Grade A++

announces

Conference
on

**Recent Advances in IT,
Mathematics & Management
(RAIMM-2023)**

October 21, 2023

Organized By

Department of Computer Application

Panel Members



Dr. Prateek Mishra
Director
APIIT, Panipat, Haryana



Dr. Alok Kapil
Associate Professor
ITS, Ghaziabad



Sh. Jitendra Kumar
Sr. Technical Architect (Cloud & IoT)
HCL Technologies Ltd.



Sh. Pransh Sharma
Sr. Analyst
SEB Administrative Services Inc.



Dr. Ashok Kumar
Director
Shri Ram College, Muzaffarnagar



Dr. Perna Mittal
Principal
Shri Ram College, Muzaffarnagar

Muzaffarnagar

About Conference

The conference brings together professionals, researchers, and academics from diverse fields to explore the latest developments and innovations at the intersection of information technology, mathematics, and management. This event not only serves as a platform for advancing IT, Mathematical sciences and Management research but also offers an excellent opportunity for participants to grasp current research trends and update their expertise in their respective areas of study. The program consists of plenary invited talks as well as contributed paper presentations on various technical aspects of different research areas.

The purpose of this conference is an earnest attempt to create the right interface for the exchange and dissemination of new ideas and techniques among the academics, leading engineers, researchers and scholar students in various fields of IT, Mathematical sciences and Management.

Introduction

With the rapid development and increasing complexity of computer science and informatics, user's requirements for trusted computing and informatics systems are becoming more and more demanding. Useful and innovative technologies in these areas are attracting researchers. National Conference on Recent Advances in IT, Mathematics & Management (RAIMM-2023) aims to bring researchers, academicians, scholars and experts from various backgrounds and application areas in different engineering disciplines.

RAIMM-2023 will emphasize on promoting a high level of interaction between the theoretical, experimental and applied communities, so as to achieve exchange of ideas in new and emerging computer and informatics areas.

RAIMM-2023 will serve as a platform to cover the advanced concepts and approaches of computer science, engineering, mathematics and management in the real world scenario and provides a forum to present and discuss emerging ideas and trends in this highly challenging research field.

Therefore, in this upcoming edition of the conference we plan to focus on digital transformation aspects and how these may impact the people and society. By incorporating a variety of related topics, RAIMM-2023 aims to create and promote more inter-departmental and interdisciplinary research ideas and knowledge.

IQAC, Shri Ram College
Muzaffarnagar

Call for papers :

Original contributions, previously unpublished and high quality research papers are solicited on the topics covered under the following broad areas, but not limited to:

Information Technology

- Data Security
- Data Innovation
- Software Reliability
- Cyber-Physical Systems
- Web Intelligence
- Image Processing
- Machine Learning and Deep Learning
- IoT, IoT Architecture and Applications
- Data Mining and Big Data Analytics
- Applications of Information Technology
- Block Chain and Crypto Currency
- Cyber Security
- Soft Computing
- Computer Networking
- Artificial Intelligence
- Pattern Recognition
- Grids & Clouds

Mathematics

- Computational Complexity Theory
- Probability Statistics and Stochastic Process
- Mathematical Modeling and Computational Techniques
- Computational and Financial Mathematics
- Neural Network and Genetic Algorithms
- Computational Bio Mathematics
- Application of Fuzzy Theory
- AI in Mathematical Optimization and Decision Making
- Computational Optimization and Approximation
- Soft Computing in Complex Mathematical System
- Theory of Computation

Management

- Stress management
- Work-life balance
- Knowledge Management
- Entrepreneurship
- Marketing Innovation
- Product design and commercialization
- Supply chain risk and uncertainty
- Academic entrepreneurship
- Digital Marketing strategies
- E-Commerce: Planning & Execution

Schedule

Timing

10:00 am - 11:00 am

11:00 am - 01:00 pm

1:00 pm - 2:00 pm

2:00 pm - 4:00 pm

4:00 pm - 5:00 pm

Session

Inaugural Session

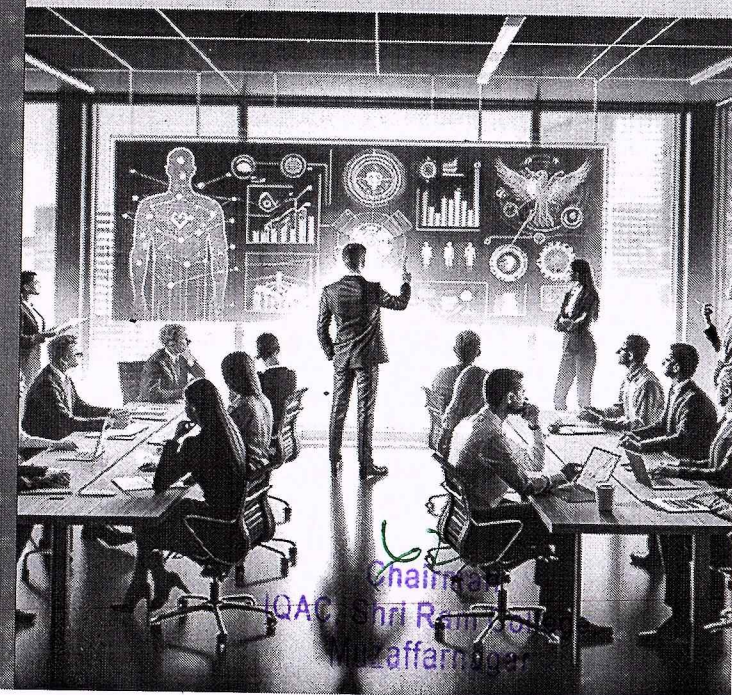
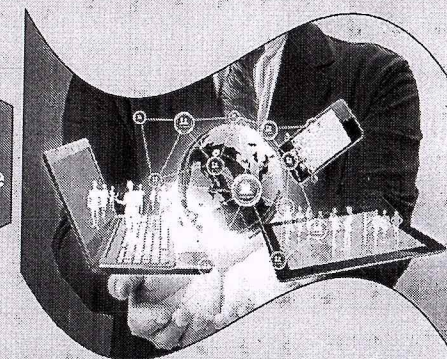
Technical Session - I

Lunch

Technical Session - II

Valedictory Session

Venue :
Auditorium
Shri Ram College
Muzaffarnagar



CONTENTS

1. Improving the Efficiency and Convergence of Particle Swarm Optimization Algorithms
— *Nidhi, Vidhi Tayal*
2. Impact of Crypto currency on the Indian Economy: Opportunities, Risks and Regulatory Challenges
— *Dr. Shubham Tayal and Mohd. Yusuf*
3. Unsupervised Learning Approaches for Anomaly Detection in Industrial Systems: A Comparative Study
— *Kapil Kumar, Navneet Singh Chauhan*
4. Augmented Reality (AR) and Virtual Reality (VR): Transforming Our World
— *Ajay Kumar, Rahul Gautam, Navneet Singh Chauhan*
5. Sustainable IT: Green Computing and Energy-Efficient Practices for Data Centers and IT Infrastructure
— *Praveen Kumar, Vikas Kumar, Sumit Kumar Saini*
6. Application of Soft Computing Techniques in Solving Mathematical Optimization Problems: A Review
— *Vidhi Tayal, Nidhi*
7. A Optimal Solution of Fuzzy Transportation Problem by Using a New Finding Method "Novel Method"
— *Mr. Sidhant Garg*
8. Benefits of Digital Marketing for Start-ups: A Comprehensive Analysis
— *Radhika Mittal and Mohd. Yusuf*
9. The Role of Social Media Marketing in Brand Promotion and Customer Engagement: A Comprehensive Analysis
— *Mohd. Yusuf, Dr. Shubham Tayal*
10. The Impact of Accounting Information on Investor Decision-Making: A Comprehensive Analysis
— *Mohd. Yusuf, Dr. Shubham Tayal*
11. An appraisal of labour welfare activities in Fertilizer industry of Uttar Pradesh (With special reference to Muzaffarnagar)
— *Dr. Shubham Tayal, Mohd. Yusuf*
12. Enhancing Data Security through Trusted Delegation in Mobile Healthcare
— *Rahul Gautam, Dr. Pramod Kumar, Vikas Kumar*


Co-ordinator
IQAC, Shri Ram College
Muzaffarnagar


Chairman
IQAC, Shri Ram College,
Muzaffarnagar

13. A Review of Hybrid Particle Swarm Optimization Algorithms for Global Optimization Problems
— *Gurmeet Saini, Nidhi, Vidhi Tayal*
14. Exploring Novel Techniques for Enhancing Database Performance: A Comprehensive Review and Analysis
— *Mr. Navneet Singh Chauhan, Mr. Ajay Kumar*
15. Optimization Techniques for Training Deep Neural Networks
— *Sumit Saini, Vikas Kumar, Rahul Gautam*
16. The Next Generation of Web Frameworks
— *Sanjay Kant and Praveen Singh*
17. Automated Malware Evolution and Countermeasures Using Deep Reinforcement Learning
— *Dr Pramod Sharma, Mr. Vikas Kumar, Dr. Sanjeev Tayal*
18. Enhancing Differential Equation Solutions with Soft Computing Techniques
— *Vidhi Tayal, Nidhi*
19. IoT in Action: Revolutionizing City Living with Smart Technologies
— *Vaishnavi Shukla*
20. Enhancing Wastewater Treatment Efficiency: A Computational Approach to Taisei Soil System Technology for Sustainable Wastewater Management
— *Kapil Kumar, Navneet Singh Chauhan*
21. A Comprehensive Review of Ensemble Learning Techniques and Their Effectiveness in Machine Learning
— *Neetu Singh, Ankur Rohilla*
22. A Comparative Review of Machine Learning Methods in Sentiment Analysis
— *Ankur Rohilla, Neetu Singh*
23. The Impact of Artificial Intelligence on Jobs and Employment in India
— *Dr. Himanshu Hora, Mr. Ankur Rohilla*
24. Cyber-Physical Systems in IoT: Challenges and Opportunities for IT Infrastructure
— *Amit Tyagi, Vikas Kumar, Sumit Kumar Saini*
25. The Study on METAVERSE: From Physical Reality to the Internet and Its Impact on humans
— *Kuldeep Dhiman*
26. Exploring Advanced Encryption Techniques for Securing IoT Data
— *Vishwas Kumar Sharma, Nishant Kumar Rathi, Pramod Kumar*
27. Detecting Polymorphic and Metamorphic Malware: Challenges and Techniques
— *Vikas Kumar, Mr. Amit Tyagi, Dr. Sanjeev Tayal*


Co-ordinator
IQAC, Shri Ram College
Muzaffarnagar


Chairman
IQAC, Shri Ram College,
Muzaffarnagar

28. Current Cybersecurity Challenges and Future Trends in Technological Advancements
— *Nishant Kumar Rathi, Ankur Rohilla, Dr. Himanshu Hora*
29. Application of Artificial Intelligence in Harvest Optimization and Logistics in India
— *Dr. Himanshu Hora, Mr. Ankur Rohilla*
30. Investigating the properties of Countable and Uncountable Sets within Number Theory
— *Mr. Rahul Kumar Mainwal*


Co-ordinator
IQAC, Shri Ram College
Muzaffarnagar


Chairman
IQAC, Shri Ram College,
Muzaffarnagar

SHRI RAM COLLEGE, MUZAFFARNAGAR



NAAC Grade A++

National Conference

on

Recent Advances in IT Mathematics & Management (RAIMM-2023)

CERTIFICATE OF PARTICIPATION

*This is to certify that Prof/Dr/Mr/Ms _____
from _____ served as keynote speaker/
participated/presented paper entitled _____
in the National Conference on "Recent advances in IT, Mathematics & Management
(RAIMM-2023)" organized by the Department of Computer Application on Oct. 21, 2023.*

Co-ordinator
IQAC, Shri Ram College
Muzaffarnagar

(Dr. Prerna Mittal)

Principal

(Dr. Nishant Kumar Rathi)

Convener

(Dr. Himanshu Hora)

Coordinator

Chairman
IQAC, Shri Ram College,
Muzaffarnagar

(Dr. Ashok Kumar)

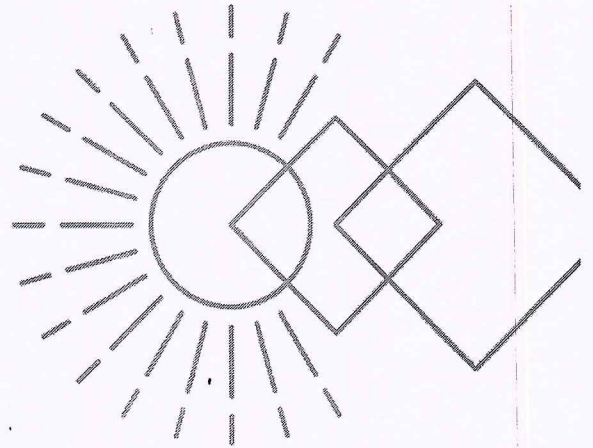
Director

PROCEEDINGS.....

National Conference

Approaches & Advancements
in Multidisciplinary Segments

SEP 30, 2023



Virtual Mode

Organised By



**Community Of Multidisciplinary
Approaches in Education**

Under the division of Pesots

(Registered under the Uttar Pradesh Society Act No.21,1860)

A community of multidisciplinary approaches in education refers to a collaborative network or group of individuals, institutions, or stakeholders who engage in and promote the integration of various disciplines to enhance teaching and learning experiences. This approach fosters diverse perspectives, creativity, and innovation in education, bridging gaps between different fields of study

Co-ordinator
IGAC, Shri Ram College,
Muzaffarnagar

CALL: 9149110199

Chairman
IGAC, Shri Ram College,
Muzaffarnagar

S.No.	Author Name	Title of Paper
1	Suhal Sardar, Parveen Malik and Suraj Singh	To Study the impact of spacing and organic manures on growth and yield of wheat
2	Vikrant Kumar, Anjali Jakhar and Raj Kumar	Paddy Parboiling - A Review
3	Anjali Jakhar, Parveen Malik and Suraj Singh	Variability & Growth rate in Area, Production & Productivity of Wheat crop in Meerut Division of Western Region of Uttar Pradesh.
4	Parveen Malik, Suhal Sardar, Raj Kumar	Germination of Primed Seed Under Water stress conditions in wheat (<i>Triticum aestivum</i> L.)
5	Pardeep Saini, Manoj Kumar and Raj Kumar	A Comprehensive Review on sustainable Soil Restoration Practices: The Role of Organic Input
6	Manoj Kumar, Pardeep Saini and Riya Jakhwal	A Comprehensive Review on Conflict Management in Organization
7	Raj Kumar, Parveen Malik, Suhal Sardar, Suraj Singh	Effect of Integrated Application of Vermicompost and NPS on yield components and yield of Paddy (<i>Oryza sativa</i> L.)
8	Rahul Arya, Rajdeep Saharawat, Rishabh Bhardwaj, Pooja Tomar	Investigating eco-friendly catalysts for industrial chemical processes to minimize waste and environmental impact.
9	Rajdeep Saharawat, Rahul Arya, Rishabh Bhardwaj, Meenal Maan	Synthesis and applications of environmentally friendly polymers for packaging and medical use.
10	Rishabh Bhardwaj, Anjali Goyal, Rahul Arya, Rajdeep Saharawat, Meenal Maan	Development of highly sensitive and selective chemical sensors for detecting pollutants in air and water.
11	Rama Median, Sachin Kumar, Pooja Tomar, Rishabh Bhardwaj	Studying how changing ocean temperatures and acidity levels affect marine flora and fauna.
12	Pooja Tomar, Reetu Pundir, Rama Median, Mahak Naz	Investigating the foraging patterns and habitat preferences of pollinators like bees and butterflies.
13	Reetu Pundir, Pooja Tomar, Sachin Sharma, Mahak Naz	Using genetic tools to understand population dynamics and devise strategies for conservation.
14	Sachin Kumar, Rama Median, Mahak Naz, Rishabh Bhardwaj	Exploring the use of plants to remove toxic metals and pollutants from soil and water.
15	Anjali Goyal, Pooja Tomar, Manoj Mittal, Vivek, Reetu Pundir	Designing photocatalytic materials for the degradation of pollutants and microorganisms in wastewater.
16	Mahak Naz, Pooja Tomar, Reetu Pundir	Understanding the physiological and behavioral adaptations of parasites in Their hosts
17	Manoj Kumar Mittal, Vivek	Investigating the properties of materials that exhibit superconductivity at relatively high temperatures.

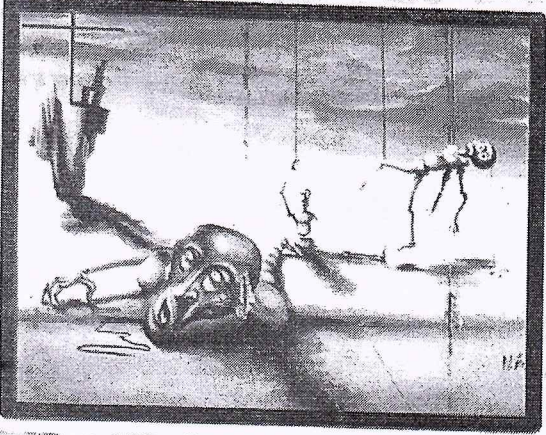
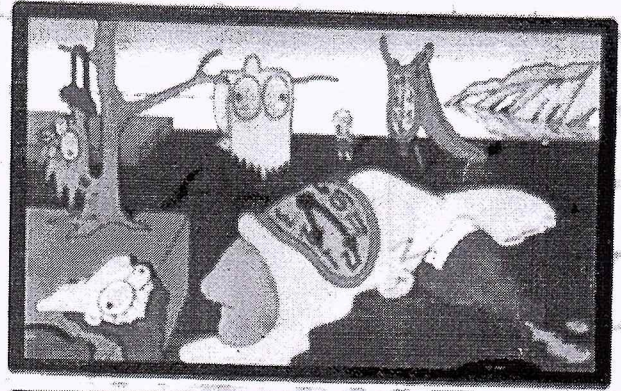
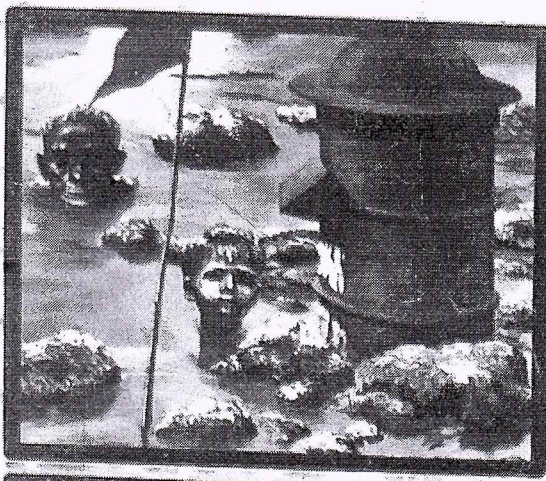

 Co-ordinator
 IQAC, Shri Ram College
 Muzaffarnagar


 Chairman
 IQAC, Shri Ram College,
 Muzaffarnagar

18-	Vivek, Manoj Kumar Mittal	Theoretical and experimental approaches to understand dark matter and dark energy's role in the universe's expansion.
19	Sofiya Ansari, Shweta Rathi, Ruby Poswal, Anju Singh	Nutritional Quality of Home- Cooked Meals vs. Processed Foods
20	Ruby Poswal, Shweta Rathi, Alina Siddiqui, Shivani	Role of Technology in Modern Home Management
21	Shweta Rathi, Ruby Poswal, Alina Siddiqui, Shivani	The Psychology of Home Décor: How Environment Affects Mental Health
22	Alina Siddiqui, Ruby Poswal, Shweta Rathi, Shivani	Food Safety and Hygiene Practices in Domestic Kitchens
23	Anju Singh, Sofiya Ansari, Shweta Rathi, Ruby Poswal,	Child Development and Parenting Styles: Insights from Home Science


 Co-ordinator
 IQAC, Shri Ram College
 Muzaffarnagar


 Chairman
 IQAC, Shri Ram College,
 Muzaffarnagar



आधुनिक भारतीय परिवेश में अतिथार्थवादी प्रवृत्तियाँ (Surrealistic trends in Modern Indian Milieu)

Co-ordinator
IQAC, Shri Ram College
Muzaffarnagar

सम्पादक
प्रो. वन्दना शर्मा

प्रधान सम्पादक
प्रो. अंजू चौधरी

Chairman
IQAC, Shri Ram College,
Muzaffarnagar

सह-सम्पादक
डॉ. सरिता शर्मा

Date: 15/9/2023

ISBN : 9789-3959-22

आधुनिक भारतीय परिवेश में अतिथार्थवादी प्रवृत्तियाँ

प्रधान सम्पादक
प्रो. अंजू चौधरी

सम्पादक

प्रो. वंदना शर्मा

सह-सम्पादक

डॉ. सरिता शर्मा

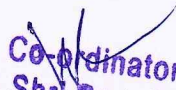

Co-ordinator
IQAC, Shri Ram College
Muzaffarnagar




Chairman
IQAC, Shri Ram College,
Muzaffarnagar

विकास प्रकाशन, कानपुर

43. Surrealistic Expressions in Contemporary Art 298
Professor Shubham Shiva
44. Subversion of Rationalism in 308
Contemporary British Surrealist Poetry
Dr. Nishi Singh
45. Recent trends and Future aspects of 315
Surrealism in Modern Indian painting
Deepak Kumar Singh
46. Surrealistic motifs in ancient Indian 326
religious artistic trends
Lakshit Soni
47. Surrealist Art and contemporary art market 329
Mallika Sahu
48. Contemporary surrealist Female artist 336
Rekha Rodwittiya
Ruby Chaudhary
लेखक परिचय 340


Co-ordinator
IQAC, Shri Ram College
Muzaffarnagar


Chairman
IQAC, Shri Ram College,
Muzaffarnagar

Contemporary Surrealist contemporary surrealist

Ruby Chaudhary

Rekha Rodwittiya born in Bangalore in 1958, she completed her graduation from the faculty of fine arts, M.S. University, Baroda in 1981. She then received the lakhs scholarship for her M.A. in painting from Royal College of Art, London in 1984. In 1988-1989 she was invited as guest artist to the konsthogskolen, Stockholm and was also invited to deliver series of lectures on Indian art at the Ecole des beaux arts



Grenoble and castello de Rivoli, Torino in 1991. She did a short stint at the fullam institute on film and video and was conferred the staff fellowship from the rockfeller foundation Asian cultural council to work in the U.S. in 1990. She conducts an art studio in Vadodara called The Collective Studio, jointly with her husband and artist Surendran Nair. Rekha Rodwittiya's work describes complex issues of life and living of alienation and belonging of discrimination and acceptance of accord and discord. It is of paramount importance to this sensitive artist to react pragmatically to socio-political attitudes that surround her. Her work reflects her sensitivity towards socio-political attitudes along with the reflections from her past. She does not treat art and life in isolation and deems it necessary to experience life to paint. Her fervent activity of painting is a struggle for her own rightful existence. The artist explains to say, "I go through life to paint."

and agony of stepping into an „Unknown . Her images are a by-product of her thoughts and emotions, her readings, observation beliefs, values and vast compilation of past experiences.

The artist draws on a heritage of elemental imagery, tempered by psychological insights, portraying women through the prism of personal experience and day-to-day realities. As she has noted: “caught within the intricacies of adult angst where the undercurrent of pain was recognized through not fully understand by me, the drawn or constructed image became very early a means of deciphering all that I accumulated from observing... My sense of empathy with the drawn image was that it offered a physically, and established a concretizing of the otherwise intangible. It became a method, as I perceive it in retrospect, of creating a dialogue that gave meaning to a psychological realm.”



Rekha Rodwittiya enactment of the feminine presence is direct and engaged. In rekha the feminine self is usually caught up in confrontations that challenge her to effect change and resolution within herself and her environment, In rodwittiya s paintings of the 1980s, sexuality, its exploitation and abuse become a metaphor for the state of women. The women foregrounded on her canvas becomes an emblem of resistance even as chimneys spewing smoke, turbid water, claustrophobic skyscrapers make up a congestive environment. Rodwittiya who acknowledges western influences of Chirico or Goya, and whose work recalls the dramatic juxtapositions of max Beckman- writes of “bleeding, an emotive quality so that it re-echoes through the painting or drawing.” What, in rodwittiya, constitutes this highly emotive charge is that questions of childhood and memory, sexuality and desire, are played out. Shivaji Pannikar argues that rodwittiya s

personal and generalized feminist concerns do not essentially draw

Co-ordinator
IQAC, Shri Ram College
Muzaffarnagar

Chairman
IQAC, Shri Ram College,
Muzaffarnagar

“rootlessness” as much as her sensitivity to the emotional and physical violence of urban India.

In Rodwittiya the difficult transition from being to becoming, the evolution from one to another state, be it the chrysalis-like emergence from childhood, the state of motherhood and nurture, or the assumption of the artistic persona and the dilemma of creative choices is powerfully recorded. Even as rodwittiya works through emblem and metaphor, she steps outside narrative to universalize the image of the feminine self. It is the power which she vests in her women saves them from the fate of victims, and instead forces a direct engagement with their concerns. In recent years, the fury and passion of her work has stilled somewhat. The figure is delineated with the fluid calm of the yogic body, even the symbols of violence are used with an ironic, heightened calm. The extreme medical and sexual violence to the female body is contained in the work, “scissor, gun, knife, cunt” 1995 and the objectification and wilful

use of body parts is neatly, even dispassionately, framed in “mapping body imprints” 1997.

Rekha said my work has always been hinged to the space of the self, without the frame of it being autobiographical. Rekha rodwittiya's life and art have been guided by her feminist beliefs, drawing upon a



wide variety of Indian painting traditions, she works with in existing genres while rejecting those part of tradition that justify the subordination of women. It is difficult to distinguish between the issues artist rekha rodwittiya concerns herself with and her own self, precisely because she enters the socio-political frame of engagement with the outside world while grappling with concerns of identity and gender. The precise paint

when she detaches herself from a painting, withdrawing to her own person, becomes all the more difficult to distinguish because she places herself within the canvas without turning the work into her specific memory. Some of the famous artworks are **Home is wherever you are., Hope, Love done right can change the world, Rekha@50 series, Restless waters in the High tide, Forty days and forty nights, In stories from the womb, In rodwittiya exhibition „Bye Bye Baby.**

Conclusion: In short, Rodwittiya was using expressionistic devices and personalised symbols to articulate issues, concerns and observations within the territory of gender politics. She uses eclectic and intensely personal issues. They combine elements of dream, fantasy, myth, and mundane elements of everyday life in a broad narrative style that was popular in Baroda in the 80s. Rekha usually used bright and bold colours; continue to have Rodwittiya's language in the form of feminine figures and decorative but, symbolic tapestry. Giving an insight into her usage of bright and bold colours, she

states that the colours bring about an optical association that further forges you into an association with my work." Her basic philosophy is to visualize beauty even in the most trivial of things, and the same holds true for art; she believes you need to cultivate that fundamental appreciation within you. she develops a language in art that will straddle social change, history, myth, the subjective and the general, sexuality; or the gamut of human experience on social exegesis.

References

1. <https://www.Aicongallery.com>
2. Art Heritage Catalogue.
3. Jhaveri, Amrita, A guide to 101 Modern & Contemporary Indian Artists, India Book House Pvt. Ltd., Mumbai, 2005, p- 153.
4. Pannikar, Shivaji, Rekha Rodwittiya: Of feminist concerns and beyond, Calcutta, A seagull Exhibition, 1992.
5. Dalmia, Yashodhara, Contemporary Indian Art (other realities), Marg Publications, Mumbai, March 2002, Vol-53, No.3, p-68.
6. Manifestations 20th Century Indian Art, Delhi Art Gallery, Jan, 2011, p-

About the Editors



Dr. Saurabh Tyagi: M.Sc.; MBA.; Ph.D. Currently, He is working as an Assistant Professor, Department of Agriculture at Keral Verma Subharti College of Science, Swami Vivekanand Subharti University, Meerut, (UP) India. He has published 45 Research & Review Papers, 15 book chapters, 11 Books, and received 6 Awards from reputed societies. He has also Organized many International Conferences and Seminars.



Dr. Saksham Pundir: M.Phil, Ph. D. Presently, She is working as Assistant Professor, Department of Botany at Keral Verma Subharti College of Science, Swami Vivekanand Subharti University, Meerut. She has published 8 Research articles, four book chapter, 4 newsletters in prestigious journals and 2 awards.



Dr. Rakhi Singh: M.phil, Ph.D. in Genetics and plant breeding, ICAR-NET 2018 in Agriculture Biotechnology, Rajeev Gandhi National Fellow, 10 research paper and 02 book chapter in reputed journals.



Dr. Mohd. Nayeem Ali: Present time he is working as Head, Faculty of Agriculture, Shri Ram College, Muzaffarnagar. Dr. Ali has Published 35 research papers, 15 Papers and Abstracts published in Proceeding, 2 book chapters, 2 manuals, 10 Leaflets,. He have received 5 Awards from reputed societies.



Mr. Vikas Kumar Singh: At present, Mr. Vikas Kumar Singh is a Research Scholar in Genetics and Plant Breeding at Chaudhary Charan Singh University, Meerut, Uttar Pradesh, courtesy of the DST-INSPIRE fellowship. He has garnered acclaim with 20 research papers, a published book, contributions to 5 book chapters, 2 popular articles, 4 newsletters and 5 awards.



Learning Media Publication
A-16, Aman Vihar, Mawana Road,
Opp. J.P. Academy, Meerut- 250001
Contact No. +91-8791976106, 8449001390
E-mail : learningmediapublicationmeerut@gmail.com
Website : www.learningmedia.in

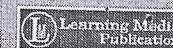
2024

ISBN :978-81-969809-3-1

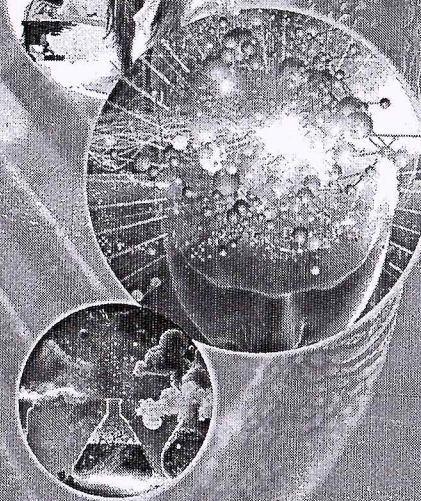


₹ 850/-

Recent Trends in Multidisciplinary Sciences



Recent Trends in MULTIDISCIPLINARY SCIENCES



**Edition: 2024
(Volume -I)**

Dr. Saurabh Tyagi
Dr. Saksham Pundir
Dr. Rakhi Singh
Dr. Mohd. Nayeem Ali
Vikas Kumar Singh

Co-ordinator
IQAC, Shri Ram College
Muzaffarnagar

Chairman
IQAC, Shri Ram College,
Muzaffarnagar



Recent Trends in MULTIDISCIPLINARY SCIENCES

Dr. Saurabh Tyagi

Assistant Professor
Department of Agriculture
Swami Vivekanand Subharti University
Meerut, (UP) India

Dr. Saksham Pundir

Assistant Professor
Department of Botany
Swami Vivekanand Subharti University
Meerut, (UP) India

Dr. Rakhi Singh

Faculty
Food Science and Technology
Chaudhary Charan Singh University
Meerut, (UP) India

Dr. Mohd. Nayeem Ali

Head & Assistant Professor
Faculty of Agriculture
Sri Ram College
Muzaffarnagar, (UP) India

Vikas Kumar Singh

Research Scholar
Genetics and Plant Breeding
Chaudhary Charan Singh University
Meerut, (UP) India

**Edition: 2024
(Volume -I)**


Co-ordinator
IQAC, Shri Ram College
Muzaffarnagar


Chairman
IQAC, Shri Ram College,
Muzaffarnagar

Recent Trends in Multidisciplinary Sciences

Editors: **Dr. Saurabh Tyagi, Dr. Saksham Pundir, Dr. Rakhi Singh,
Dr. Mohd. Nayeem Ali and Vikas Kumar Singh**

First Edition : 2024

ISBN : 978-81-969809-3-1

Printing : Shiv Offset Printers, Meerut

DTP : Learning Media DTP Unit, Meerut

Design: Learning Media Designing Unit, Meerut

© **Editors**

Publisher: Learning Media Publication, Meerut

Regd. Office :

Learning Media Publication

A-16, Aman Vihar, Mawana Road,

Opp. J.P. Academy, Meerut- 250001

Contact No. +91-8449001390, 8791976106

E-mail : learningmediapublicationmeerut@gmail.com

Website : www.learningmedia.in

Price: ₹ 850

- The views expressed by the authors are their own. The editors and publishers do not own any legal responsibility or liability for the views of the authors, any omission or inadvertent errors.
- No part of this book may be reproduced or transmitted by any means/forms, electronic, mechanical, or any other way, without prior written permission from the publishers.
- Any dispute arising due to any issue/issues related to the publication of this book shall be subject to the jurisdiction of Meerut Courts only.



Co-ordinator
IQAC, Shri Ram College
Muzaffarnagar

Chairman
IQAC, Shri Ram College,
Muzaffarnagar

Chapter 5

Information Communication & Technology in Rural Marketing

Vaishali Malik¹, Saurabh Tyagi², Ashok Kumar³ and Shweta Vyas⁴

¹Research Scholar, Computer Science and Engineering and Technology, Meerut (UP) India

²Assistant Professor, Department of Agriculture, Keral Varma Subharti College of Science,
Swami Vivekanand Subharti University, Meerut (UP) India

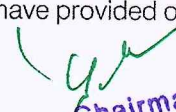
³Director, Shri Ram College, Muzaffarnagar (UP) India

⁴Assistant Professor, Department of Chemistry, University of Kota, Rajasthan, India

Information and Communication Technologies (ICT) is being used by the government and non government organization for developing the rural and urban areas. In rural areas people are less aware. Due to this unawareness people can't easily communicate to the current market and each other. Government and non government projects applications are developed as pilot projects and it's aimed to offering easy access to citizen services and improved processing of government-to-citizen transactions. Some of these have drawn international attention and have won prestigious awards for their innovative approaches. If citizens are aware about the technologies so they can easily utilize the services provided by government and non government organization (NGO). The formers and owner of household industry of rural area can sail our product at market price. If there is proper communication and transportation available then peoples of that area can get the employment by small scale industry established by government and NGO. Electricity is the key factor for development. Some projects have experimented with the wireless technology to reach the remote location. Due to the lack of knowledge and use of ICT in rural areas, development is at a very low rate. Some improvement and advancement in the technologies provided by the government but there is no more effect in the development of rural areas. Information and communication technologies are developing day by day but are less applicable in rural areas. Lack of communication and resources are the cause of undeveloped. Main problem are in rural areas are electricity, communication, transportation and lack of knowledge about new technology. ICT is not being completely implemented by the government and non government organization for rural and urban areas. Electricity is the main hindrance in development. There may be different basic solution to solve the electricity problem by using solar energy, bio fuels, bio gas, wind energy etc. E-governance and non government organization can develop rural areas with the help of technologies.

With the increasing challenge of feeding an ever-growing population, agriculture has been continuously re-inventing itself, and more so in the last decade. The farming community has had to deal with declining arable land area, prolific pests and diseases, as well as anomalous and sometimes drastic weather patterns induced by climate change; these issues are juxtaposed by agricultural industrialization, newer value chains and a lack of actionable information, which when bundled together make farming a highly challenging occupation. However newer varieties that are resistant to certain types of pests, innovations in irrigation technology and improved communication channels, enhanced by advances in information and communication technology and facilitated by greater use of mobile phones, have provided opportunities to address these challenges.


Co-ordinator
IQAC, Shri Ram College
Muzaffarnagar


Chairman
IQAC, Shri Ram College,
Muzaffarnagar

Role of IT

1. Information technology facilitates access to information.
2. IT helps in accurate forecasting of weather conditions and market dynamics.
3. Help in promoting government schemes for the benefit of rural marketers.
4. IT helps in providing better services to the consumers and speedy claim services.
5. Monitoring & tracking of product performance and feedback.
6. IT ensures better interaction between the company and the consumer.
7. Correct feedback helps in the improvement of the product.
8. IT helps in cost reduction on distribution and transportation.
9. Cost-effective, doorstep delivery is possible due to the use of information technology.
10. IT helps in the Development of customer Databases.
11. IT helps in developing customized products for the different target segments with effective tracking.

Types of E-Commerce

1. Business to Business (B2B)
2. Business to Consumer (B2C)
3. Business to Government (B2G)
4. Consumer to Consumer (C2C)
5. Government to Consumer (G2C)
6. Government to Business (G2B)

Importance of ICT

E-commerce in the recent years has transformed the way businesses are carried in and around the world. Agriculture has also been impacted by the E-commerce and has found its way in agriculture.

E-commerce has many applications which can be helpful in agricultural activities'-commerce requires that both buyers and sellers have access to the Internet and that they are able to use the required software's. Common agribusiness B2B transactions such as buying, selling, trading etc can use ecommerce for increasing efficiency. In B2C categories also e-commerce can be used for activities such as, Remote Service, and Maintenance referred to as Agri business to Agri business (A2A) and Agri business to grower (A2G). Other benefits of ecommerce in agriculture can be identified as follows:

Promotion of Information Flow

The exchange of relevant information about agricultural products, availability, their characteristics, advantages, disadvantages, etc., can be increased through the use of information on the Internet during ecommerce transactions. Internet technology also acts as an important link between farmers in the food production irrespective of their geographic location. This increase market access through online transactions and reduces geographic obstacles, such as time and distance.

Market and Price Transparency

Online transactions allow comparison of products on pricing which increases transparency in the transactions. Price differentials due to geographic location can be minimized because of competition. This benefits farmers in terms of uniform prices with regard to input prices. This may be more relevant where many existing products are not differentiated on a regular basis.


Co-ordinator
IQAC, Shri Ram College
Muzaffarnagar


Chairman
IQAC, Shri Ram College,
Muzaffarnagar

RM3-Rural**Reduction in Transaction Costs**

With the application of ecommerce, many transactions through the supply chain are either eliminated or simplified. In this way, transaction costs are drastically reduced or even eliminated.

Increase in Online Cooperatives

The processes of ecommerce transactions give emergence to new opportunities for furthering the concept of cooperatives. From the perspective of farmers, e-cooperatives provide a solution for small businesses.

Reduce dominance of Middlemen

E-Commerce presents an advantage to both consumers and sellers. E-commerce eliminates the middlemen and inventory reduction which makes it easy for a seller to pass on the benefits to consumers at a lower price. Agri-marketing can benefit immensely from e-commerce both in B2B and B2C markets. While e-NAM is the government driven government which has promoted private players such as Big Basket to fill the gap of the B2C market through policy initiatives like direct purchase and etrading.

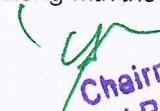
Technology plays an important role in rural development. It can be said that that the economic growth of rural population completely depends upon the information and communication technology. By use of communication technologies, the rural marketer gets aware of the latest development taking place around him. This awareness leads to incorporation of changes in the product or product strategy which in turn leads to the increase in demands and economic benefits. As the demand of the rural products increases it leads to the enhancement of production to fulfill the demands which further results in the economic growth of the rural population. The rural population needs to be made aware of the current market trends, instruments, materials and price of the product by the use of technology. ICT help in adoption of better methods and techniques of producing a product, the new methods of manufacturing also makes the final products uniform and high on quality. Use of latest technologies also helps in developing good and attractive infrastructure. In the current times, the technology is changing very fast and one has to be flexible enough to incorporate these new changes.

The changing technologies play a prominent role in improving the living standards and mental status of the rural population. The use of ICT (Information and Communication Technology) increases the effectiveness of distribution systems for rural marketing. The government of India has realized this fact and it is because of this reason that it had taken many initiatives related to ICT for the development of the rural markets. A good number of projects are already under progress for the development of rural markets and many more are going to be implemented in the coming days. As per NCAER (National Council for Applied Economic Research), the number of rural households in India is expected to grow from 111 Million to 210 Million by the end of the year 2021 as compared to Urban India. The use of ICT in rural distribution strategies may be related to:

- Usage of proper logistics and supply chain system
- Creating Joint distribution systems
- Creating Feeder towns for further Distribution.
- Use of Mandis, Rural Haats and fairs.
- E-Commerce and Private Courier services.
- Partnership with Marketing agencies and NGO's
- Use of Internet, Intranet and Extranet
- Creating infrastructure for Rural Malls.

To conclude we can say that ICT has a diverse role to play in the development of rural markets. ICT holds the key to rural development. Efforts should be made to increase the usage of ICT in rural areas by creating awareness about the advantages of using ICT and how its usage can lead to the development of the rural markets and the distribution systems thus, having a substantial impact on the economy of the rural area. The government should also invest in the infrastructural developments of rural India along with the technological


Co-ordinator
IQAC, Shri Ram College
Muzaffarnagar


Chairman
IQAC, Shri Ram College,
Muzaffarnagar

and financial investors, because without the development in the areas of electricity, communication media, transportation etc. ICT cannot be effectively implemented. The awareness of the rural marketers towards ICT can increase the productivity of the rural products which would enhance the economical growth of the country.

ICT& e-GOVERNANCE

Information and communication technology and e-governance are very helpful for development of our country. Without the help of government we cannot implement technologies in rural areas. Government provides the authority to the organizations for implementing the technology in rural areas and also government provide various other services to the citizens for rural and urban area through internet or other media like markets, health, and education. Furthermore, ICT can empower the poorer by expanding the use of government services, and reduce the risks by widening access to micro finance. Application of ICT processes governance is divided into two categories i.e. improving government process and second bounding interaction within civil society. ICT is applicable to the rural areas since 1990's. The applying information and communication in public domain by the government is known as e-governance. Further, e-governance help in providing information to citizens and it also generate innovative ideas for wealth generation for rural citizen.

E-Catalogue for Commodity Profiles: In the present time of export competitiveness, each and every product needs to be publicized highlighting its characteristics on nutrition values, chemistry, quality standards, seasonality, quantity for supply and prices etc. A brief commercial profile of the commodity would help the buyer in making comparative analysis on account of cost and margins. Therefore, it is necessary that each commodity has specific commercial profile giving the details as mentioned above. Profiles should be transmitted to international markets through "Web Pages". Main objective of the scheme will be (a) To prepare commercial profiles of exportable commodities and (b) to give exposure of commodities to the international markets

National Atlas of Markets: The mapping of the agricultural markets of the country is a prerequisite for carrying any planning/developmental activity. All the regulated markets along with their classification on the national maps will give synoptic view of the distribution of the markets. The infrastructure facilities, the quantum transacted, the area and population served, the outflow and the inflow of the commodities are the various aspects, which should be mapped out. This would be useful for research and policy making. The National Atlas of Agricultural Markets should be based on the application of GIS tools; such mapping activity then can also be put on the Internet for its greater usage.

ICT AND Livelihood Assets

ICT has an impact on livelihood assets in a number of ways depending on the local context in which they are introduced. They impact on livelihood in following ways:

- i. **Human Capital:** Improved access to education and training through distance learning Programs and educational tools for wide range of formats. The impact of increasing information flow, human capital needed for translating information into different languages and appropriate formats for the intended users and their local culture
- ii. **Natural Capital:** Uses of ICT in rural area can managed all natural resource records such as land, cool etc. Communication channels can be enhanced with appropriate authorities, landowners, government ministries and local government officials. So that, all can communicate for take appropriate decision about the natural resources.
- iii. **Financial Capital:** Support and strengthening of the local financial institutions including micro-credit organizations to improve information provision on services and facilities available such as loans and savings schemes. By using ICT we can establish banking services in rural areas. So that, all the people can takes loans, save money for growth purposes.


Co-ordinator
IQAC, Shri Ram College
Muzaffarnagar


Chairman
IQAC, Shri Ram College,
Muzaffarnagar

- iv. **Social Capital:** Improved 'networking' both at the community level with existing networks and potentially amongst a much wider community. The ability to build new social networks at a regional and national level can help to bring benefits to existing networks and institutions at a local level such as CBOs, FOs etc. The reduction in the cost and time taken to pursue social networking goals can also have a positive impact at a household level with family members spending less time away and less money on transport. Expanded social networks may also result in increased opportunities for employment both locally and away.
- v. **Physical Capital:** communication channel established by ICT are used for access to the markets and market information helps to improve choices for the sale of goods on local markets or global market according to enhanced information on prices, comparative supply and demand for products.

Communication Media

For the connectivity of entire world to the rural areas, a communication media is required. Now a day's internet acts as a good communication media.

Telephonic communication media: This is one of the best communication media used in the communication between the service provider and the peoples. Through this communication media two people are interacted directly with each other. It is the oldest media of communication. Uses of telephonic media are.

- i. Telephonic and Transport.
- ii. Telephonic and Market Information for Agricultural Products.
- iii. Mobile Phones and Emergencies.

Telephonic and Transport: Mobile phones are very useful for the arrangement of travels and transports for transferring goods to market place. This reduces traveling time and provides higher productive time.

Telephonic and Market Information for Agricultural Produce: Mobile phones greatly improve the access of information about the market. So Mobile phones also provide great help when making decisions for the best time to sell the crops. It also cuts off the middleman between rural farmer and actual buyer. So that, problem like getting cheated by middleman is completely removed.

Mobile Phones and Emergencies: Mobile phones can be used to seek for help during urgent situations or get support during emergencies. For example, some villagers had doctors' and nurses' phone numbers that were being used to seek for medical consultation.

Wireless communication media: Now a day's internet is a good communication media through which we can connect to the whole world. Wireless communication is the cheapest and most secure media of communication. By the use of wireless devices we can communicate with the network. We get the knowledge about all the activities which we want to perform.

Radio communication: Previously known as "Radio Farm Forum" it was one of the earliest efforts in the use of radio for rural development. In February 1956 experiment was carried out for five districts of Maharashtra by All India Radio (AIR). So that people in rural areas listen to radio broadcasts and gain various type of profit like getting knowledge about market, country agriculturists and non-agriculturists, village leaders and others.

Satellite communication: Satellite Instructional Television Experiment (SITE) is considered to be one of the biggest techno-social communication experiments in education and rural development. It was firstly introduced in 2400 villages of Andhra Pradesh, Bihar, Karnataka, Madhya Pradesh, Orissa and Rajasthan to provide direct broadcasting instruction and education in India. Satellite technologists called it SITE.

Communication Media for Household Income: One of the best assets for income generation for the rural people is the communication media. If communication media is established in the rural area then residents of rural area can do communication business. Example household of rural area earn money through selling mobile phone related goods and services such as recharge voucher. Mobile phones can provide both direct (selling mobile phone services) and indirect income (monetary and time savings).


Co-ordinator
IQAC, Shri Ram College
Muzaffarnagar


Chairman
IQAC, Shri Ram College,
Muzaffarnagar

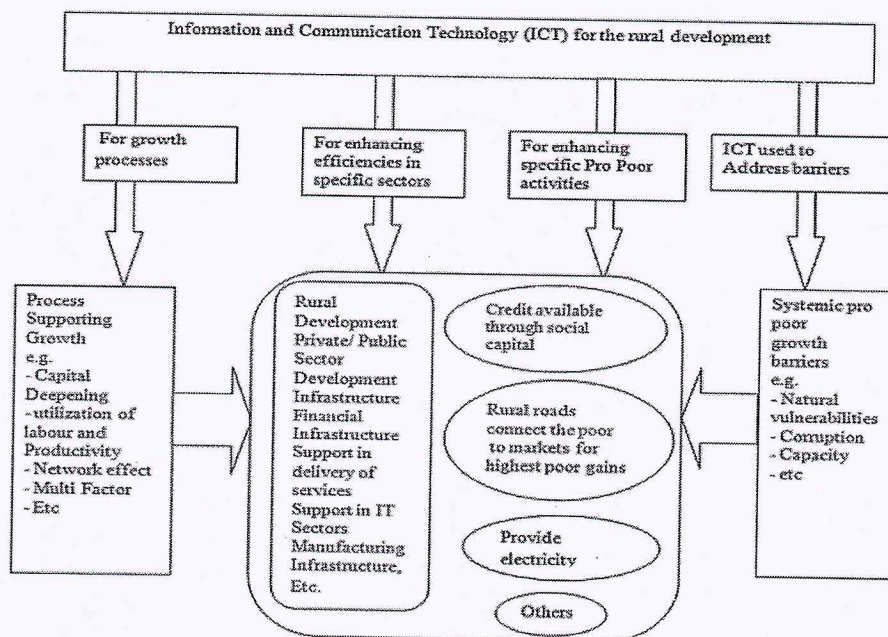
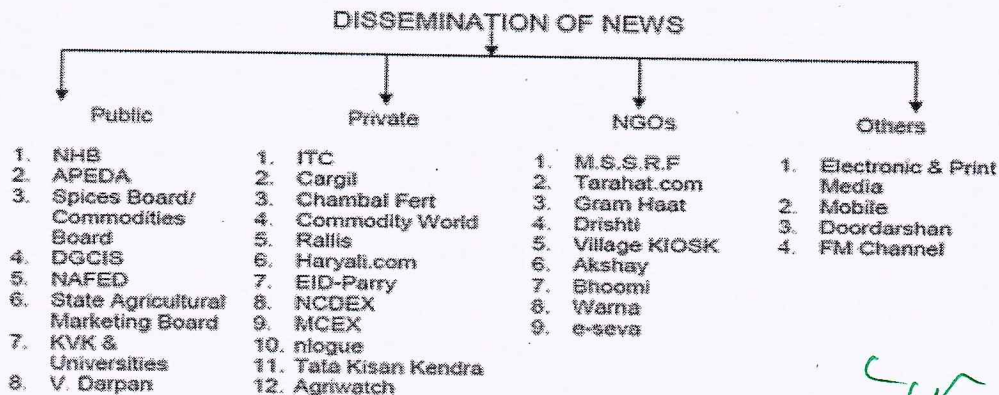


Fig. 2.1: ICT as a key for rural development

ICT as A Key for Rural Development

Technology plays an important role for developing rural areas. This is shown in figure 3 we can say that the economic growth totally depends upon the information and communication technology. By use of technology farmers or people get aware about all the things and productivity increases. If the productivity increases then the economic growth is increased at a high rate. All the people in the rural areas know about the instruments, materials and price of the product by the use of technology. If people are aware about all the technology they get maximum profit by using them, So that growth of rural development increases rapidly. Technology helps in manufacturing new goods and with the use of new and latest technologies, one can make good and attractive infrastructure. Now a day's technology changes day by day and its use plays an important role to improve the living and mental status.

Agriculture Market Information in India



Co-ordinator
IQAC, Shri Ram College
Muzaffarnagar

Chairman
IQAC, Shri Ram College,
Muzaffarnagar

References

- Schultz, D. E., and Schultz, H. F. 1998. Transitioning marketing communication into the twenty-first century, Journal of marketing communications, 4(1): 9-26
- Singh, Hardeep, M.K. goel, and A.K. Singhal. 2012. Challenges in Rural and Agriculture Market, VSRD International Journal of Business & Management Research, 2 (6): 299-304
- Vyas, S. C. 1997. Rural Market-Needs to fine-tune marketing strategies. Rural Marketing: Thrust and Challenges, 193-197.


Co-ordinator
IQAC, Shri Ram College
Muzaffarnagar


Chairman
IQAC, Shri Ram College,
Muzaffarnagar

Chapter 7

Intellectual Property Rights (IPRs)

Saurabh Tyagi¹, Ashok Kumar², Vishal Kumar¹ and Ankur Kumar³

¹Assistant Professor, Department of Agriculture, Keral Varma Subharti College of Science,
Swami Vivekanand Subharti University, Meerut, UP, India

²Director, Shri Ram College Muzaffarnagar, UP, India

³Research Scholar, Department of Agriculture; Shobhit Deemed to-be University Meerut, UP, India

Intellectual property rights are the rights given to persons over the creations of their minds. They usually give the creator an exclusive right over the use of his/her creation for a certain period of time. IPRs are intended to promote research and development by providing incentives for investment in the creative process and encourage access to inventions produced elsewhere.

Policy objectives favoring IPRs in new plant varieties

The policy goals of granting IPRs to plant varieties are grounded principally on an instrumentalist approach to IPRs.

- This is true both for patents and plant breeders' rights. Under this instrumentalist approach, new plant varieties are afforded legal protection to encourage commercial plant breeders to invest the resources; labour and time needed to improve existing plant varieties by ensuring that breeders receive adequate remuneration when they market the propagating material of those improved varieties. In the absence of a grant of exclusive rights to breeders, the dangers of free riding by third parties would be considerable. This is because the genetic material within plants that specifies their distinctive and commercially valuable features is naturally self-replicating, for example by reproduction of seeds or other propagating material. Self-replication makes innovations incorporating biological material particularly susceptible to exploitation by parties other than the innovator.
- IPRs in plant varieties thus provide some assurance to breeders that they will be able to recoup the risks and costs of a value-added innovation that is based upon an underlying biological resource.
- Ultimately, however, the grant of exclusive rights to plant breeders is designed to benefit the society granting the rights. It provides an incentive for private research and development into new breeding techniques, thereby reducing the need for government funding to subsidize these activities. It encourages the development of new and beneficial plant varieties for use by farmers and consumers. And it furthers the society's development of agriculture, horticulture and forestry.
- An international system of IPR protection for plant varieties expands these benefits by facilitating access to new varieties created in other states. Once breeders are assured that their rights will be protected in other states, breeders will be more willing to make their new varieties available in those states. This benefits farmers, consumers and researchers in many more jurisdictions.

The evolution and structure of the international intellectual property system

The different policy objectives underlying the protection of IPRs have shaped the structure and evolution of the international intellectual property system. Most early domestic intellectual property laws provided no legal protection to intellectual property products created in other nations, thereby permitting those products to be exploited by free riders operating outside the state in which the products were created. The unfairness of this result prompted governments in the late nineteenth century to consider an international approach to protect IPRs.

Co-ordinator
IQAC, Shri Ram College
Muzaffarnagar

Chairman
IQAC, Shri Ram College,
Muzaffarnagar

Limited treaty obligations

The drafters of the first multilateral intellectual property treaties quickly realized, however, that there was insufficient political support for reconciling many of the differences that existed among national IPR laws. For this reason, the drafters abandoned the idea of harmonizing diverse national laws to create a single, international IPR applicable in all signatory states. They fashioned instead a system that creates a limited set of treaty-based obligations that each member state of that system is then required to implement in its national IPR laws.

Implementation of treaty-based obligations in national IPR laws can occur in one of two ways. In some nations (often referred to as "automatic incorporation" states), treaties become binding as a part of domestic law as soon as formal ratification procedures have been adopted. In these nations, treaties are considered to be "self-executing" or capable of being given "direct effect" in domestic law such that courts and administrative agencies can construe the treaty directly and enforce the rights it grants to the owners of intellectual property products. In other nations, however (often referred to as "legislative incorporation" states), treaties are considered to be "non-self-executing" and can only become binding in domestic law once the parliament or legislature has adopted legislation to implement the treaty. In these nations, owners of intellectual property products rely on this domestic legislation rather than on the treaties themselves when they seek to enforce rights granted to them under the treaties.

The territoriality of IPRs

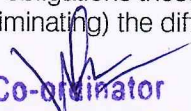
Because of the limited scope of international IPR agreements, there are to this day (with the limited exception of the European Union) no international IPRs available to inventors and creators who seek to market their products across borders; rather, IPRs are territorial in nature and are acquired and enforced on a country-by-country basis under territorially-circumscribed national IPR laws. Thus, for example, the inventor of a genetically enhanced variety of corn who seeks patent protection for that variety must apply for protection in each country in which he or she hopes to sell the corn. The inventor must comply with all of the requirements that each country imposes for granting patent rights to the new variety. Similarly, once protection is granted, issues such as the scope of the exclusive rights the inventor enjoys in the patented plant variety, the term of patent protection and the limitations imposed on the inventor's rights are all determined by the different national laws. Recent international agreements have achieved some modest forms of procedural harmonization, but they have not altered the fundamental premise that national laws rather than international treaties are the immediate source of nearly all private rights in intellectual property products.

Two basic principles flow from this territorial approach to protecting IPRs. First, where national laws differ as to the scope or content of the protection they provide to intellectual property products, the rights enjoyed by the owners of those products will vary in different national jurisdictions. Second, territoriality implies that each nation has the right to decide on the form of IPR protection to be granted within its own borders, provided that it complies with the obligations contained in international IPR agreements to which it is a party.

Although territoriality thus gives governments some autonomy to set national IPR policies within their own borders, states often view the policies other governments choose as a subject of concern. Indeed, the global reach of markets for intellectual property products makes this concern a necessity. To take just one example, most patent laws grant inventors owning patents within a state the right to prevent the importation into that state of products created in other nations that contain the patented invention. Thus, where distribution markets transcend national borders, an industry may find itself precluded from distributing products in other jurisdictions as a result of patent rights, as occurred when Indian cotton producers were precluded from importing certain forms of transgenic cotton into the United States.

Core obligations imposed by international intellectual property agreements

The territorial approach to IPR protection appears at first to present myriad difficulties for creators and owners of intellectual property products. In fact, however, the content of each nation's IPR laws are often quite similar since they have been shaped by international IPR agreements ratified by many states. In addition, the obligations these agreements impose have expanded over time, thus narrowing (although by no means eliminating) the differences among national intellectual property systems.


Co-ordinator
IQAC, Shri Ram College
Muzaffarnagar


Chairman
IQAC, Shri Ram College,
Muzaffarnagar

National treatment

One of the cornerstones of international IPR agreements is the national treatment principle. National treatment bars discrimination against foreign IPR owners by requiring that each state provide the same IPRs to private parties from other member states as are provided to the state's own nationals. National treatment levels the playing field among treaty parties and prevents a state from giving its own creators and inventors unfair advantages over foreign creators and inventors. In the absence of national treatment, for example, domestic firms could freely exploit intellectual property products created in other member states while simultaneously enjoying legal protection within their own domestic markets.

Reciprocity

The provisions of several intellectual property treaties contain a limited exception to national treatment known as reciprocity. Where a treaty permits reciprocity, State A may condition the grant of legal protection to intellectual property products from State B upon State B's granting of legal protection to intellectual property products from State A. Reciprocity is often applied to new IPRs as means of encouraging other nations to recognize the new rights and extend their protection to foreign nationals. Once a large number of states have recognized the new IPR, they may revise the treaty to eliminate the reciprocity option and impose a national treatment obligation.

Most favored nation treatment

The most favored nation ("MFN") principle is a common feature of international trade agreements but has only recently been applied to IPRs. The principle extends the national treatment rule by compelling a government that provides a privilege or benefit to one state within a treaty system automatically to grant that same privilege or benefit to all states within the same system. The MFN principle thus prevents a subset of states within a larger treaty system from entering into bilateral or other special agreements among themselves, unless they grant the rights contained in those agreements to all other parties within the larger treaty system.

Subject matter and eligibility requirements

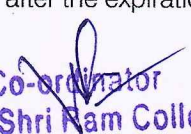
Intellectual property agreements specify the subject matter characteristics of the products that are eligible for legal protection. In the context of patents, for example, a treaty may specify the types of inventions (such as products and processes) to which states parties must grant legal rights. These subject matter requirements are generally drafted using language that instructs member states concerning the basic characteristics that a product must possess for it to merit protection under domestic IPR laws, while preserving sufficient flexibility for states to tailor the details of protection to the particularities of their national legal systems.

Exclusive rights

Where an intellectual property product satisfies a treaty's subject matter eligibility requirements, states parties are required to grant an enumerated set of exclusive rights with respect to that product. These exclusive rights grant to the product's owner the power to exclude all third parties from engaging in the activity that the right covers (such as reproducing or modifying the product or distributing it to others). It is the exclusivity of the rights granted that allows IPR owners to recoup the investment of time, money and resources required to create intellectual property products. The particular exclusive rights mandated by IPR agreements differ depending on the specific type of IPR product at issue. They are drafted with greater or lesser degrees of specificity depending on the degree of consensus among member states' national IPR laws, thus affording varying levels of discretion to governments to implement the rights in their domestic legal systems.

Terms of protection and the public domain

Intellectual property agreements also specify for their states parties the minimum term of years during which intellectual property products must receive legal protection. Once that term has expired, the treaties do not require states to grant legal protection to the products. Thus, unless the state adopts a longer term of protection, after the expiration of the initial term of protection the product may be freely used by anyone for


Co-ordinator
IQAC, Shri Ram College
Muzaffarnagar


Chairman
IQAC, Shri Ram College,
Muzaffarnagar

any purpose, including as a source for creating new products or simply for consumption. A corollary of this rule is that national IPR laws do not permit putative inventors and creators to claim IPRs in materials as they are found in nature or where they are already part of the public domain.

Exceptions and limitations to exclusive rights

International IPR agreements constrain the ability of national governments seeking to restrict the exercise of IPRs to achieve competing social or policy objectives, such as access to information, research, education and cultural development. Restrictions designed to achieve these objectives are generally known as "exceptions and limitations" to exclusive IPRs. These exceptions and limitations generally appear in two forms. The first form permits third parties to engage in specified uses of intellectual property products without the permission of the rights holder and without the payment of remuneration. The second form is known as a "compulsory license." Compulsory licenses allow third parties to use intellectual property products without the owner's permission, but only upon the payment of adequate compensation. To prevent both forms of exceptions and limitations from eviscerating IPRs altogether, intellectual property agreements impose specific constraints the ability of member states to adopt them.

Enforcement provisions

The grant of IPRs in national laws would be meaningless without adequate and effective mechanisms to enforce those rights. For this reason, recent intellectual property agreements specify the types of enforcement provisions that member states must adopt in their national laws. These provisions include the imposition of civil and criminal penalties against any person who engages in acts of exploitation reserved to the owner of an intellectual property product without the owner's authorization. The penalties include civil judicial proceedings for monetary damages or an injunction to prevent the continued unauthorized use of the product and criminal proceedings commenced by the government itself.

The "minimum standards" framework of multilateral IPR agreements

Taken together, these core provisions of international IPR agreements impose significant legal obligations on member states. The agreements do not, however, purport to definitively address all of the issues raised by the grant of legal protection to intellectual property products. For this reason, the treaties are often referred to as "minimum standards" agreements in that they create only a basic floor of legal protection to which all member states must adhere.

There are three important consequences of this minimum standards framework. First, it allows member states the discretion to interpret and apply those provisions of the treaties that are ambiguous or that reasonably permit more than one construction. Second, a minimum standards approach permits, but does not require, states to grant additional IPR protections within their national laws. And third and perhaps most importantly, the framework leaves member states free to enact laws that serve other political, economic or social objectives, even where those objectives are in tension with IPRs, provided that those laws are not inconsistent with the terms of IPR agreements.

In the last five years, however, an increasing number of developing countries have entered into bilateral or regional trade and investment treaties with the United States or with the European Community. These treaties often contain higher standards of intellectual property protection than those specified in multilateral intellectual property agreements. They thus restrict the minimum standards approach contained in the multilateral agreements, for example, by requiring states to enact specific intellectual property protection rules in their national laws or by requiring developing countries to follow the standards contained in multilateral agreements to which they are not parties.

The minimum standards framework (as limited by bilateral or regional treaties requiring higher standards of protection) provides a methodology for analysis but not a solution for every potential clash between IPRs and other governmental policies. This is particularly true for plant varieties and plant breeders' rights, an area of intellectual property protection regulated by several international IPR agreements and subject to diverse standards of legal protection under different domestic laws. To understand how national governments can reconcile competing and sometimes conflicting domestic laws and objectives consistently with the obligations imposed by different international IPR agreements, it is first necessary to examine other


Co-ordinator
IQAC, Shri Ram College
Muzaffarnagar


Chairman
IQAC, Shri Ram College,
Muzaffarnagar

international agreements and international institutions relating to plant genetic resources that have promulgated policies in tension with IPRs.

Identifying the relevant international agreements and institutions relating to intellectual property rights in plant varieties

Before turning to a more detailed discussion of policy objectives, it is important first to identify the principal international institutions and international agreements that generate legal rules and standards relating to IPRs in plant varieties and plant genetic resources, as well as the institutions and agreements that generate rules and standards in tension with IPRs. Although a comprehensive discussion of these institutions and agreements is beyond the scope of this study, a basic familiarity with their most important elements is necessary to understand the legal regime of intellectual property rights in plant genetic resources for food and agriculture.

1.5.1 World Intellectual Property Organization ("WIPO")

The World Intellectual Property Organization ("WIPO") is a specialized agency of the United Nations charged with "promoting the protection of intellectual property throughout the world." (WIPO Convention, art. 3(i)). The WIPO Secretariat undertakes wide variety of activities relating to IPRs, including hosting diplomatic conferences of government representatives seeking to negotiate new international treaties. WIPO's staff also provides technical assistance and training to member states and their national intellectual property offices, especially in developing countries. More recently, WIPO has created standing, expert and intergovernmental committees that conduct studies on particular intellectual property topics and generate nonbinding guidelines and recommendations for consideration by WIPO members.

WIPO's recent activities in the area of plant genetic resources have been considerable. Issues relating to the intersection of IPRs and PGRs have been raised during the negotiation of two multilateral patent agreements (the Patent Law Treaty and the Substantive Patent Law Treaty) and have been a principal subject of discussion and study in the recently created Intergovernmental Committee on Intellectual Property and Genetic Resources, Traditional Knowledge and Folklore ("IGC").

Developing states first sought to raise issues relating to the intersection of IPRs and PGRs during the WIPO-sponsored negotiation of the Patent Law Treaty in 1999. They proposed the addition of an article in the treaty requiring applicants for inventions derived from genetic resources to demonstrate that they had received permission to access those resources from the country of origin. Industrialized countries opposed the proposal, arguing that it addressed substantive law issues that were inappropriate for inclusion in a treaty largely devoted to procedural issues. As a compromise, the WIPO Secretariat proposed the creation of a new intergovernmental committee (the IGC) to study the intellectual property aspects of genetic resources and traditional knowledge.

During the IGC's first five sessions between April 2001 and July 2003, WIPO members have supported a wide-ranging work programme for the Committee, including:

1. creating a searchable database of clauses in contracts that regulate access to genetic resources or require benefit sharing;
2. studying technical issues raised by the disclosure of biodiversity-related information in patent applications;
3. creating databases of traditional knowledge;
4. identifying ways to document genetic resources and traditional knowledge in the public domain; and
5. Studying the appropriate legal rules to protect traditional knowledge. Most recently, the WIPO General Assembly extended the IGC's mandate and authorized it to accelerate its work, which may include the development of new international agreements.

World Trade Organization ("WTO")

The WTO is a global intergovernmental organization dealing with the rules of trade between nations. It was established in 1994 at the conclusion of the Uruguay Round of trade negotiations held under the auspices of

Co-ordinator
IQAC, Shri Ram College
Muzaffarnagar

Chairman
IQAC, Shri Ram College,
Muzaffarnagar

the General Agreement on Tariffs and Trade ("GATT"). As of July 2004, 147 states and customs territories ("WTO Members" or "Members") had joined the organization. The WTO's substantive obligations are contained in a series of treaties relating to international trade, including agreements on trade in goods, services, agriculture, sanitary and phytosanitary measures, trade-related investment measures, technical barriers to trade, textiles and clothing and intellectual property rights. These treaties are linked together as annexes to the Agreement Establishing the WTO. Disputes between WTO Members relating to any of these treaties are to be resolved by the WTO Dispute Settlement Body, which is composed of ad hoc dispute settlement panels and a standing Appellate Body of trade experts. A WTO Member whose national laws or practices are challenged by another WTO Member and found to be incompatible with its WTO treaty obligations by the Dispute Settlement Body must modify those laws or practices or face the prospect of trade sanctions.

Convention on Biological Diversity ("CBD")

The CBD was opened for signature in 1992 and entered into force in 1993. As of July 2004, 188 states had ratified this agreement.

The CBD's main objectives are the conservation of biological diversity, the sustainable use of its components, the fair and equitable sharing of benefits arising out of the utilization of genetic resources and the preservation of indigenous knowledge. The CBD also recognizes that nation states have the sovereign right to exploit their own resources and the authority to determine the conditions of access to them.

One of the mechanisms by which the CBD achieves its objectives is in situ conservation of plant genetic resources. Conservation in situ involves the preservation of ecosystems and natural habitats and the maintenance of viable populations of species in those settings. Such conservation occurs, for example, where farmers and indigenous communities safeguard traditional plant varieties in the locations where they grow naturally or are cultivated.

Although the CBD does not expressly refer to any international IPR agreements, it contains numerous provisions relating to IPRs, principally in article 16. In particular, article 16(5) recognizes that IPRs "may have an influence on the implementation" of the CBD. The article obliges member states to cooperate in order to ensure that IPRs are "supportive of and do not run counter to" the treaty's objectives. Other provisions make clear that the CBD is to be interpreted so as to preserve the rights of IPR owners recognized in international law. For example, articles 16(2)-(4) state that the transfer of technology and measures taken to gain access to such technology shall be consistent with the adequate and effective protection of IPRs recognized in international law. Thus, for example, where a government encourages foreign direct investment in industrial technologies (such as a biotechnological process used to insert new genetic sequences into existing plant varieties), it must respect any patent rights that the owner of that technology has acquired to protect it.

Over time, the biodiversity regime's approach to intellectual property protection has evolved beyond the text of the CBD. The Conference of the Parties (COP) - the convocation of CBD members that determines how the Convention should be applied and implemented - has given detailed attention to harmonizing IPRs with the CBD's objectives. In particular, developing countries active in the COP, together with the support of nongovernmental organizations, have expressed concern about the adverse effects of IPRs and have sought to harness intellectual property rules to promote compliance with the Convention.

In response to this concern, official COP statements have stressed the need to "promote increased mutual supportiveness and integration of biological diversity concerns and the protection of intellectual property rights." Members of the COP have worked toward this objective by gathering information, commissioning case studies, holding workshops and drafting guidelines and recommendations. The Guidelines' most important recommendation encourages applicants for IPRs such as patents or plant breeder's rights to disclose the country of origin of the genetic resources or the traditional knowledge upon which those IPRs are based. The Guidelines advocate these disclosures to monitor whether applicants for IPRs have obtained the prior informed consent of the country of origin and complied with the conditions of access (if any) that that country has adopted.


Co-ordinator
IQAC, Shri Ram College
Muzaffarnagar


Chairman
IQAC, Shri Ram College,
Muzaffarnagar

Although the COP members adopted the Bonn Guidelines by consensus, the Guidelines' reliance upon intellectual property laws to promote compliance with the obligations of the CBD remains controversial. The Consultative Group on International Agricultural Research ("CGIAR") CGIAR is an informal association of public and private donors founded in 1971 that supports an international network of agricultural research centres, each with its own governing body. CGIAR's mission is to engage in research, in partnership with other public and private entities, to promote sustainable agriculture in developing nations. With respect to plant genetic resources, CGIAR's principal method for achieving this objective is ex situ conservation. Networks of gene banks within CGIAR store and conserve seeds and propagating materials outside of their natural habitat for future use by farmers, researchers and breeders. The CGIAR network holds the world's largest ex situ collection of plant genetic resources for food and agriculture.

International Plant Genetic Resources Institute ("IPGRI")

IPGRI is the world's largest international institute dedicated to the conservation and use of plant genetic resources. Founded in 1974, IPGRI focuses on conservation, management and preservation of the diversity of plant genetic resources, through domestic, regional and international programmes and research initiatives.

The International Undertaking on Plant Genetic Resources (the "Undertaking")

FAO has helped to generate several nonbinding international instruments relating to plant genetic resources. The Undertaking, the first of these instruments, was adopted in 1983. As of 2000, 113 states were signatories to the Undertaking, thus pledging them to implement the recommendations it contains. For many years, the Undertaking served as the central legal instrument in FAO's global system for plant genetic resources, a system that includes a fund for the equitable sharing of benefits and a mechanism to give early warning about genetic resources under threat.

The Undertaking's principal objectives are to ensure that the need for conservation is globally recognized and that sufficient funds for this purpose are made available; to assist farmers and farming communities in the protection and conservation of PGRs and of the natural biosphere; and to allow farmers, their communities and countries to participate fully in the benefits derived from improved uses of PGRs, including through plant breeding.

In its initial formulation, the Undertaking challenged a private property rights approach to plant genetic resources by declaring that all such resources, whether as cultivated by farmers in the field or modified through breeder innovations, were part of the "common heritage of mankind and consequently should be available without restriction." An interpretation issued adopted by FAO in 1989, however, clarified that plant breeders' rights were not incompatible with the Undertaking. It also recognized the interrelationship between the rights of traditional farmers (whose practice of saving seeds provided the raw genetic materials for innovation) and the rights of plant breeders (who use technology to achieve that innovation).

The International Treaty on Plant Genetic Resources for Food and Agriculture ("ITPGR")

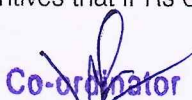
On 3 November 2001, an intergovernmental conference sponsored by FAO adopted the text of a legally binding international agreement on plant genetic resources. The ITPGR entered into force on 29 June 2004. As of July of that year, the treaty had been ratified by 55 states and signed by an additional 50 countries. The ITPGR not only codifies and updates the nonbinding principles set out in the Undertaking and its subsequent revisions, but also contains provisions relevant to IPRs in plant genetic resources and plant varieties.

Specific policy objectives in tension with IPRs

Having identified the principal institutions and agreements relating to plant genetic resources, the next sections address specific critiques of IPRs as applied to plants and plant varieties and the policy arguments that inform those critiques.

Preserving genetic diversity

Granting IPRs to plant breeders has uncertain consequences for preserving plant genetic diversity. Given the incentives that IPRs create for private parties to invest in research and breeding techniques relating to


Co-ordinator
IQAC, Shri Ram College
Muzaffarnagar


Chairman
IQAC, Shri Ram College,
Muzaffarnagar

new plant varieties, it might be thought that IPRs would lead to an increase in plant genetic diversity over time.

A number of commentators have argued, however, that diversity is eroded rather than enhanced by granting IPRs to plant breeders. According to this view, in situ conservation by indigenous farmers diminished as they began to rely on commercial plant breeders for seeds and other propagating material. Rather than using informal breeding techniques to experiment with the creation of new varieties suitable for local growing conditions, indigenous farmers came to depend upon third party plant breeders to provide them with seeds possessing uniform genetic characteristics. The plant varieties that have come to dominate agriculture as a result of this dependence may possess many beneficial characteristics, but they do not enjoy the adaptive abilities of less well known and informally bred varieties.

To evaluate these competing assertions about the effects of IPRs on plant genetic diversity, empirical testing would be useful. Unfortunately, empirical studies of the causal impact of IPRs on plant genetic diversity are difficult to devise because of the uncertainty of screening out other relevant causal variables. Empirical studies that do exist often focus on industrialized countries rather than developing states and tend to rely on anecdotal evidence. As a result, the broader applicability of their conclusions is uncertain and often controversial.

Farmers' rights

A second challenge to IPRs concerns the relationship between farmers' rights and IPRs in plant varieties. The concept of farmers' rights was developed to reflect the contributions that traditional farmers, particularly in the developing world, have made to the preservation and improvement of plant genetic resources. FAO Resolution 5/89 defines farmers' rights as "rights arising from the past, present and future contributions of farmers in conserving, improving and making available plant genetic resources, particularly those in centers of origin/diversity." Such rights are also recognized in article 9 of the ITPGR.

Farmers' rights are in tension with IPRs for plant breeders because many farmers and farming communities do not claim exclusive rights in the cultivated landraces (also known as traditional cultivars, and plant varieties they have cultivated over time. Moreover, the subject matter requirements of existing IPR laws, which as explained below are designed to protect innovations in new and clearly distinguishable plant varieties, often cannot accommodate contributions of individual farmers using more informal methods to select for better crops or sought-after plant characteristics.

Advocates of farmers' rights have developed different approaches to address this situation and to reward farmers for their contributions to plant genetic diversity.

- The first approach involves situating the traditional practices of farmers as exceptions to the exclusive rights of plant breeders under existing IPR laws. In other words, breeders are precluded from demanding payment from farmers who engage in certain farming practices, such as saving seeds and planting seeds saved from prior purchases, or informally exchanging seeds.
- A second approach seeks to modify existing IPR laws so as to permit farmers themselves to claim exclusive rights in the plant varieties they cultivate informally.
- A third approach involves recognizing farmers' rights not through IPRs but through benefit sharing mechanisms, such as financial payments and technology transfers, that compensate farmers for their contributions to plant genetic diversity. This last approach - which is recognized in article 9 of the ITPGR - questions whether farmers in fact have "rights" as that term is understood within an intellectual property paradigm, while acknowledging the need to reward their contributions to plant genetic diversity.

Traditional knowledge

An issue closely related to farmers' rights is the recognition and protection of the plant-related knowledge, innovations and practices of indigenous and local communities. (Cottier & Panizzon, 2004) Advocates assert that those claiming IPRs in plant genetic resources and plant varieties often utilize such knowledge without adequately acknowledging the contributions of the communities who possess it. Mechanisms to redress this problem are similar to those discussed above relating to farmers' rights, a linkage reflected in article 9 of the ITPGR. They include modifying existing IPR laws to recognize traditional knowledge as a form


Co-ordinator
IQAC, Shri Ram College
Muzaffarnagar


Chairman
IQAC, Shri Ram College,
Muzaffarnagar

of intellectual property and protecting traditional knowledge through sui generis national laws that recognize the communal ownership of much of traditional knowledge. In the fall of 2000, the World Intellectual Property Organization (WIPO) established a new Intergovernmental Committee on Intellectual Property and Genetic Resources, Traditional Knowledge and Folklore to study these issues.

Regulating access to plant genetic resources

Plant breeders and others seeking to develop plant-related innovations need access to existing stocks of plant germplasm for breeding, research and development. Access issues arise for both in situ and ex situ collections of seeds and plant propagating material.

With respect to in situ collections, a number of states have enacted national access laws and regulations to control third party access. These access controls are consistent with the CBD, which grants states the sovereign right to control their plant genetic resources. They also further the CBD's benefit sharing objectives by conditioning access upon the current or future payment of compensation or the transfer of technology to the state providing access. The specific conditions of access are often specified in Material Transfer Agreements ("MTAs") entered into between the entity that owns or controls the germplasm and the entity (usually private) that seeks access to it.

Similar access issues arise with regard to ex situ collections of plant germplasm, including the seed banks maintained under the auspices of CGIAR. Although pursuant to a 1994 agreement between CGIAR and FAO the autonomous agricultural research centres under CGIAR's auspices each create their own access regulations, certain designated germplasm is to be held by the centres "in trust for the benefit of the international community." With respect to IPRs, the 1994 agreement provides that a centre "shall not claim legal ownership over the designed germplasm, nor shall it seek any [IPRs] over that germplasm or related information." The centres also commit to apply the same restrictions on IPRs in MTAs with third parties to whom the centre transfers designated germplasm.

"Biopiracy" and property rights in unimproved plant materials

Issues of access to plant genetic resources are linked to larger controversies concerning the propriety of granting IPRs in the raw materials accessed.

Under settled principles of intellectual property law, unimproved plant germplasm already in the public domain cannot be removed and privatized. Nevertheless, there are several reported cases and one empirical study which indicate that plant breeders and commercial entities have on occasion been granted IPRs in wild plant varieties or in germplasm found in CGIAR seed collections. It is unclear whether such rights were granted because of inadvertence, insufficient or inaccurate information provided by the IPR applicant or particularities in national laws that limit the sources to which granting authorities may refer in determining what materials are in the public domain. Where such rights have been granted, however, states and interested NGOs have often succeeded in petitioning the authorities in other nations to remove legal protections they had previously granted.

Attempts to claim IPRs in unimproved plant genetic resources have often been labeled as a form of "biopiracy." Biopiracy is not a legal term of art, however and has been loosely used to refer to any act by which a commercial entity seeks to obtain IPRs over biological resources, including plant varieties that are seen as "belonging" to developing states or indigenous communities. Thus, even where an IPR claim relates to improvements to raw plant materials, certain governments and NGOs have labeled the entity seeking legal protection as a biopirate if it has not provided a fair return to those who granted access to the raw materials.

Plant breeders' research interests

Even as between groups of plant breeders, the scope of IPRs in plant varieties can be controversial. Tensions arise between first generation breeders who have secured legal protection for new varieties and second generation breeders who seek to utilize those new varieties to develop still more varieties. As with farmers' rights, it is possible to use the exceptions and limitations provisions of national IPR laws to permit second generation innovators to engage in such activities without the authorization of first generation breeders.


Co-ordinator
IQAC, Shri Ram College
Muzaffarnagar


Chairman
IQAC, Shri Ram College,
Muzaffarnagar

References

- Kockelmann, A., Tilcher, R., and Fischer, U. 2010. Seed Production and Processing. Sugar Tech, 12(3-4), 267-275
- Pratibha B., Sanjeev S., and Dhillon, B.S. 2003. The Protection of Plant Varieties and Farmers Rights Act of India *Current Science*, 86, (3): 392 - 398
- Simonyan, K. J. and Yiljep, Y. D. 2008. Investigating Grain Separation and Cleaning Efficiency Distribution of a Conventional Stationary Rasp-bar Sorghum Thresher. *Agricultural Engineering International: the CIGR Ejournal Manuscript PM 07 028*. Vol. X
- Singh, B.D. 2011. Plant Breeding: Principles and Methods. 4th Issue. Kalyani Publisher, Ludhiana, Punjab, pp: 916.


Co-ordinator
IQAC, Shri Ram College
Muzaffarnagar


Chairman
IQAC, Shri Ram College,
Muzaffarnagar

Abstract

The present study was conducted to analyse effect of dietary supplementation of plant derived immunostimulant e.g., *Tinospora cordifolia* and its combination with *Allium sativum* on *Heteropneustes fossilis*. The effect of these immunostimulant on fish health was analysed and determine. Fish were obtained from local fish market and various water bodies from Meerut region. They were brought to the laboratory and allowed to acclimatize in laboratory conditions on basal diet for one week and on formulated diet for different time periods. On the basis of diet and doses, fish growth was measured. The effect of these diets on fish health was analysed. The formulated feed and their combination was effective as herbal immunostimulants. The formulated feed based on *Tinospora cordifolia*, was given, and it was found that the fish growth was fast, and the fish were recovered soon after. After that, a dose of a mix of other immunostimulants, *Allium sativum*, was given for few months and found the similar growth and recovery.

Keywords: Dietary supplementation, growth, *Allium sativum*, *Tinospora cordifolia*, Immunostimulants, *Heteropneustes fossilis*.

APPLE POMACE AS A FUNCTIONAL AND HEALTHY INGREDIENT

Pankaj Kumar^{1*}, Neelash Chauhan¹, Jaivir Singh¹, B.R. Singh¹, Vikrant Kumar²

1. Deptt. of Agric. Engg., SVPUAT, Meerut (UP)

2. Shri Ram College Muzaffarnagar (UP)

*Email: pankajkumaretw842@gmail.com

Abstract

Apple pomace is the main by-product obtained during the processing of apple juice. It is estimated that millions of metric tons of apple pomace are produced worldwide each year. However, the recovery rate of this by-product is low. Extrusions are normally disposed thrown away as a waste, resulting in environmental problems and even threats to public health. As a byproduct in the apple juice processing industry, pomace contains potential source of phytochemicals and contains a significant amount of carbohydrates as well as a small amount of protein, vitamins and minerals. It is estimated that the result of apple juice production is a product with a low content of polyphenolic compounds, which has only 3-10% antioxidant activity of the fruit from which it is made. Most of the polyphenolic compounds remain in apple pomace a heterogeneous mixture of peel, core, seed, stem and soft tissue. Currently, there is little use of AP, with most of it being used on farms as animal feed or taken to landfills and incinerators. many different nutritional varieties important compounds such as carbohydrates, phenolic compounds, fiber and minerals. These important compounds may or may not be obtained from apple pomace use of apple pomace in food systems directly or after minimal processing. Hence the applesauce they can be used in food products to improve their health benefits and commercial values.

Keywords: Apple pomace polyphenols, antioxidant, anti-inflammatory, environmental.

Co-ordinator
IQAC, Shri Ram College
Muzaffarnagar

Chairman
IQAC, Shri Ram College,
Muzaffarnagar

About the Authors



Er. Vikrant Kumar completed his B.Tech (Agricultural Engineering) from Mahatma College of Agriculture Engineering and Technology, Ambedkar Nagar, N.D. University of Agriculture and Technology, Meerut (U.P.) in 2015 and M.Tech. Agricultural Process and Food Engineering from S.V.P. University of Agriculture and Technology, Meerut (U.P.) in 2018. Er. Vikrant also qualified ICAR-NET Examination in 2018. At present, he is pursuing Ph.D. in Agricultural Engineering with specialization in Process and Food Engineering from S.V.P. University of Agriculture and Technology, Meerut (U.P.). He has published 20 Research papers and 7 review papers in National and International Journal. He has participated national and international conferences, he has published more than 30 abstracts in national and international conferences. He has Published 5 book chapters. He is a life time member of various professional societies. He has awarded like Out Standing Agriculture Engineer Award, Young Fellow Award and Emerging Scholar Award - 2019. E-Mail: vikrant09@gmail.com



Dr. Jaivir Singh is working as Associate Professor in the Department of Agricultural Engineering, Sardar Vallabhbhai Patel University of Agricultural and Technology, Meerut (U.P.) since March, 2003. He obtained his B.Tech. (G.B.P.U.A. & T. Pantnagar), M.Tech. (M.P.U.A. & T. Udaipur, Rajasthan), and Ph.D. from S.V.P.U.A. & T. Meerut. Presently, he has more than 15 years's service experience in teaching, research and extension. Dr. Singh published more than 35 research/review technical papers in national/international journals and Book Chapters in journals & magazines. He is life member of various professional societies. He has been conferred with various awards like Young Fellow Award-2014, Dr. Masood Ali Vashisht Raja Vagwanik Puraskar-2014, Scientist of the year Award-2017 and outstanding achievement Award-2018. Dr. Singh guided seven M.Tech. and Four Ph.D. students.



Er. Pankaj Kumar did his B.Tech (Agricultural Engineering) from Sir Chhotu Ram Institute of Engineering & Technology, CCS Unit, Campus, Meerut, (U.P.) in 2013. At present, he is pursuing M.Tech. in Agricultural Engineering with specialization in Process and Food Engineering from S.V.P. University of Agriculture and Technology, Meerut (U.P.). He has published 2 research papers in International Journal. He has participated national and international conferences, he has published more than 2 abstracts in national and international conferences. He has awarded like Young Achiever Award.

Published by **Co-ordinator**
AkiNik Publications
169, C-11, Sector - 5, Rohini
Delhi - 110085
Toll Free (India): 18001234070
Email: akinkbooks@gmail.com

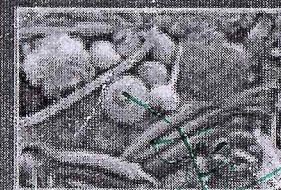
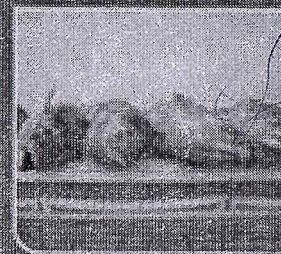
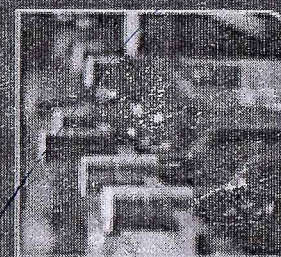
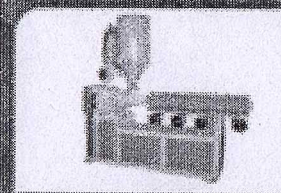
ISBN- 9789390322152



With Previous years questions of ICAR/NET (Memory based)

A Question Bank on Agricultural Structures & Process Engineering

Er. Vikrant Kumar, Dr. Jaivir Singh
Er. Pankaj Kumar



Chairman
IQAC, Shri Ram College,
Muzaffarnagar
AkiNik Publications
New Delhi

About the Authors



Dr. Jaivir Singh is working as Associate Professor in the Department of Agricultural Engineering, Sardar Vallabhbhai Patel University of Agriculture and Technology, Meerut (U.P.) since March, 2005. He obtained his B.Tech. (G.B.P.U.A. & T, Parbhagar), M. Tech. (M.P.U.A.&T, Udaipur, Rajasthan), and Ph.D. From S.V.P.U.A. & T, Meerut. Presently, He has more than 15 year's service experience in teaching, research and extension. Dr. Singh published one Book & more than 35 research/review/technical papers in national international journals and Book Chapters in souvenir & magazines. He is life member of various professional societies. He has been conferred with various awards like Young Fellow Award-2014, Dr. Masood Ali Vaisht Yuv Vaishtik Puraskar-2014, Scientist of the year Award-2017 and outstanding achievement Award-2018. Dr. Singh guided seven M.Tech. & Four Ph.D. students. E-Mail: jaivirsingh037@gmail.com



Er. Vikrant Kumar completed his B.Tech. (Agricultural Engineering and Technology) from Mahatma College of Agriculture Engineering and Technology, Ambedkar Nagar, N.D. University of Agriculture and Technology, Ayodhya (U.P.) in 2015 and M.Tech. Agricultural Process and Food Engineering from S.V.P. University of Agriculture and Technology, Meerut (U.P.) in 2018. Er. Vikrant also qualified ICAR-NET Examination in 2018. At present, he is pursuing Ph.D. in Agricultural Engineering with specialization in Process and Food Engineering from S.V.P. University of Agriculture and Technology, Meerut (U.P.). He has published one Book, two practical manuals, 20 Research papers and seven review papers in national and international journal. He has participated national and international conferences, he has published more than 20 abstracts in national and international conferences. He has Published 5 book chapters. He is life time member of various professional societies. He has awarded like Out Standing Agriculture Engineer Award, Young Fellow Award and Emerging Scholar Award-2019. E-Mail: vik8806@gmail.com



Er. Pankaj Kumar did his B.Tech (Agricultural Engineering) From Sir Chhotu Ram Institute of Engineering & Technology, C.C.S. Uni. Campus, Meerut, (U.P.) in 2018 and M.Tech. Agriculture Engineering with specialization in Process and Food Engineering from S.V.P. University of Agriculture and Technology, Meerut (U.P.) in 2020. He has Published One Book, one practical manual and two research papers in international journal. He has participated national and international conferences. He has awarded like Young Achiever Award. E-Mail: pankajkumartw842@gmail.com

ORDERS CAN BE PLACED DIRECTLY ONLINE ALSO

Books can be purchased online at
amazon.in flipkart

Jain Brothers (New Delhi)

16/B73, East Park Road (Near Dr. N.G. Joshi Hospital), Karol Bagh, New Delhi-110005
Ph : 23618426, 45097398 Fax : 011-3363844
E-mail: jain_bros@hotmail.com
Website : www.thejainbrothers.com

Co-ordinator
IQAC, Shri Ram College
Muzaffarnagar

ISBN: 876-03-10576-00-7

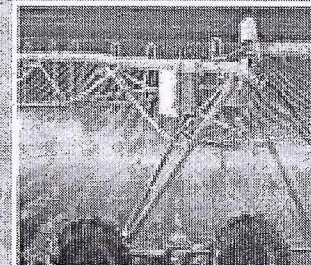
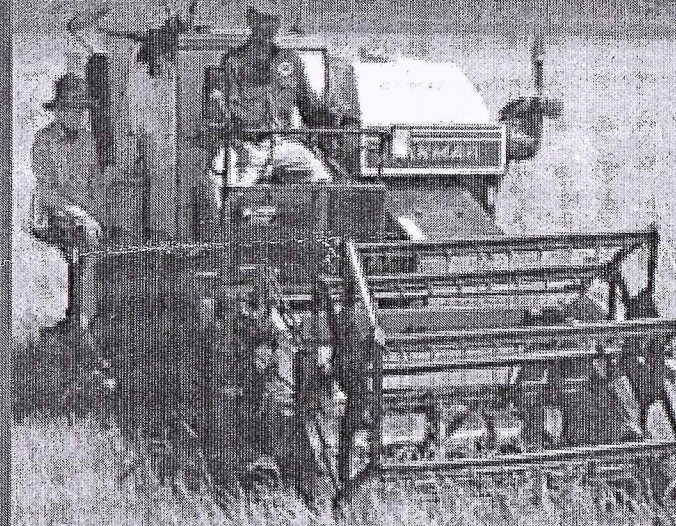
ISBN:-
9789390576067

AGRICULTURAL ENGINEERING QUESTION BANK

JAIVIR SINGH
VIKRANT KUMAR
PANKAJ KUMAR

AGRICULTURAL ENGINEERING

Question Bank



JAIVIR SINGH
VIKRANT KUMAR
PANKAJ KUMAR



JAIN BROTHERS

Chairman
IQAC, Shri Ram College,
Muzaffarnagar



Dr. Parveen Malik, completed graduation (BSc; agriculture), Post Graduation (MSc; Genetics and Plant Breeding), Master of Philosophy (MPhil: Genetics and Plant Breeding) and completed PhD (Doctor of Philosophy) from Ch. Charan Singh University, Meerut-250004 (U.P.), India. He is working in area of molecular breeding particularly LD based association mapping and linkage based interval mapping on wheat crop. He has published more seven research papers in peer reviewed and high impact international Journals. He is also present posters of own research work in national and international conferences. Presently, he is working as an Assistant Professor in the Department of Agriculture, Faculty of Science, Keral Verma Subharti College of Science, Swami Vivekanand Subharti University, Meerut-250005 (U.P.) India.



Dr. D.P. Singh is an Assistant Professor in the Department of Zoology, Janta Vedic College, Baraut (Baghpat) Affiliated to G.C.S. University Meerut. He has completed his Ph.D. Degree from Dr. B.R. Ambedkar University Agra. He has published 50 research papers in various reputed national and international journals. Besides, he has so far successfully participated in 41 national and 09 international seminars and 04 workshops sponsored by UGC. He has been a member of various academic bodies such as IAAS, IJAI and Indian Academy of Science and Nature. He is an associated editor of international journal on Agricultural Invention and also in the editorial board of journal of exp. Zoology India. He has delivered various lecture on the topic related to Cell and Molecular Biology as a guest lecture in various College's. He is actively engaged in conducting research and guiding doctoral research scholars. He was also awarded with gold medal in 2013 by Indian Academy of Science and Nature for his outstanding research and Academic contribution in the field of global warming.

**book
enclave**
publishers ■ exporters

F-11, S.S. Tower, Dhamani Street,
Chauha Rasta, Jaipur-302003 (Raj.)
Ph: 0141-231 1900, 94144 43132
e-mail: bookenclave@gmail.com
Web: www.bookenclave.com

IQAC, Shri Ram College,
Muzaffarnagar

ISBN: 978-93-92581-31-9



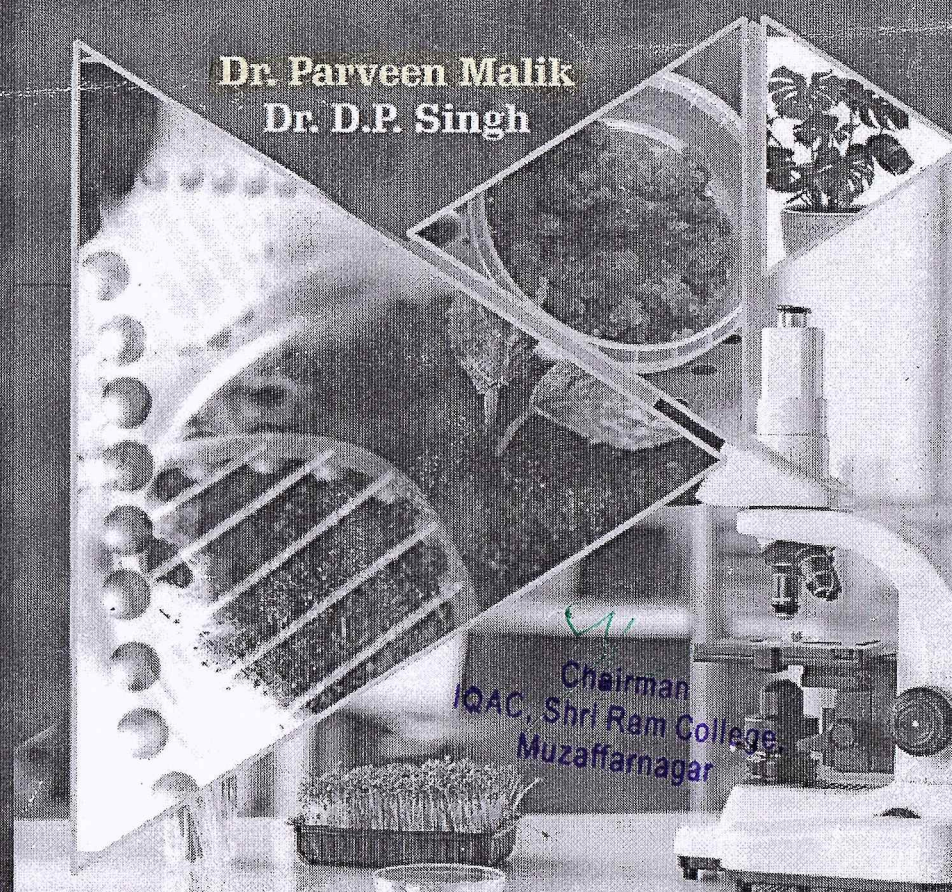
Cell and Molecular Biology of Plants

Dr. Parveen Malik
Dr. D.P. Singh

Cell and Molecular Biology of Plants



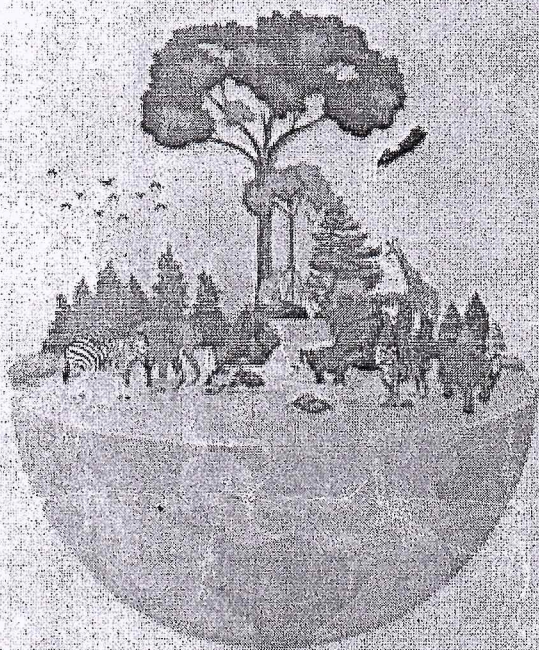
**Dr. Parveen Malik
Dr. D.P. Singh**



Chairman
IQAC, Shri Ram College,
Muzaffarnagar



BIODIVERSITY AND BIORESOURCES : EXPLORING NATURE'S RICHES



Dr. Smriti Kukshal


Co-ordinator
IQAC, Shri Ram College
Muzaffarnagar


Chairman
IQAC, Shri Ram College,
Muzaffarnagar

Publisher
Samaya Sakshaya

15 Faltu line
Dehradun 248001

Phone: 0135-2658894
mailssdun@gmail.com

Edition
First, 2024

Price
Rs. 500/-

ISBN: 978-81-19743-31-5

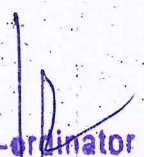
© Editor & Writers

Co-ordinator
IQAC, Shri Ram College
Muzaffarnagar

Chairman
IQAC, Shri Ram College,
Muzaffarnagar

CONTENTS

1. A Review on <i>Podophyllum hexandrum</i> Royle. : A High Value Endangered Medicinal Plant from Western Himalaya - Shweta Negi, Neha Bhatt, Vandana Shukla and B.P. Nautiyal	9
2. Climate Change in the Himalaya: Current scenario & future prospects - Vikram S. Negi and I.D. Bhatt	29
3. Phytosociological and soil analysis on <i>Paeonia emodi</i> Wall. ex Royle habitats in Garhwal Himalaya, India - Praveen Joshi, Prem Prakash and Vijay Kant Purohit	44
4. Ethnobotanical and pharmacological uses of Himalayan <i>Abies pindrow</i> (Royle ex D. Don) Royle: A Review- Parikshit Kumar, Narendra Kumar, Smriti Kukshal, Manju Rani and Sarika Maheshwari	73
5. <i>Paris Polyphylla</i> Smith: A Potential Herb from Himalaya for the Treatment of Cancer - Ajay Hemdan, BP Nautiyal and V K Purohit	85
6. Appraisal of Medicinal Plants for Pharmacological Properties for skin disease - Rajeev Ranjan Kumar, Jaidev Chauhan, Ajay Hemdan, Vijay Kant Purohit and Pratti Prasad	103
7. Utilisation of Native Plants for Diabetes Treatment in the Tiuni and Chakrata regions of Jaunsar- Bawar in Dehradun District, Uttarakhand - Rakhee Dimri and Anita Chauhan	114
8. Drug Discovery and Development from Plants: An Overview - B.P. Nautiyal and Mamta Bohra	122
9. A review on the utilization of lichens as a natural filter for airborne pollutants - Manju Rani, Jitendra Kumar, Smriti Kukshal, Sarika Maheshwari, Parikshit Kumar, Narendra Kumar and Durga Rajak	140
10. Air pollution and Human health - Sarika Goel and Sarika Maheshwari	148
11. Water pollution by sugar mills and distillery spent wash - Reetu Pundir, Rishabh Bhardwaj and Rajdeep Saharawat	159
12. Phytochemistry of rhizomatous plants of the Indian Himalaya - Vaishali Chandola, Pallavi Sati, Sudeep Chandra	166
13. Combating Food and Nutrition Security under changing Climate - Reeta Mishra, YD Mishra and P.P. Singh	192
14. Agri tourism: Social Benefits and Biodiversity Conservation - Amit Kanawjia, Satya Prakash Rashmi, Ajay Kumar Singh, Rakesh Kumar and Ajay Kumar	199
15. <i>Coccinia grandis</i> (L.) Voigt. An Underexploited Medicinal Plant: A Review - Neha Bhatt, Sweta Negi, Vandana Shukla and B.P. Nautiyal	208


 Co-ordinator
 IQAC, Shri Ram College
 Muzaffarnagar


 Chairman
 IQAC, Shri Ram College,
 Muzaffarnagar

Water pollution by sugar mills and distillery spent wash

Reetu Pundir¹, Rishabh Bhardwaj², Rajdeep Saharawat³

Department of Basic Sciences,
Shri Ram College Muzaffarnagar

Abstract

India is a global agriculture power house. It being a developing country establishing a large number of industries such as sugar distillery, steel, paper, textile etc. that play an important role in progress of the nation. These industries along with their product produce wastewater, which causes various environmental hazards. However, wastewater characteristics are different from industry to industry. A no. of industries are established in India and distilleries are one of them. These industries produce wastewater called spent wash which is in general practice discharge into local water bodies without any treatment. This practice causes water and soil pollution. The spent wash is acidic and loaded with organic and inorganic salts. Being plant origin, the spent wash contains considerable amount of plant nutrients and organic matter. Spent wash is some acidic effluent rich in organic carbon, K, Ca, Mg and S, considerable amount of N, P, traces of micronutrients viz Fe, Mn, Zn and Cu and traces of sugar are also observed. Presence of appreciable amount of plant growth promoters viz gibberellic acid (GA) and indole acetic acid (IAA) have also been detected which further enhance the nutrient value of spent wash. Though the spent wash generally does not contain any toxic metals, but is characterized by high biological oxygen demand and chemical oxygen demand levels which are the main cause of water pollution. The solution of the problem is discharge of waste water into water bodies after proper biological and chemical treatment by the industries. The present paper investigates about all aspects of water and soil pollution caused by distillery spent wash.

Keywords : Distillery spent wash, water pollution, Biological Oxygen

Biodiversity and Bio resources Exploring Nature's Riches //159

Co-ordinator
IQAC, Shri Ram College
Muzaffarnagar

Chairman
IQAC, Shri Ram College,
Muzaffarnagar

Collective Intelligence

*A Resource for Teachers, Parents &
Policymakers*

• Ravindra Kumar Kushwaha • Pradeep Kumar Yadav
• Anukampa Devi • Sonali Jaiswal



BlueRoseONE
Stories Matter
New Delhi • London

[Signature]
Co-ordinator
IQAC, Shri Ram College
Muzaffarnagar

[Signature]
Chairman
IQAC, Shri Ram College,
Muzaffarnagar

BLUEROSE PUBLISHERS

India | U.K.

Copyright © Ravindra Kumar Kushwaha, Pradeep Kumar Yadav, Anukampa Devi, Sonali Jaiswal 2024

All rights reserved by author. No part of this publication may be reproduced, stored in a retrieval system or transmitted in any form or by any means, electronic, mechanical, photocopying, recording or otherwise, without the prior permission of the author. Although every precaution has been taken to verify the accuracy of the information contained herein, the publisher assumes no responsibility for any errors or omissions. No liability is assumed for damages that may result from the use of information contained within.

BlueRose Publishers takes no responsibility for any damages, losses, or liabilities that may arise from the use or misuse of the information, products, or services provided in this publication.



BlueRose ONE
ARTS & SCIENCES

For permissions requests or inquiries regarding this publication,
please contact:

BLUEROSE PUBLISHERS

www.BlueRoseONE.com

info@bluerosepublishers.com

+91 8882 898 898

+4407342408967

ISBN: 978-93-6452-131-4

Cover design: Shivam

Typesetting: Namrata Saini

First Edition: October 2024


Co-ordinator
IQAC, Shri Ram College
Muzaffarnagar


Chairman
IQAC, Shri Ram College,
Muzaffarnagar

CHAPTER: 6

Innovative Teaching Methods for Learning Collective Intelligence

Dr. Rahul Arya*

Associate Professor
Department of Chemistry
Shri Ram College Muzaffarnagar (U.P)

Dr. Rishabh Bhardwaj**

Assistant Professor
Department of Chemistry
Shri Ram College Muzaffarnagar (U.P)

Dr. Reetu Pundir***

Assistant Professor
Department of Zoology
Shri Ram College Muzaffarnagar (U.P)

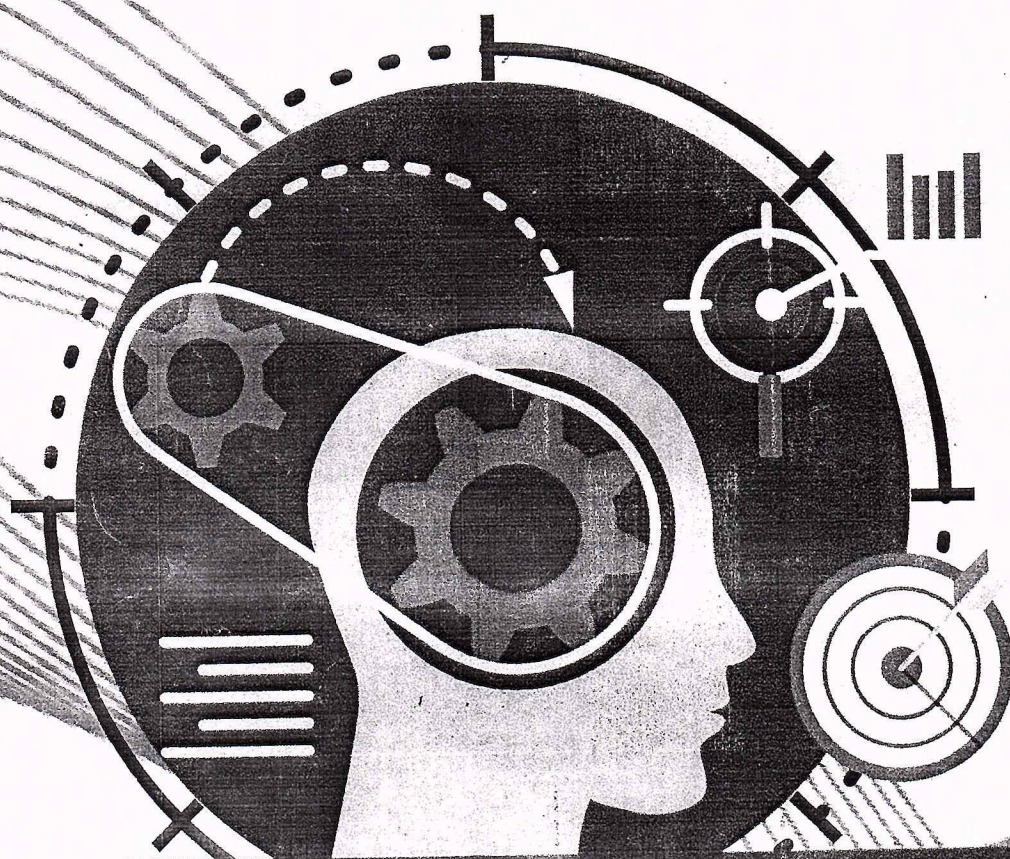
***Abstract:** Collective intelligence, the ability of groups to outperform individuals in problem-solving and decision-making, is increasingly valued in today's interconnected world. To foster this skill, innovative teaching methods are essential. This abstract explores emerging approaches that promote collaborative learning, critical thinking, and effective communication. By leveraging technology, real-world problem-solving and diverse perspectives, educators can cultivate a new generation of individuals capable of harnessing collective intelligence to address complex challenges.*

***Keywords:** Collective intelligence, Innovative teaching methods, Collaborative learning, Critical thinking Communication skills, Technology-enhanced learning, Real-world problem-solving and Diverse perspectives.*

Co-ordinator
IQAC, Shri Ram College
Muzaffarnagar

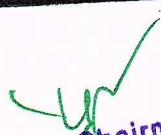
Chairman
IQAC, Shri Ram College,
Muzaffarnagar

GENERAL REASONING



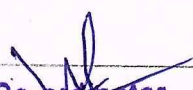
Dr. Manoj Kumar Mittal
Associate Professor,
Department of Physics,
Shri Ram College, Muzaffarnagar


Co-ordinator
IQAC, Shri Ram College
Muzaffarnagar


Chairman
IQAC, Shri Ram College,
Muzaffarnagar

All rights are reserved. No part of this publication may be reproduced, stored in a retrieval system or transmitted in any form or by any means, electronic, mechanical, photocopying, recording or otherwise, without the prior permission of the copyright holder.

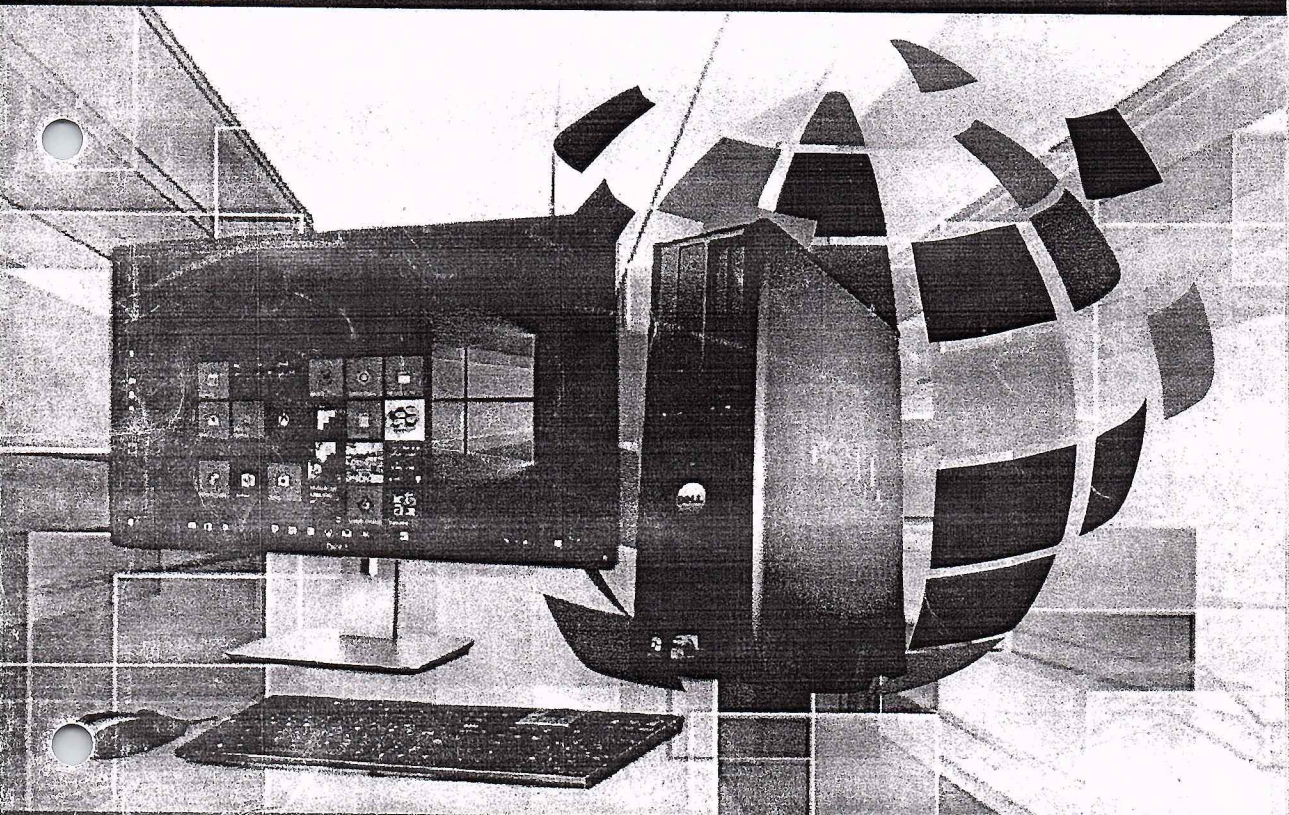
Author © : **Dr. Manoj Kumar Mittal**
Publisher : Swaranjali Publication Sector 10-B,
Vasundhara, Ghaziabad, (U.P.) 201012
Phone : 9810749840, 8700124880
E-mail : swaranjalipublication@gmail.com
Website : www.swaranjalipublication.co.in
Book : **General Reasoning**
Edition : 2023
ISBN : 978-93-5470-872-5
Price : 699/-
Printed By : Swaranjali Printers
Book Available : www.buybox.me


Co-ordinator
IQAC, Shri Ram College
Muzaffarnagar


Chairman
IQAC, Shri Ram College,
Muzaffarnagar

COMPUTER SKILL

Co-Curricular Courses
5th Semester



Dr. Manoj Kumar Mittal
Associate Professor,
Department of Physics
Shri Ram College, Muzaffarnagar

Co-ordinator
IQAC, Shri Ram College
Muzaffarnagar

Chairman
IQAC, Shri Ram College,
Muzaffarnagar

All rights are reserved. No part of this publication may be reproduced, stored in a retrieval system or transmitted in any form or by any means, electronic, mechanical, photocopying, recording or otherwise, without the prior permission of the copyright holder.

Author © : **Dr. Manoj Kumar Mittal**
Publisher : Swaranjali Publication
Sector 10-B, Vasundhara,
Ghaziabad, (U.P.) 201012
Phone : 9810749840, 8700124880
E-mail : swaranjalipublication@gmail.com
Website : www.swaranjalipublication.co.in
Book : **Computer Skill**
Edition : 2023
ISBN : 978-93-5470-871-8
Price : 699/-
Printed By : Swaranjali Printers
Book Available on : www.buybox.me


Co-ordinator
IQAC, Shri Ram College
Muzaffarnagar

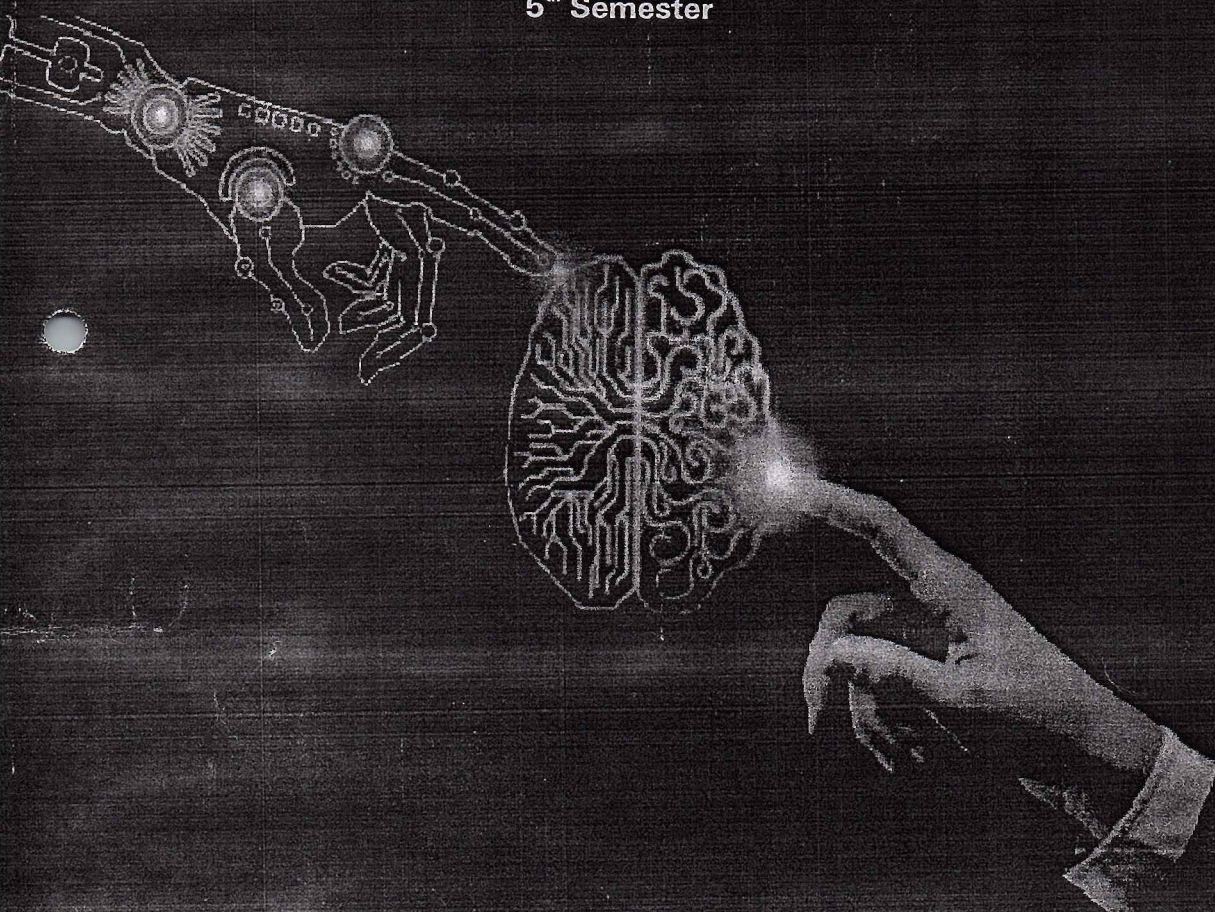

Chairman
IQAC, Shri Ram College,
Muzaffarnagar

NEP

National Education Policy 2020
According to New Syllabus

DIGITAL AWARENESS

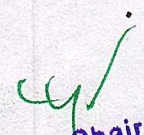
Co-Curricular Courses
5th Semester



Dr. Manoj Kumar Mittal

Associate Professor
Department of Physics
Shri Ram College Muzaffarnagar


Co-ordinator
IQAC, Shri Ram College
Muzaffarnagar


Chairman
IQAC, Shri Ram College,
Muzaffarnagar

All rights are reserved. No part of this publication may be reproduced, stored in a retrieval system or transmitted in any form or by any means, electronic, mechanical, photocopying, recording or otherwise, without the prior permission of the copyright holder.

Author © : Dr. Manoj Kumar Mittal
Publisher : Swaranjali Publication
Sector 10-B, Vasundhara,
Ghaziabad, (U.P.) 201012
Phone : 9810749840, 8700124880
E-mail : swaranjalipublication@gmail.com
Website : www.swaranjalipublication.co.in
Book : Digital Awareness
Edition : 2023
ISBN : 978-93-5470-742-1
Price : Price-699/-
Printed By : Swaranjali Printers
Book Available on : www.buybox.me

Chapter 1
Digital Awareness
Chapter- 2
Internet Basics
Chapter 3
Web Surfing
Chapter-4
E-Mail.....
Chapter-5
Gmail.....
Chapter- 6
What is a Browser
Google Chrome
Mozilla Firefox
Internet Explorer
Chapter- 7
Cyber Security
Chapter- 8
Data Manipulation
Chapter- 9
Introduction to
Chapter- 10
Cyberspace and


Co-ordinator
IQAC, Shri Ram College
Muzaffarnagar


Chairman
IQAC, Shri Ram College,
Muzaffarnagar



Dr. Sachin Kumar (M.Phil. GATE, Ph.D.), Assistant Professor in the Department of Bioinformatics, Janta Vedic College, Baraut, Baghpat. Formerly worked as Research Associate, at the Dept. of Biotechnology, Punjabi University, Patiala in multi-institutional, world bank funded (NAIP) project. He has an experience of almost 20 years in total of research & teaching. He has about 30 research papers, 3 books, 9 book chapters and 3 patents (1 Granted, 2 Published) in his credits.



Dr. Ashwani Kumar (Ph.D.), Associate Professor and Head Department of Biotechnology at KVSCOS, Swami Vivekanand Subharti University, Meerut. He has been awarded various prestigious Awards and Fellowships including Scientist of the Year Award 2022, Young scientist Award and participated as Resource Person in various conferences. He completed his post-graduation from C.C.S. University, Campus, Meerut and Ph.D. in Biotechnology from Punjabi University Patiala, Punjab. He has more than 50 research publications in national and international journals.



Mr. Amit Kumar Head, Department of Biotechnology, Dr. K. N. Modi Institute of Pharmaceutical Education and Research, Modinagar. He has completed a Post-Graduation in Biotechnology from C.C.S. University, Meerut. He has passed both GATE and ICAR NET. Pursuing a Ph.D. in Biotechnology from Uttarakhand Technical University, Dehradun. He has published more than 20 research papers in national and international journals



Dr. Vipin Kumar Saini is working as Head, Department of Bioscience at Shri Ram College, Muzaffarnagar. In 2012, he was awarded a Doctor of Philosophy degree for his work by FRI University, Dehradun. He has been the head of more than two prestigious institutions. He has been a research fellow on an ICFRE-funded project. He has published more than 20 research papers in national and international journals and has also been granted one patent. He had been awarded for outstanding work in the field of education by the UP Government in 2021 and the Best Faculty Award in 2015 by the KNMODI Foundation.

BOOK AVAILABLE

GET IT ON
Google Play

Flipkart

amazon

amazonkindle

BOOK RIVERS
WE CREATE READERS



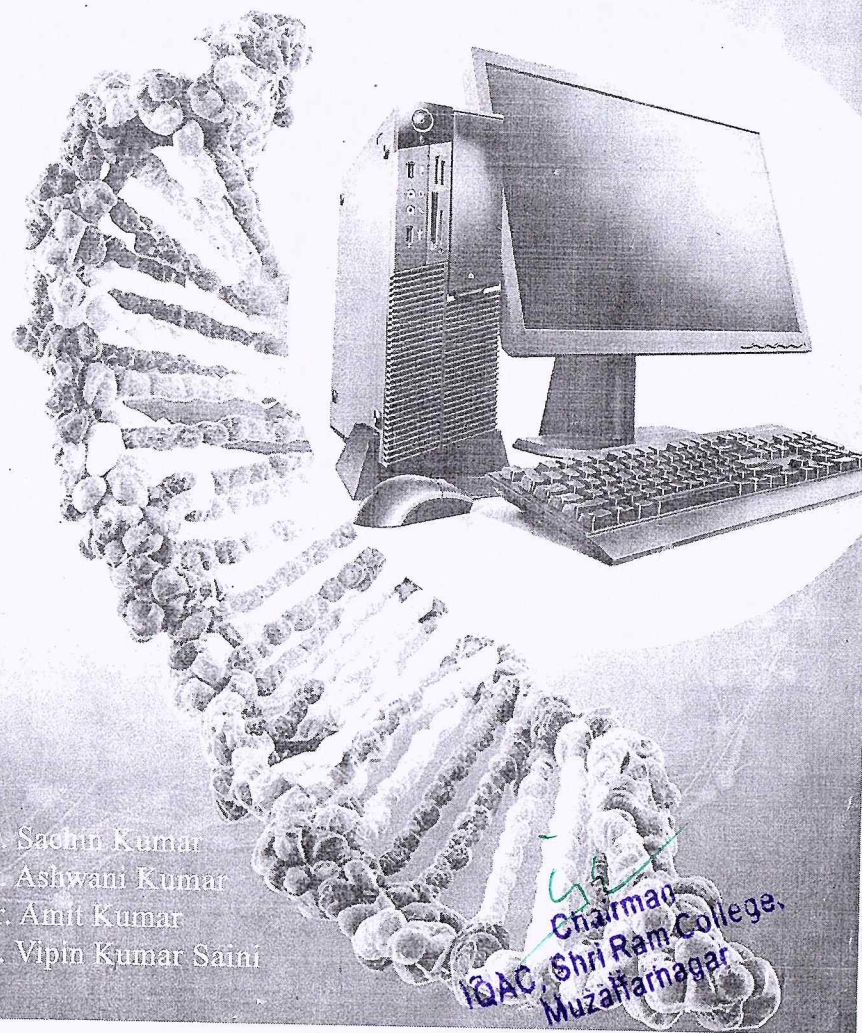
9 789358 429824

Co-ordinator
IQAC, Shri Ram College
Muzaffarnagar

Molecular Biology and Bioinformatics



BOOK RIVERS



Dr. Sachin Kumar
Dr. Ashwani Kumar
Mr. Amit Kumar
Dr. Vipin Kumar Saini

Chairman
IQAC, Shri Ram College,
Muzaffarnagar

Chapter 6

Impact of Artificial Intelligence (AI) and Machine Learning (ML) on Cloud Security

Ruchi Rai

Shri Ram Group of Colleges, India

Ankur Rohilla

 <https://orcid.org/0009-0006-4322-2246>
Shri Ram Group of Colleges, India

Abhishek Rai

S.D. College of Engineering, India

ABSTRACT

This chapter explores the profound impact of artificial intelligence (AI) and machine learning (ML) on the realm of cloud security. As organizations increasingly migrate their operations and data to cloud environments, ensuring robust security measures becomes paramount. The integration of AI and ML technologies introduces novel ways to enhance threat detection, prevention, and response in the cloud. This chapter delves into various aspects of this synergy, discussing the benefits, challenges, and future prospects of utilizing AI and ML for safeguarding cloud infrastructures. This chapter also presents the benefits, challenges, and future directions. It underscores the transformative potential of AI and ML in fortifying cloud infrastructures and safeguarding sensitive information in the digital age.

DOI: 10.4018/979-8-3693-3249-8.ch006

Copyright © 2024, IGI Global. Copying or distributing in print or electronic forms without written permission of IGI Global is prohibited.


Co-ordinator
IQAC, Shri Ram College
Muzaffarnagar


Chairman
IQAC, Shri Ram College,
Muzaffarnagar

1. INTRODUCTION

In the rapidly evolving landscape of modern technology, the integration of Artificial Intelligence (AI) and Machine Learning (ML) has proven to be a catalytic force, reshaping industries and redefining conventional paradigms. One such domain that has witnessed a profound transformation is cloud security. As organizations increasingly migrate their operations and data to cloud environments, the need to ensure robust protection against a spectrum of evolving cyber threats has become an imperative of paramount importance. In this context, the symbiotic relationship between AI, ML, and cloud security emerges as a potent solution, capable of revolutionizing the way we safeguard digital assets in an interconnected world.

In this exploration, we delve into the impact of AI and ML on cloud security, investigating their multifaceted roles in fortifying the integrity, availability, and confidentiality of data and applications. From advanced threat mitigation to automated incident response, the potential of these technologies is vast. As we embark on this journey through the intersection of AI/ML and cloud security, we uncover the transformative potential that promises a safer and more resilient digital landscape.

1.1 Cloud Security Landscape

The “Cloud Security Landscape” presents a panoramic view of the challenges, considerations, and evolving dynamics surrounding the protection of data, applications, and services in the cloud. The cloud, by its very nature, involves data traversal across diverse networks and geographical boundaries, necessitating a comprehensive reassessment of traditional security measures. It encompasses:

- I. **Shared Responsibility Model:** A fundamental pillar of cloud security, this model delineates the distribution of security responsibilities between cloud service providers and their clients.
- II. **Threat Vectors and Attack Surfaces:** The expansive reach of cloud computing introduces novel threat vectors and widens the attack surfaces that malicious actors can exploit. This section dissects the potential entry points for threats and the techniques employed to exploit vulnerabilities.
- III. **Data Confidentiality and Privacy:** Entrusting data to third-party cloud providers necessitates stringent measures to preserve confidentiality and privacy. Encryption, access controls, and data residency regulations play pivotal roles in safeguarding sensitive information.
- IV. **Identity and Access Management (IAM):** As cloud environments host a multitude of users, devices, and applications, effective IAM is pivotal in ensuring authorized access and preventing unauthorized breaches.

12 more pages are available in the full version of this document, which may be purchased using the "Add to Cart" button on the product's webpage:

www.igi-global.com/chapter/impact-of-artificial-intelligence-ai-and-machine-learning-ml-on-cloud-security/340594?camid=4v1

Related Content

Fog Computing Qos Review and Open Challenges

R. Babu, K. Jayashree and R. Abirami (2018). *International Journal of Fog Computing* (pp. 109-118).

www.igi-global.com/article/fog-computing-qos-review-and-open-challenges/210568?camid=4v1a

Evaluating the Performance of Monolithic and Microservices Architectures in an Edge Computing Environment

Nitin Rathore and Anand Rajavat (2022). *International Journal of Fog Computing* (pp. 1-18).

www.igi-global.com/article/evaluating-the-performance-of-monolithic-and-microservices-architectures-in-an-edge-computing-environment/309139?camid=4v1a

Privacy-Preserving Machine Learning Techniques for IoT Data in Cloud Environments

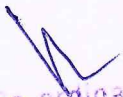
Tarun Kumar Vashishth, Vikas Sharma, Kewal Krishan Sharma, Bhupendra Kumar, Sachin Chaudhary and Manoj Gupta (2024). *Emerging Technologies for Securing the Cloud and IoT* (pp. 144-173).

www.igi-global.com/chapter/privacy-preserving-machine-learning-techniques-for-iot-data-in-cloud-environments/343334?camid=4v1a

BER Improvement in OFDM Systems Using Wavelet Transform Based on Kalman Filter

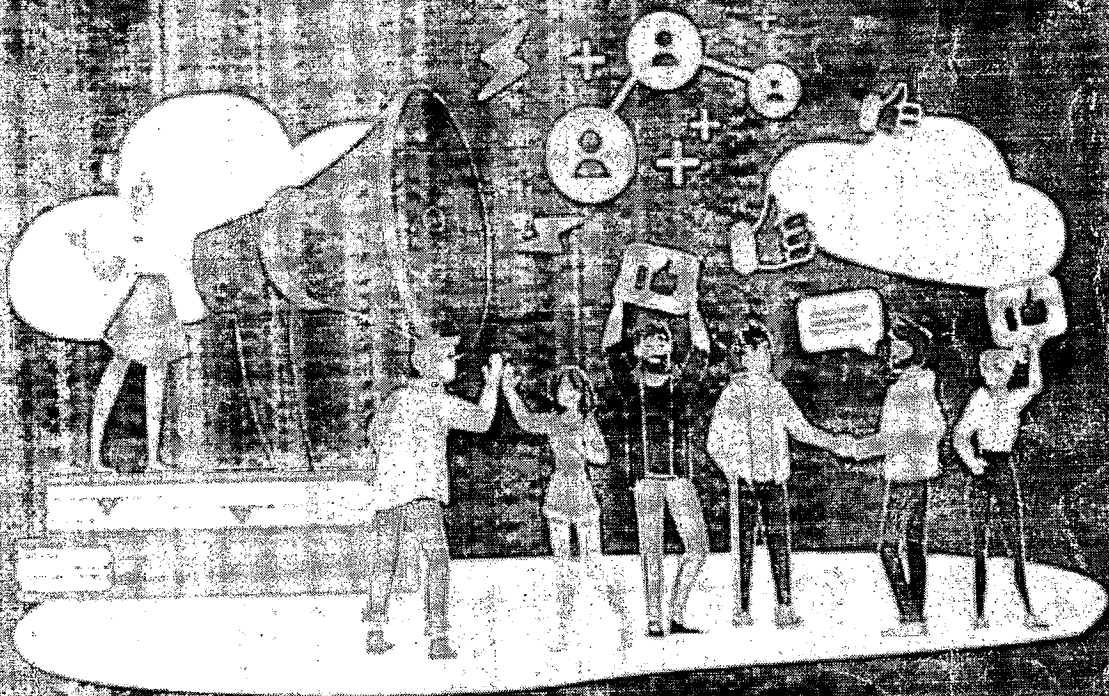
Sajjan Singh (2020). *Fundamental and Supportive Technologies for 5G Mobile Networks* (pp. 102-124).

www.igi-global.com/chapter/ber-improvement-in-ofdm-systems-using-wavelet-transform-based-on-kalman-filter/241974?camid=4v1a


Co-ordinator
IQAC, Shri Ram College
Muzaffarnagar


Chairman
IQAC, Shri Ram College,
Muzaffarnagar

Basics of Advertising and Public Relations



RAVI B. GAUTAM

Mayank Verma
Shiwani Berman
Kehkasha Mirza



A.R. PUBLISHING CO.

K-37, Ajit Vihar, Delhi-110084

Mo. : 09968084132, 07982062594

e-mail : arpublishingco11@gmail.com

Basics of Advertising and Public Relations

Edited by Ravi B. Gautam, Mayank Verma,
Shiwani Berman, Kehkasha Mirza

ISBN : 978-93-88130-87-5

Media


Co-ordinator
IQAC, Shri Ram College,
Muzaffarnagar
© Editors
First Edition : 2024
Price : ₹ 495


Chairman
IQAC, Shri Ram College,
Muzaffarnagar

Basics of Advertising and Public Relations is published by
A.R. Publishing Co. and copyrighted in 2024 to Editors. All rights reserved.



RAVI B. GAUTAM

Ravi Bhushan Gautam is currently working as Head, Department of Journalism & Mass Communication, Shri Ram College, Muzaffarnagar and as Media Coordinator, Shri Ram Group of Colleges, Muzaffarnagar . He is associated with news portal namely NAMASKAR BHAARAT as Chief Editor. He has expertise in TV Journalism and directed as well as scripted 23 documentaries, 15 promotional films and 6 advertising films. His 10 research papers published in various Research Journals. He presented 6 Research Papers in various National and International Seminars/Conferences. He is the organizer of several workshops on subjects related to Journalism and Mass Communication.

Co-ordinator
IQAC, Shri Ram College
Muzaffarnagar



A. R. PUBLISHING CO.

Publishers & Distributors

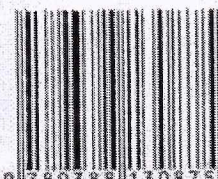
K-37, Ajit Vihar, Delhi-110084

Mob. 9968084132, 7982062594

e-mail: arpublishingco11@gmail.com

Chairman
IQAC, Shri Ram College
Muzaffarnagar

ISBN 978-93-88130-87-5

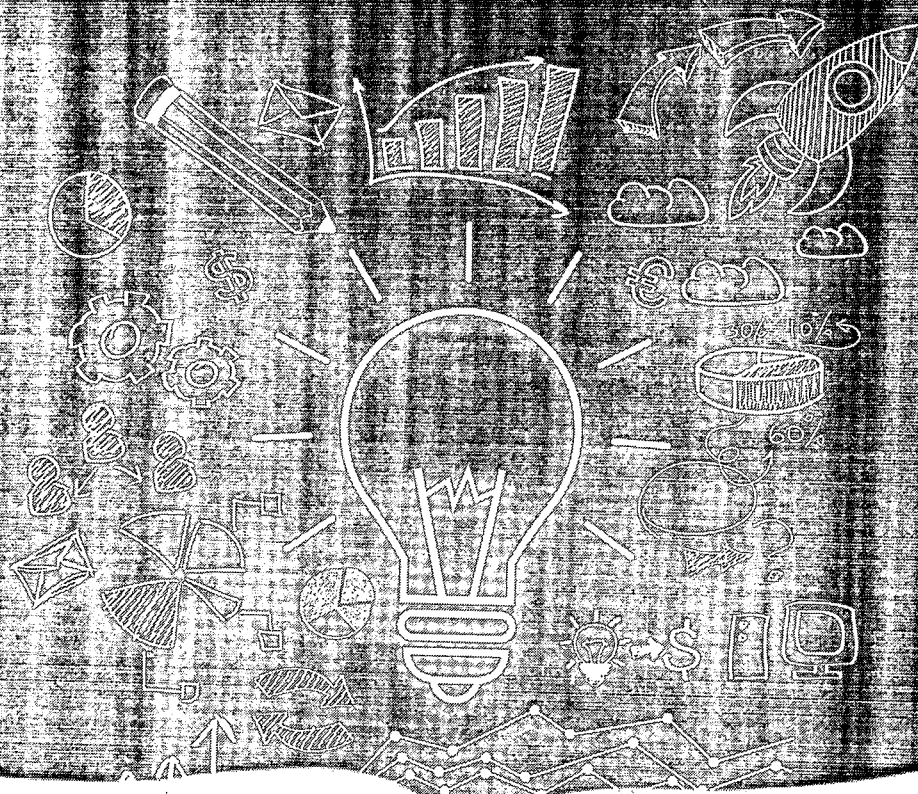


9 789388 130875

VARIOUS DIMENSIONS OF EDUCATION

शिक्षा के विविध आयाम

DR. HARISH KUMAR YADAV
DR. AMREEN SEKHON



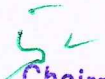
Co-ordinator
ICAC, Shri Ram College
Muzaffarnagar

Editor
ICAC, Shri Ram College
Muzaffarnagar

CONTENTS

SR.NO.	CHAPTER NAME	PAGE NO.
1	THE IMPLEMENTATIONAL ASPECT OF STUDENT PROGRESSION IN INCLUSIVE SCHOOLS OF TRIPURA IN VIEW OF INCLUSIVE EDUCATION FOR THE STUDENTS WITH SPECIAL NEEDS Dr. Uttam Kumar Das	1
2	TRENDS AND CHALLENGES FOR THE 21 ST CENTURY TEACHER IN EDUCATION Dr. Dayal Pyari	18
3	INCLUSIVE EDUCATION AND ITS IMPORTANCE FOR DISABLED STUDENTS Jugmaheer Gautam	25
4	A STUDY OF HEALTH AND PHYSICAL EXERCISE EFFECT ON ACADEMIC ACHIEVEMENT IN SCHOOL EDUCATION Soma Singha	37
5	THE IMPORTANCE OF YOGA AND HEALTH IN EDUCATION Soumen Ghorai	45
6	IMPORTANCE OF YOGA IN OUR EVERYDAY LIVES: AN INSIGHT Dr. Shalini Pandey	53
7	TEACHER WELL-BEING: UNDERSTANDING STRESS AND BURNOUT IN EDUCATION Dr. Amreen Sekhon	58


Co-ordinator
IQAC, Shri Ram College
Muzaffarnagar


Chairman
IQAC, Shri Ram College,
Muzaffarnagar

CHAPTER 3

INCLUSIVE EDUCATION AND ITS IMPORTANCE FOR DISABLED STUDENTS

Jugmaheer Gautam,
Assistant Professor, Faculty of Education,
Shri Ram College, Muzaffarnagar

ISBN: 978-93-5879-758-9 | DOI: 10.25215/9358797584.03

ABSTRACT

This paper recognizes and talks about significant issues and patterns in a custom curriculum in Indonesia, including ramifications of patterns for the future turns of events. Patterns are examined for the accompanying regions: (1) consideration and coordination, issues will stay irritating sooner rather than later; (2) youth and postsecondary instruction with incapacity understudies, custom curriculum will be seen as life expectancy tutoring; (3) changes and fundamental abilities, these will get more prominent accentuation; and (4) interview and joint effort, more accentuation yet issues remain. In addition, the member of the concentrate in this paper was a chemical imbalance understudy of twelve years of age who inhabited Maguwoharjo, Yogyakarta. This study was subjective with contextual investigation as an approach of the exploration. The scientists close the mental imbalance that has great intellectual, correspondence and profound ability can go to incorporated school joined by direction educator. However, by and by, comprehensive training in Indonesia is indistinguishable from partners going from government and establishments, for example, schools, teachers, school climate, local area and guardians to help the objective of comprehensive instruction itself. Satisfactory framework additionally should be given to the school that coordinates comprehensive training for an proficient and successful understudies understanding learning-focused of comprehensive schooling. So, every kid has a similar open door in training, yet for

Co-ordinator
IQAC, Shri Ram College
Muzaffarnagar

Chairman
IQAC, Shri Ram College,
Muzaffarnagar

a custom curriculum which is focused on understudy with exceptional instructive necessities.

KEYWORDS: *Inclusive education, early childhood, integrated school, school climate.*

Introduction:

Lately, the idea and practice of comprehensive training have acquired significance. Globally, the term is progressively seen all the more comprehensively as a change that backings and invites variety among all students.

Comprehensive schooling should be visible as a course of fortifying the limit of a school system to contact all students. It is, hence, a general rule that ought to direct all instructive strategies and works on, beginning from the conviction that schooling is a key basic freedom and the establishment for an all the more society. Training happens in numerous unique circumstances, both formal and non-formal, and inside families and the more extensive local area. Thusly, comprehensive schooling is definitely not a peripheral issue yet is fundamental to the accomplishment of great instruction for all students and the improvement of additional comprehensive social orders. Comprehensive schooling is fundamental to accomplish social value and is a constituent component of deep rooted learning. To put it plainly, comprehensive training is a cycle that includes the change of schools and different focuses of figuring out how to cater for all kids - including young men and young ladies, understudies from ethnic and semantic minorities, rustic populaces, those with handicaps and troubles in learning and to give learning potential open doors to all young and grown-ups too. Point is to take out prohibition is a result of negative perspectives and an absence of reaction to variety in race, monetary status, social class, identity, language, religion, orientation, sexual direction and capacity.

Most nations take on the standards of Schooling for All (EFA) in their strategies and regulations, however by and by, training is for "practically all" or for "the vast majority" and individuals rejected are definitively the people who need it most, to repay what is going on. As per the EFA Worldwide Checking Report 2008, there are as yet 72 million of kids on the planet who have no admittance to essential training and 774 million of

youngsters and grown-ups who are uneducated, 64% of which are ladies.

Admittance to youth care and schooling, important to ensure equivalent open doors, is very restricted in the three first years, and youngsters from the most impeded financial settings and from provincial regions scarcely benefit from these administrations. Admittance to auxiliary training has expanded by 5%, from 2000 to 2005, coming to 66%. By and by, a more prominent exertion ought to be made since these days essential instruction isn't enough for being incorporated into the information society and rising up out of neediness.

Training quality and balance are unsettled matters even in those nations with high tutoring rates. There are huge differences among and inside nations as respects the admittance to the different instructive levels and the dissemination of information. Just 63% of nations with accessible information have arrived at orientation equality in essential schooling, diminishing to 37% at the optional level. Understudies from monetarily hindered areas, country regions or minorities are the individuals who, because of an underlying circumstance, show higher reiteration and drop-out rates and accomplish lower learning results.

Also, isolated schools and projects exist, which are focused on individuals with exceptional instructive requirements, of various ethnic beginning, or transient families. Large numbers of these understudies are not treated with human poise; their way of life is not regarded and they are survivors of physical or mental viciousness.

Thusly, instructive prohibition is a significant peculiarity which isn't limited to the people who don't go to class due to a disavowal of access, or on the grounds that they exited school because of redundancy, the absence of importance of the schooling, monetary hindrances or the understudies' life conditions. Avoidance likewise influences the people who go to class yet are isolated or oppressed due to their ethnic beginning, orientation, social condition, of other individual attributes or limits, too as the individuals who can't learn because of the bad quality of the instruction they get.

In view of the perception at Mugowoharjo, Yogyakarta, Indonesia; there is long term understudy who has handicap which learn at one of formal school at Yogyakarta. He looks ordinary like

Co-ordinator
IQAC, Shri Ram College
Muzaffarnagar

Chairman
IQAC, Shri Ram College,
Muzaffarnagar

different understudies, yet he isn't; he is mental imbalance. He needs guide from the educator during the growing experience. Up until this point, incorporation has been introduced through a handicap focal point.

Incorporation ought to, be that as it may, not be viewed as an issue exclusively about understudies with inability. Some, notwithstanding, presently view comprehensive training as being worried about variety all the more by and large. As indicated by Shaddock and partners (2009), That's what incorporation infers assuming interest turns into an issue for any understudy, whether emerging from incapacity, orientation, conduct, destitution, culture, displaced person status or some other explanation, the beneficial methodology isn't to lay out extraordinary programs for the recently distinguished individual or gathering need, however to grow standard reasoning, designs, and practices with the goal that all understudies are obliged.

Incorporation and Combination

Comprehensive training is a course of reinforcing the limit of the schooling system to contact all students and can subsequently be perceived as a vital methodology to accomplish EFA. As a general rule, it ought to direct all training strategies and works on, beginning from the way that instruction is an essential basic liberty and the establishment for an all the more and equivalent society. The significant catalyst for comprehensive training was given at the World Meeting on Extraordinary Necessities Schooling: Access and Quality, held in Salamanca, Spain, June 1994. In excess of 300 members addressing 92 legislatures and 25 worldwide associations considered the essential arrangement shifts expected to advance the methodology of comprehensive training, accordingly empowering schools to serve all youngsters, especially those with extraordinary instructive requirements.

Albeit the quick focal point of the Salamanca Gathering was on extraordinary requirements instruction, that's what its decision was:

Exceptional necessities schooling - an issue of equivalent worry to nations of the North and of the South - can't progress in disconnection. It needs to frame part of a generally speaking instructive methodology and, without a doubt, of new friendly and

monetary strategies. It calls for significant change of the normal school.

An 'comprehensive' schooling system must be made assuming customary schools become more comprehensive - at the end of the day, in the event that they become better at teaching all kids in their networks. Consideration is in this way seen as a course of addressing and answering the variety of necessities, everything being equal, youth and grown-ups through expanding support in learning, societies and networks, and diminishing and taking out prohibition inside and from schooling. It includes changes and changes in happy, approaches, designs and techniques, with a typical vision that covers all offspring of the fitting age range and a conviction that it is the obligation of the standard framework to teach all kids.

The term consideration has various understandings in different nations. It is some of the time related with those understudies living in underestimated or unfortunate settings, however regularly it is connected with the cooperation of the crippled or those with extraordinary instructive requirements in standard schools. In this manner consideration is viewed as practically equivalent to joining, when they are as a matter of fact two unique methodologies with various dreams and viewpoints. As an outcome of this misinterpretation, comprehensive strategies are viewed as an obligation of a custom curriculum, confining the examination of the relative multitude of normal types of rejection and segregation that occur inside school systems.

On account of incorporation, in actuality, the emphasis is on the change of schooling systems and schools with the goal that they can cater for the variety of understudies' advancing necessities coming about because of their social and social foundation and their singular attributes as respects learning inspirations, capacities, styles and cadence. As per this viewpoint, it isn't the understudies signed up for school that should adjust to the current instructive arrangement, yet rather the school that ought to be adjusted to the requirements of each and every understudy, since all understudies are unique. Corps, Ceralli, and Boisseau (2012) make sense of that custom curriculum framework implies kids with handicaps getting training in an isolated learning climate, for example, an exceptional school or focus that is frequently segregated from the local area, from different youngsters, or from the standard training schools. In

numerous nations this sort of a custom curriculum framework has no connection to the Service of Training.

The critical component of consideration isn't individualization however the enhancement of the instructive arrangement and the personalization of normal growth opportunities to accomplish the most significant level of support, everything being equal, considering their singular necessities. This infers progressing towards general plan, where the showing growing experience and the educational plan consider all along the variety of requirements, everything being equal, rather than anticipating the premise of an "normal" understudy and afterward do individualized activities to answer the necessities of explicit understudies or gatherings who were not thought about by a schooling proposition in view of a rationale of homogeneity rather than variety. The reaction to variety — a fundamental condition to accomplish excellent training — is most likely the principal challenge as of now looked by schools and educators, as it includes considerable changes in the current originations, perspectives, educational programs, academic practices, educator preparing, assessment frameworks and school association.

So, the comprehensive schooling system adopts a methodical strategy to change as opposed to a school by school approach. Coordinated instruction can likewise imply that a youngster with a handicap is set into a standard school and class, yet that the school makes just negligible endeavors to address a particular scholar or social necessities the kid could have, and as needs be the kid should adjust his/herself to the climate. It implies classes for youngsters with handicaps that are situated in standard schools however in a different homeroom with other crippled students and with a committed educator. These kids will frequently have practically no contact with their non-debilitated peers. In addition, Schooling system considers the actions it should take to have the option to give suitable training all youngsters learning together.

Youth and Postsecondary Training with Incapacity

The World Statement on Training for All, took on in Jomtien, Thailand (1990), sets out a general vision:

Universalizing admittance to schooling for all kids, youth and grown-ups, and advancing value. This implies being proactive in recognizing the hindrances that many experience in getting to

Co-Moderator
IQAC, Shri Ram College
Muzaffarnagar

Chairman
IQAC, Shri Ram College
Muzaffarnagar

instructive open doors and distinguishing the assets expected to defeat those obstructions. Youth is a rapidly growing concentration in a custom curriculum. Research has upheld the conviction that early mediations are basic for huge enhancements in uncommon people. There have been new regulations, subsidizing, and preparing laid out in the field to help with supporting youth custom curriculum. Tragically, there is as yet a lot more popularity for these administrations than what is right now being given. The ongoing accentuation in regulation has been toward growing custom curriculum from birth to adulthood. This more up to date viewpoint depends on a perspective on life expectancy tutoring.

School-going age for kids both with and without incapacities might fluctuate from one locale to another and country to country. Public legislatures have approaches and regulations specifying as far as possible for essential and auxiliary school: 1) normal preschool age 3-6 years, 2) normal grade young 6-15 years, 3) normal optional young 14-25 years. For this situation, the subject of understudy is at twelve years of age which has handicap on his correspondence, socialization and profound. Mental imbalance range jumble (ASD) and mental imbalance are both general terms for a gathering of mind boggling problems of mental health. These problems are portrayed, in fluctuating degrees, by challenges in friendly association, verbal and nonverbal correspondence and monotonous ways of behaving.

For kids with incapacities, who frequently start school later than their non-incapacitated friends and who some of the time call for extra investment, the most common way of setting an age limit regulation can forestall the consummation of fundamental training.

Training for youngsters with handicaps in most low and center pay nations generally comprises of isolated extraordinary schools in metropolitan regions where framework is more evolved. In any case, proof is starting to show that this kind of schooling system is certainly not a practical arrangement over the long haul and constantly rejects the least fortunate people, particularly in rustic settings. The beyond a decade have seen a huge worldwide drive on the issue of admittance to training. While much headway has been made, as exhibited by a worldwide reduction in the quantity of kids out of school, there stay serious difficulties regarding nature of instructing, learning, maintenance and progress in training. For youngsters with incapacities, the circumstance is

Co-ordinator
IQAC, Shri Ram College
Muzaffarnagar

Chairman
IQAC, Shri Ram College,
Muzaffarnagar

basic. Schooling systems and administrations overall are just neglecting to address their issues, both with regards to access and nature of training.

Progress and Fundamental abilities of Incapacity Understudies

Most people gain a greater part of their fundamental abilities from their families or friend gatherings. For people with exceptional necessities, these abilities frequently become a need for their schooling. People who have tactile or actual issues, for example, visual hindrance, hearing misfortune, cerebral paralysis or spinal bifida need to figure out how to utilize the particular materials and gear that will help them. Progress has turned into a developing worry of a custom curriculum. The aftereffects of examination on professional and postsecondary results prodded unique instructors to foster projects to assist understudies with handicaps make the change from school to work and free living. In accordance with the progress and fundamental abilities, the educational program and educators strategies in instructing and growing experience are associated with the outcome of understudies' fundamental abilities in the climate. A comprehensive educational program tends to the youngster's mental, close to home, social and innovative turn of events. It depends on the four mainstays of training for the twenty-first hundred years - figuring out how to be aware, to do, to be and to live respectively.

It plays an instrumental part to play in encouraging resilience and advancing basic liberties, and is a useful asset for rising above social, strict, orientation and different contrasts. A comprehensive educational program takes orientation, social personality and language foundation into thought. It includes breaking negative generalizations in reading material as well as, and all the more critically, in educator's perspectives and assumptions. Multilingual methodologies in schooling, in which language is perceived as a basic piece of an understudy's social personality, can go about as a wellspring of consideration. Moreover, native language guidance in the underlying long periods of school emphatically affects learning results.

A comprehensive way to deal with educational plan strategy has inherent adaptability and can be acclimated to various requirements so everybody benefits from a normally acknowledged fundamental degree of value instruction. This reaches from

fluctuating the time that understudies commit to specific subjects, to giving educators more prominent opportunity to pick their functioning techniques, and to permitting additional opportunity for directed study hall based work.

As per the EFA Worldwide Observing Report 2005, one method for moving towards an important, adjusted set of points is to dissect the educational program with regards to consideration. A comprehensive way to deal with educational program strategy perceives that while every student has various necessities - considerably more so in circumstances of weakness and drawback - everybody ought to profit from a usually acknowledged essential degree of value schooling. This underlines the requirement for a typical center educational program that is significant for the student while being instructed by adaptable techniques.

Available and adaptable educational plans, course readings and learning materials can act as the way to making schools for all. Numerous educational programs anticipate that all understudies should get familiar with exactly the same things, simultaneously and by similar means and techniques. In any case, understudies are unique and have various capacities and requirements. It is significant, hence, that the educational plan be adequately adaptable to give prospects to acclimation to individual necessities and to animate educators to look for arrangements that can be coordinated with the requirements, capacities and learning styles of every single understudy. This is especially significant in the turn of events and practice of learning exercises for youth and grown-ups.

Counsel and Joint effort

For understudies that are engaged with incorporated programs, executing a meeting or cooperative model of administration delivery is fundamental. Advisor models were initially remembered to be "master models" where custom curriculum experts would work with general teachers and educate them on how the instructors were to address the issues of their uncommon understudies. This model was not proper in certain states, where the custom curriculum educators get no huge extra preparation contrasted with their ordinary schooling partners. This model additionally experienced issues when experienced instructors didn't need or value counsel about their own study halls. Current models of discussion are more corresponding and give the

Co-ordinator
IQAC, Shri Ram College
Muzaffarnagar

Chairman
IQAC, Shri Ram College,
Muzaffarnagar

expert either equivalent, or less authority than the normal schooling instructor.

The cooperation model is a more well known strategy being supported by a few scientists and professionals. Cooperation models (like conference models) accept that the customary educator is the essential supplier of guidance and has a definitive obligation. The custom curriculum educator's job is to go about as a help and an asset to the normal educator remembering working for the overall homeroom with understudies. The Overall Instruction Cooperation Model proposed by Simpson and Myles (1993) is made out of five fundamental parts: 1) Adaptable departmentalization, 2) Program proprietorship, 3) Distinguishing proof and improvement of steady perspectives, 4) Understudy evaluation as a proportion of program viability, and 5) Study hall changes that help mainstreaming.

In spite of the fact that joint effort models might sound ideal, there are a few issues that poor person yet been settled. One issue is correspondence, for instructors don't necessarily in every case have what it takes to issue settle or function admirably together.

Another worry is the absence of time to work with different experts. There is additionally once in a while minimal shared belief among customary and specialized curriculum, with teachers holding numerous misguided judgments of the other field. Educator schooling is behind in preparing exceptional teachers and particularly normal instructors to manage these changes. The field is likewise confused regarding how to satisfactorily prepare educators functioning in the schools. Albeit in-administrations are the ongoing strategy for preparing working teachers, there should be extra help, school transformations, and study hall changes for cooperation to find lasting success. The eventual fate of a custom curriculum is by all accounts swinging toward expanded coordinated effort. Apparently custom curriculum will actually want to adjust to these changes, yet it is not yet clear in the event that the overall training projects will be as open.

Conclusion:

In summarize, a comprehensive schooling system must be made on the off chance that customary schools become more comprehensive - in other words, assuming they become better at teaching all kids in their networks. Consideration is in this manner

seen as a course of addressing and answering the variety of necessities, everything being equal, youth and grown-ups through expanding support in learning, societies and networks, and decreasing and killing prohibition inside and from schooling. It includes changes and alterations in happy, approaches, designs and procedures, with a typical vision that covers all offspring of the proper age range and a conviction that it is the obligation of the customary framework to teach all kids. Additionally, a comprehensive educational program tends to the kid's mental, close to home, social and imaginative improvement. It depends on the four mainstays of schooling for the twenty-first 100 years - figuring out how to be aware, to do, to be and to live respectively. In any case, there is shared belief among ordinary and custom curriculum, with teachers holding quite a large number confusions of the other field. Instructor schooling is behind in preparing exceptional teachers and particularly customary teachers to manage these changes. The field is likewise confused concerning how to sufficiently prepare educators functioning in the schools. Albeit in-administrations are the ongoing strategy for preparing working teachers, there should be extra support, school transformations, and study hall changes for cooperation to find success. Available and adaptable educational plans, course readings and learning materials can act as the way to making schools for all. Numerous educational plans anticipate all understudies to get familiar with exactly the same things, simultaneously and by similar means and strategies. In any case, understudies are unique and have various capacities and requirements. It is significant, in this way, that the educational plan be adequately adaptable to give opportunities for acclimation to individual requirements and to invigorate instructors to look for arrangements that can be coordinated with the necessities, capacities and learning styles of every single understudy. Yet, practically speaking, comprehensive instruction is indivisible from partners going from government and establishments like schools, instructors, school climate, local area and guardians to help the objective of comprehensive training itself. Satisfactory foundation additionally should be given to the school that arranges comprehensive schooling for a productive and viable understudies understanding learning-focused of comprehensive instruction.

Co-ordinator
IQAC, Shri Ram College
Muzaffarnagar

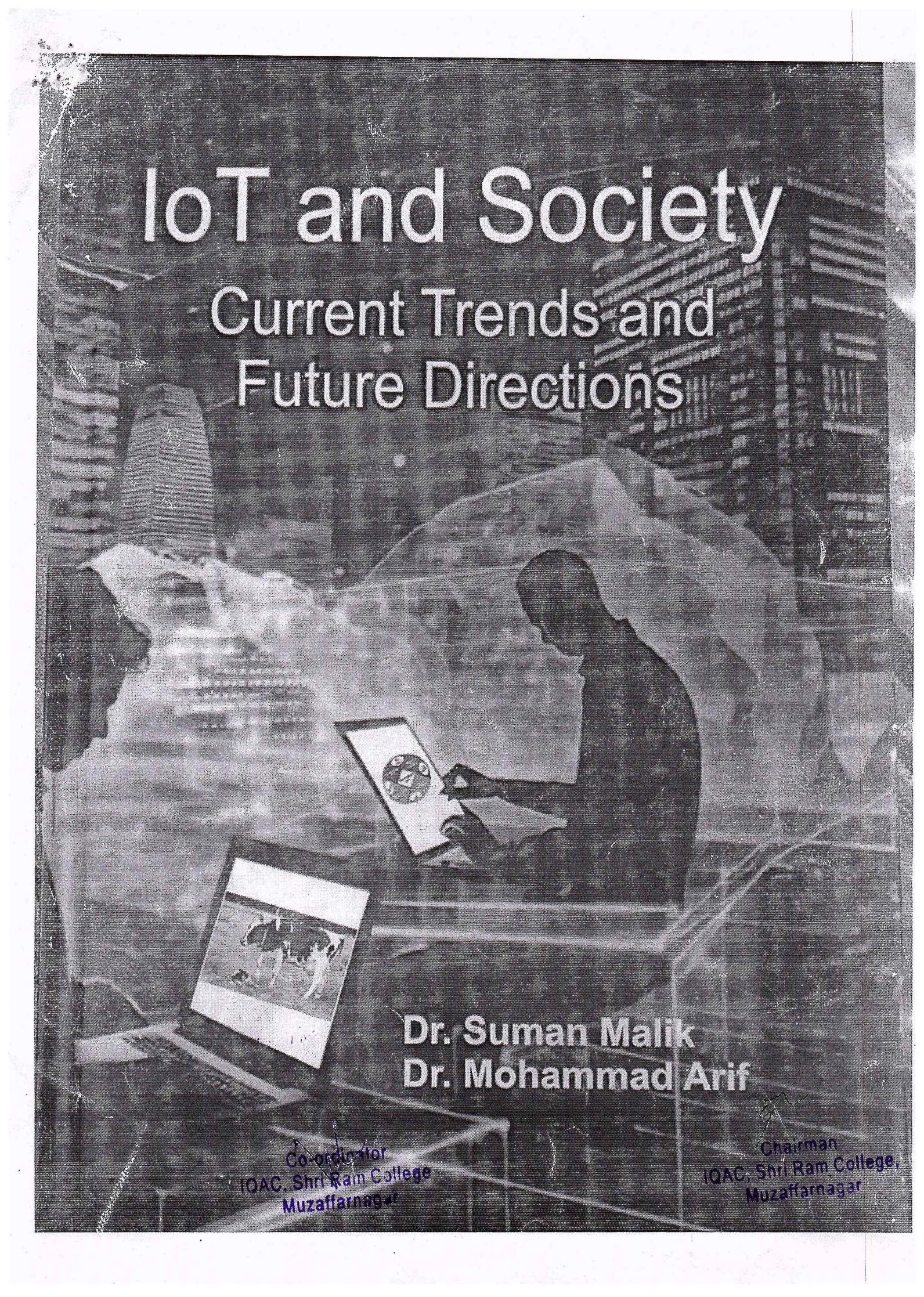
Chairman
IQAC, Shri Ram College,
Muzaffarnagar

REFERENCES

1. UNESCO. Policy Guideline on Inclusion in Education. Paris (2009)
2. S. Miles and N. Singal. The Education for All and Inclusive Education debate: Conflict, contradiction or opportunity?. International Journal of Inclusive Education. (2008)
3. UNESCO. Defining an Inclusive Education Agenda: Reflections around the 48th session of the International Conference on Education. Geneva, Switzerland. (2009)
4. UNESCO. The Salamanca Statement and Framework for Action on Special Needs Education. Paris, UNESCO/Ministry of Education, Spain. (1994)
5. H. Corps, G. Ceralli, and S. Boisseau. Inclusive Education. (2012)
6. H. Corps, G. Ceralli, and S. Boisseau. Inclusive Education. (2012)
7. UNESCO. Policy Guideline on Inclusion in Education. Paris (2009)
8. Autism Speaks Inc. Autism Speaks and Autism Speaks It's Time to Listen & Design are trademarks owned by Autism Speaks Inc. All rights reserved. (2012)
9. J. Delors, et al. Learning: the Treasure Within. Report to UNESCO of the International Commission on Education for the Twenty-first Century. Paris, UNESCO. (1996)
10. UNESCO. EFA Global Monitoring Report 2005. The Quality Imperative. Paris, UNESCO. (2004b)
11. UIS. Investing in the Future: Financing the Expansion of Educational Opportunity in Latin America and the Caribbean, Montreal, Que.,UIS. (2004c)


Co-ordinator
IQAC, Shri Ram College
Muzaffarnagar


Chairman
IQAC, Shri Ram College,
Muzaffarnagar



IoT and Society

Current Trends and Future Directions

Dr. Suman Malik
Dr. Mohammad Arif

Co-ordinator
IQAC, Shri Ram College
Muzaffarnagar

Chairman
IQAC, Shri Ram College,
Muzaffarnagar

IoT and Society
Current Trends and Future Directions

© Editors

First Edition: November 2023

ISBN: 978-81-963250-5-3

No part of this publication should be reproduced, stored in retrieval system or transmitted in any form or by any means, electronic, mechanical, photocopying, recording and/or otherwise, without the prior written permission of the editors and the publisher. All disputes are subject to Delhi jurisdiction only.

Information contained in this book has been received from respective research scholar/academician/author(s). Author(s) are solely responsible for any plagiarism issue and damage arising out of use of this published information work. For information published herein, Govt. P.G. College, Deoband, Saharanpur, U.P., Govt. College, Hansi, Hisar, Haryana, Editors, Printer and Publisher are not responsible. All disputes are subject to Delhi jurisdiction only.

Published by :

DOORS PUBLICATION

RZ-90, Street Number 1, Main Sagarpur,
New Delhi-110046

Ph.: 9821852706

E-mail : publicationdoors@gmail.com

Co-ordinator
IQAC, Govt. P.G. College
Muzaffarnagar

Printed at : India.

Chairman
IQAC, Shri Ram College,
Muzaffarnagar

An Analysis of Social Impact of Internet of Things

— Dr. Poonam Sharma, Dr. Ashfaq Ali

Abstract

The Internet of Things, or IoT, is fundamentally a system comprised of interconnected electronic devices, mechanical machinery, digital technologies, items, people, or animals. The Internet of Things (IoT) includes a wide range of devices ranging from everyday domestic products to complex industrial instruments. There are currently over 7 billion connected IoT devices, and analysts expect that figure will rise to 22 billion by 2025. Oracle has a network of device partners to help with IoT ambitions. To fully realise the promise of IoT, concerted efforts are required to move the industry beyond its early stages of market development and towards maturity. This demands a unified awareness of the unique traits and opportunities given by IoT.

Introduction

The Internet of Things (IoT) is a technology that involves the integration of devices into inert objects, such as electronic systems in plants, vehicles, lighting and roofs, enabling them to measure environmental parameters and transmit this data over a communications network.

IoT is essentially a system comprising interconnected computing devices, digital and mechanical machines, objects, people or animals. These entities are equipped with unique identifiers (UIDs) and have the capability to transfer data over a network without human-to-human-to-computer interaction. Essentially, any artificial or natural object can be assigned an Internet Protocol address and transmit data over a network.

In a nutshell, IoT refers to physical items that are outfitted with sensors, processing capacity, software, and other technologies. These things communicate with other gadgets via the Internet or other communication networks. It's important to note that IoT devices don't have to be connected to the public internet; they just have to be part of a network and indi

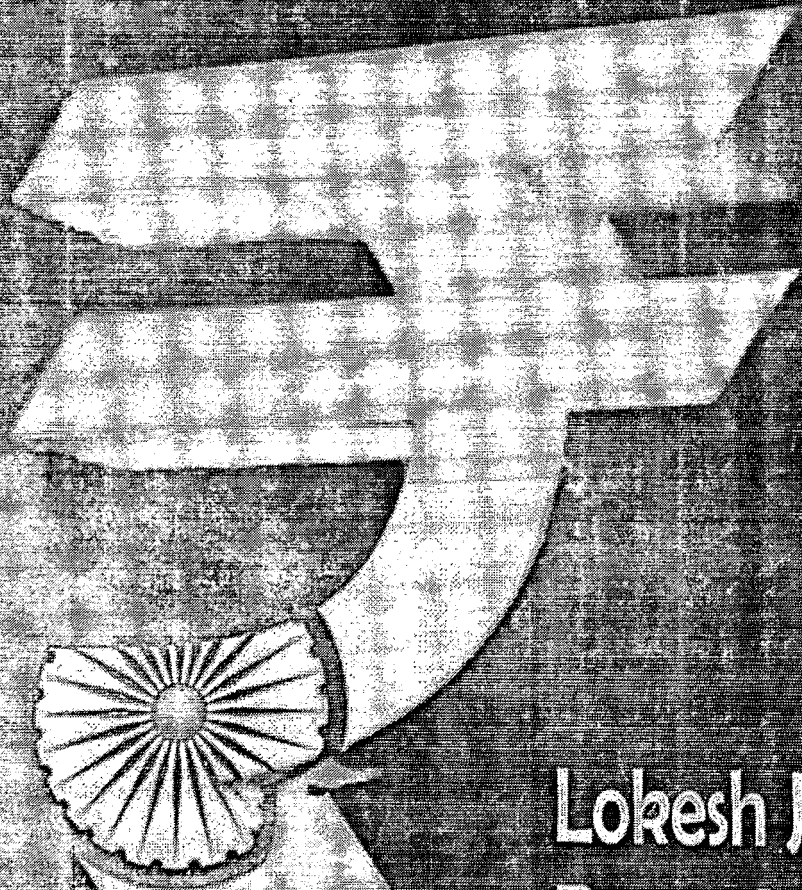
Co-ordinator

Shri Ram College

Chairman
IQAC, Shri Ram College
Muzaffarnagar

FDI

Opportunities and Policies



Lokesh Jain
Pooja Jain

© 2011 Lokesh Jain
Pooja Jain
All rights reserved.

FDI: Opportunities and Policies

© Editors

First Edition: 2024

ISBN: 978-81-953550-6-8

No part of this publication should be reproduced, stored in retrieval system or transmitted in any form or by any means, electronic, mechanical, photocopying, recording and/or otherwise, without the prior written permission of the editors and the publisher. All disputes are subject to Delhi jurisdiction only.

Information contained i.e., articles printed, in this book, have been received from respective research scholar(s)/academician(s)/author(s) who are solely responsible for the details and statements made in their articles. For any plagiarism issue and for any type of damage arising out of use of this published information work, the Editors, the Publisher and the Printer shall not be held responsible in any way. All disputes are subject to Delhi jurisdiction only.

Published by :

DOORS PUBLICATION

RZ-90, Street Number 1, Main Sagarpur,

New Delhi-110046

Ph.: 9821852706

E-mail : publicationdoors@gmail.com

Printed at : India

Co-ordinator
IQAC, Shri Ram College
Muzaffarnagar

Chairman
IQAC, Shri Ram College,
Muzaffarnagar

INDIAN INVESTMENT LANDSCAPE: FOREIGN DIRECT INVESTMENT PERSPECTIVES

— Dr. Ashfaq Ali

ABSTRACT

Capital flows have become a prerequisite for speeding the pace of growth and development of a developing country, and practically all developing countries have been working hard to attract additional capital flows. Furthermore, these countries have correctly recognised that entrusting a significant role to the private sector has become a necessity. Capital flows to developing countries began to pick up steam in the early 1980s, and by the end of the decade, there had been a massive rise in the amount of capital flows to these countries. Though the Indian government has traditionally welcomed foreign investment with certain constraints, the government's foreign investment policy has experienced significant changes since independence. According to the Department for Promotion of Industries and Internal (DPIIT), FDI into India reached \$81.7 billion in 2022-23. Meanwhile, according to the World Investment Report 2021, India was the world's fifth-largest FDI receiver in 2020, with inbound FDI up 27 per cent from the previous year, largely due to ICT investments. This research is based on secondary sources. In light of this, the study examines India's existing FDI policy regime and attempts to analyse the trend of FDI inflows from 2000 to 2022, with a focus on country and sector-specific analyses. Thus, this study concludes that the Government of India's recent revisions to the FDI policy framework in 2022 have aided in the removal of numerous layers of obstacles for international investors. The reforms in the FDI policy regime indicate that the Indian go

INTRODUCTION

India remains a bright spot in the global economy, having been recorded as the fastest growing major economy in the world.

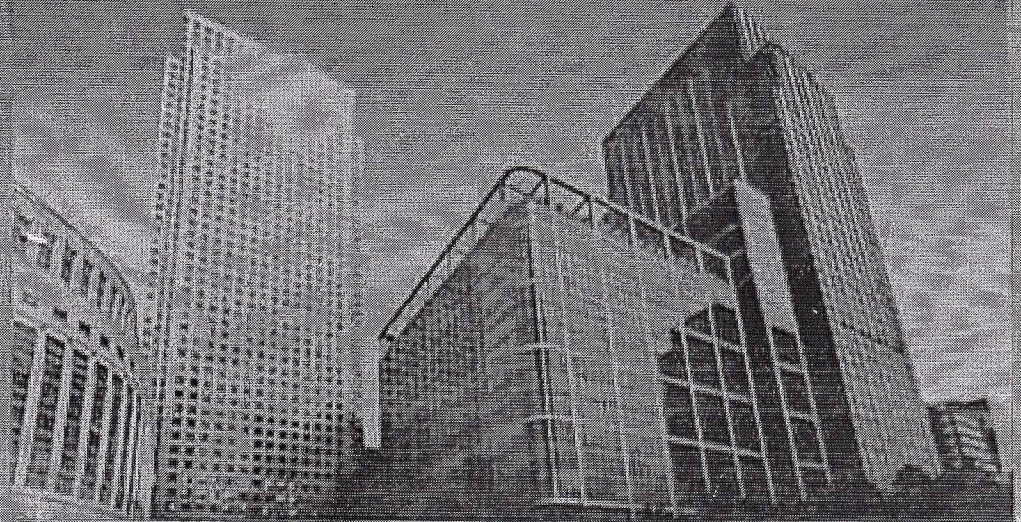
Co-ordinator
IQAC, Shri Ram College
Muzaffarnagar

Chairman
IQAC, Shri Ram College,
Muzaffarnagar

NAVYUG

NATIONAL EDUCATION POLICY 2020
ACCORDING TO THE NEW SYLLABUS

FINANCIAL MANAGEMENT



Dr. Ashfaq Ali

658452
Ali
22762

Co-ordinator
IQAC, Shri Ram College
Muzaffarnagar

Chairman
IQAC, Shri Ram College,
Muzaffarnagar

⇒ *Printing History :*

First Edition 2024

ISBN: 978-93-93575-18-0

⇒ *Price :*

₹ 250 only

⇒ *Medium :*

English Version

⇒ *Published by :*

Navyug Publications

24/140, Bagh Ram Sahai,

Lohamandi, AGRA-282 002

⇒ *Printers :*

Nikita Offset Press

Raja Mandi, Agra-282 002

⇒ *Copyright :*

© All rights reserved by Publishers. No part of this publication may be reproduced, stored in retrieval system, or transmitted in any form by any means, electronic, mechanical, photo-copying, recording or otherwise, without the prior written permission of the publishers.

⇒ *Disclaimer :*

Every effort has been made to avoid errors and omissions in this publication. Inspite of this, errors may creep in. Any mistake, error or discrepancy noted may be brought to our notice which shall be taken care of in the next edition. It is notified that neither the publishers nor the author nor the seller will be responsible for any damage or loss of action to any one, of any kind, in any manner, therefrom. It is suggested that to avoid any doubt, the reader should cross-check all the facts.

⇒ *Condition of Sale :*

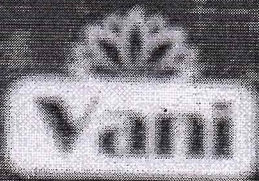
This book is sold subject to the condition that it shall not, by way of trade or otherwise, be lent, re-sold, hired out or otherwise circulated without the publisher's prior consent in any form of binding or cover other than that in which it is published and without a similar condition including this condition being imposed on the subsequent purchaser. No part of this publication may be reproduced or copied in any form or by any means without permission in writing of the author and the publishers. Breach of this condition is liable for legal action.

For binding mistake, misprints or for missing pages, etc., the publisher's liability is limited to replacement within one month of purchase by similar edition. All expenses in this connection are to be borne by the purchaser.

All disputes are subject to Agra jurisdiction only.

Co-ordinator
IQAC, Shri Ram College
Muzaffarnagar

Chairman
IQAC, Shri Ram College
Muzaffarnagar



According to the Syllabus as prescribed by
NATIONAL EDUCATIONAL POLICY-2020

विपणन के सिद्धांत

Principles of Marketing



Dr. Ashfaq Ali
Dr. D.K. Srivastava

Co-ordinator
IQAC, Shri Ram College
Muzaffar

Chairman
IQAC, Shri Ram College,
Muzaffarnagar

☐ *Printing History :*

Second Edition 2024

☐ *Price :*

₹ 425 only

☐ *Medium :*

Hindi Version

ISBN: 978-93-937268-9-3

☐ *Published by :*

Vani Publications

Kamla Nagar, Agra

☐ *For Feedback / Queries, Please Contact to :*

Consumer Services Manager

at the above Address or call us at :

09412589626 / 09411629672 / 09359838075

Whatsapp us : 07895008935

☐ *Copyright :*

© All rights reserved. No part of this publication may be reproduced, stored in retrieval system, or transmitted in any form by any means, electronic, mechanical, photocopying, recording or otherwise, without the prior written permission of the publishers.

☐ *Disclaimer :*

Every effort has been made to avoid errors and omissions in this publication. Inspite of this, errors may creep in. Any mistake, error or discrepancy noted may be brought to our notice which shall be taken care of in the next edition. It is notified that neither the publishers nor the author nor the seller will be responsible for any damage or loss of action to any one, of any kind, in any manner, therefrom. It is suggested that to avoid any doubt, the reader should cross-check all the facts.

☐ *Condition of Sale :*

This book is sold subject to the condition that it shall not, by way of trade or otherwise, be lent, re-sold, hired out or otherwise circulated without the publisher's prior consent in any form of binding or cover other than that in which it is published and without a similar condition including this condition being imposed on the subsequent purchaser.

For binding mistake, misprints or for missing pages, etc., the publisher's liability is limited to replacement within one month of purchase by similar edition. All expenses in this connection are to be borne by the purchaser.

All disputes are subject to Agra jurisdiction only.

Co-ordinator
IQAC, Shri Ram College
Muzaffarnagar

Chairman
IQAC, Shri Ram College,
Muzaffarnagar

IMPROVEMENT IN SOIL HEALTH CARD FOR RESTORING THE SOIL HEALTH

Ashok Kumar

Director, Shri Ram College Muzaffarnagar

Abstract

Introduction

India will require more than 400 mt food grain by the end of 2050 to maintain its food security. Agriculture production depends upon soil fertility, climate, genetic material (varieties) and crop Management practices. Out of these soils fertility is the most important factor. Liebig's law of minimum states that the growth of plants is limited by the plant nutrient element present in the smallest amount, all others being in adequate quantities. From this it can be concluded that knowledge about the nutrient's status in soil and monitoring of soil health regularly is essential. Nutrient uptake and removal by crop are influenced strongly by the variety, season, nature and composition of the soil and the yield level. According to an estimate, to produce 4.6 tones grains + 6.9 tones straw, wheat crop in sub-tropical Indian condition absorbed 128 kg N, 46 kg P₂O₅, 219 kg K₂O, 27 kg Ca, 19 kg Mg, 22 kg S, 1.8 kg Fe, 0.5 kg Zn, 0.5 kg Mn and 0.15 kg Cu. Similarly, to produce 1 ton of paddy (rough rice), the rice crop absorbs an average of 20 kg N, 11 kg P₂O₅, 30 kg K₂O, 3 kg S, 7 kg Ca, 3 kg Mg, 675 g Mn, 150 g Fe, 40 g Zn, 18 g Cu, 15 g B, 2 g Mo and 52 kg Si. A Pulse crop like chick pea producing 1.5 tons of grain remove 91 kg N, 14 kg P₂O₅, 60 kg K₂O, 18 kg MgO, 39 kg CaO and 9 kg S /ha and 302g Fe, 57g Zn, 105 g Mn and 17g Cu /ha (2) . In subtropical north India, the nutrient removal per ton of mustard seed was 32.8 kg N, 16.4 kg P₂O₅, 41.8 kg K₂O, 8.7 kg Mg, 42.0 kg, 17.3kg S per hectare and 123 g Fe, 100 g Zn, 95 g Mn and 17g Cu per hectare . In the past 50 years, advances in agricultural technology led to a quantum leap in food production of India. However, in many states this intensive crop production has depleted the soil jeopardizing scope of maintaining production in future. With a huge population that is projected to exceed 130 billion by 2050, compounded by competition for land and water resources and the impact of climate change, our current and future food security depends on farmers efforts to increase yields and food quality using the soils that are already under production today. Continuity of cereals-based rotation like rice-wheat in recent days without judicious use of chemical fertilizer put agricultural sustainability and environmental safety under trouble. The response to fertilizers use has decreased from 17 kg grain /kg nutrient in 1951 to 5-6 kg grains/kg nutrients during 2017-18, which ideally should be in the range of 18-25 kg kg⁻¹ nutrient. Data from farmers' fields (1999-2003) showed cereals responding around 8-10 kg grain kg⁻¹ fertilizer (average). Traditional practices of organic manuring and growing of soil fertility restoring crops are no more in practice while nutrient outflows through intensive crop production indicated an apparent negative balance of nearly 10 million tons at the national level. The recovery of fertilizer nutrients is about 20-40, 15-20 and 40-50 % for N, P and K, respectively while for secondary and micronutrients, it is substantially low ranging 5-12%. Major factors

contributing to the low and declining crop responses to fertilizer nutrients are continuous nutrient mining from the soil due to imbalanced nutrient use (6:2.9:1 NPK) leading to depletion of some of the major, secondary and micronutrients like N, K, S, Zn, Mn, Fe, B etc. Limited application of organic sources of nutrients such as FYM, compost and integration of green manures in the cropping systems leading to serious soil degradation qualitatively. Site specific nutrient management and use of customized fertilizers integrated with organic sources could be the best option to minimize the multi nutrient deficiencies and similar problems arising due to application of imbalance chemical fertilizers and maximize the sustainability and farmers income by reducing the cost of production and finally food security of India. Soil testing has been accepted as an unique tool for rational fertilizer use. It helps to assess the soil fertility status and recommend suitable and economic nutrient dose through chemical fertilizer and organic manure for different crops and cropping system. The soil testing and fertility management practices could be best option for sustaining crop production and balanced fertilization in Indian agriculture. Balanced fertilization is a key input for achieving the estimated food grain production goal of the country. Soil testing is essential and is the first step in obtaining high yields and maximum returns from the money invested in fertilizers. Soil testing every year is a costly and time-consuming affair which cannot be performed regularly therefore the alternative of every year soil testing is highly required. To monitor soil health of every field regularly soil health card is a tool which can be used as an alternative of soil testing every year easily.

Format of current soil health card

Soil Sample Details				
Date of Sample Collection	10/09/2017			
Survey No., Khasra No./ Dag No.	88			
Farm Size, Irrigation Status	2.16 Acre Irrigated (Bore well)			
Geo Position (GPS)	Latitude 16.117223°N Longitude 75.800556°E			
Soil Test Results				
Soil Health Centre, Bagalkote				
Soil Type: Black Soil				
Parameter	Test Value	Unit	Rating	Normal Level
1 pH	7.70		Moderately alkaline	7, Neutral
2 EC	0.04	dS/m	Normal	0 - 1 dS/m
3 Organic Carbon (OC)	0.35	%	Low	0.51 - 0.75%
4 Available Nitrogen (N)	200.63	kg/ha	Low	280 - 560 kg/ha
5 Available Phosphorus (P)	4.19	kg/ha	Very Low	23 - 57 kg/ha
6 Available Potassium (K)	122.85	kg/ha	Low	145 - 337 kg/ha
7 Available Sulphur (S)	26.50	ppm	Sufficient	> 10 ppm
8 Available Zinc (Zn)	0.27	ppm	Deficient	> 0.6 ppm
9 Available Boron (B)	0.63	ppm	Sufficient	> 0.5 ppm
10 Available Iron (Fe)	0.71	ppm	Deficient	> 4.5 ppm
11 Available Manganese (Mn)	6.41	ppm	Sufficient	> 2.0 ppm
12 Available Copper (Cu)	1.65	ppm	Sufficient	> 0.2 ppm

A soil health card is a document that guides the farmers about their soil. It gives information about the soil's physical, chemical, and biological properties. Soil health card provides a clear picture to farmers which nutrients are lacking in their soil. It helps farmers to decide which fertilizers should be used and in what quantity to their soil and crop. The soil health card may also recommend soil amendments such as compost, manure, or lime to improve

soil health. SHC is prepared by the officers and provides a report to the farmers once every three years. It is free for farmers. The cost is borne by the government.

A Template of Modified Soil Health Card					
Name of Grower – Crop Research Centre Part 1 Location : Chirori, SVPUAT Meerut Crops Grown– Rice, wheat, Mustard Soil textural Class– Clay loam (42.2% sand, 28.1 % silt and 30.4 % clay) Geographical Location : latitude 29°8' north, longitude 77°40' east, altitude 237MSL.					
Group(1)	Indicator (2)	Value (3)	Rating (4)	Constraints / Remarks	
Physical	BD(Mgm ⁻³)	1.24	97(H)		
	IR(cmhr ⁻¹)	1.92	79(H)		
	Aggregate Stability (%)	50.6	76(H)		
Part 2	Chemical	Part 3	Part 4	Part 5	Part 6
	pH	7.8	20(L)		
	P(kg ha ⁻¹)	23.47	97(H)		
	K(kg ha ⁻¹)	305.5	79(H)		
	Micro Nutrients (mg kg ⁻¹)	Zn	2.24	<10(L)	
		Mn	21.86		
		Fe	12.23		
		Cu	1.6		
Biological	OC (%)	0.61	87(H)		
Overall quality Score (out of 100)=		67 (Medium)			
Part 7					

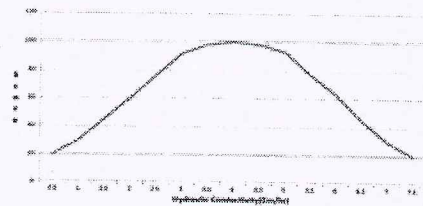
Soil health card provides the amount and time of application of fertilizers in different crops but the accuracy of calculation of fertilizers is a question. The timely availability of SHC to farmers is again a challenge. Due to high demand and slow process of sampling, testing and recommendation, a huge gap has been established. Further trust in the report is also an obstacle. Soil health card which is being used presently is not fulfilling the objective of the mission. Some deficits observed in the current soil health card are as follows.

1. The soil health card put more emphasis on the chemical indicators with little on soil biological indicators. It does not speak of physical properties.
2. The existing soil health card does not give information on over all soil health, it speaks only on range of nutrient availability and even for nutrient, rating is not provided which make the card imperfect.

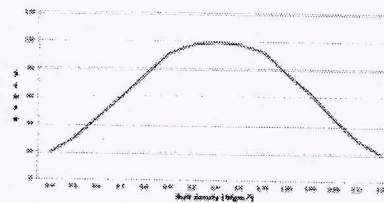
To make the soil health card perfect some improvement has been suggested by the Ashok Kumar et al 2021. According to these suggestions the Improved soil health card provides the information on physical, chemical, and biological indicators. It also provides the quality of all parameters and overall soil quality. Constraints related to parameters are also provided in the improved card. As per the suggestions, all three Physical, Chemical, and biological indicators have been included in the card. Every value of parameter under these indicators tested in laboratory has been rated through scoring function graph and entered in soil health card. Average of value of all parameters is shown as overall quality score of that soil. Based on overall quality score, the soil is categorized for making fertility map and fertilizer

recommendation to the crop.

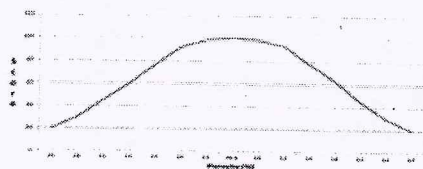
Scoring function graph for hydraulic conductivity



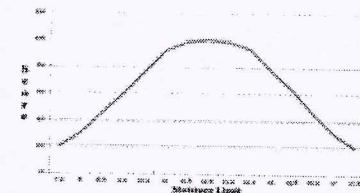
Scoring function graph for Bulk density



Scoring function graph for porosity



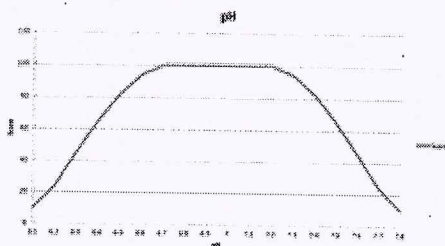
Scoring function graph for moisture limit



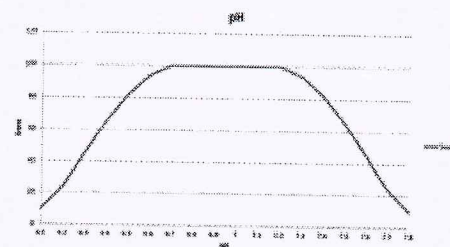
Existing Soil health card

This card provides the status of soil in relation to soil chemical parameters like pH, EC, Availability of different nutrients in soil. Fig. I indicate that value of parameters is presented with unit and status of soil as low, medium, and high. The existing card does not indicate the rating in terms of marks gained by a value of parameters out of 100. Overall rating of soil is also not provided in card. With these lacunas it can be concluded that the existing card is not perfect so to get perfect information some modifications are required which can focus on the lacunas found in existing card.

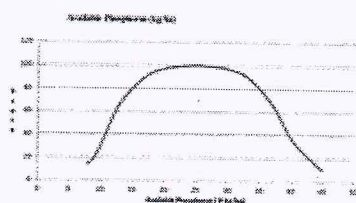
Scoring function graph for pH



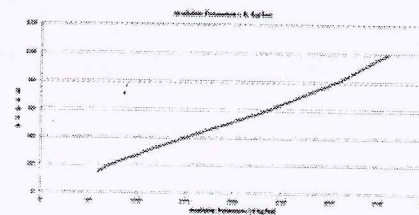
Scoring function graph for pH



Scoring function graph for Available Phosphorus



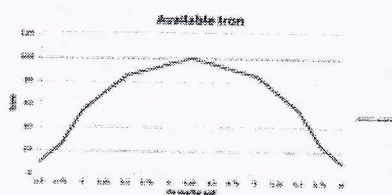
Scoring function graph for Available Potash



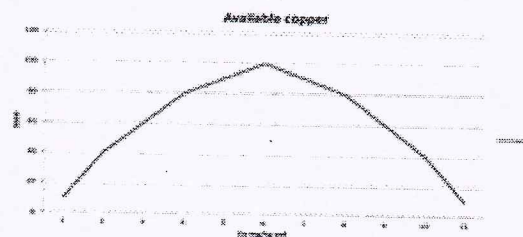
Co-ordinator
IQAC, Shri Ram College
Muzaffarnagar

Chairman
IQAC, Shri Ram College
Muzaffarnagar

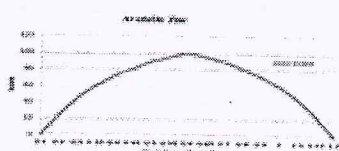
Scoring function graph for Available Iron



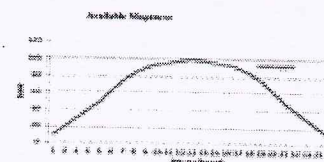
Scoring function graph for Available Copper



Scoring function graph for Available Zinc



Scoring function graph for Manganese



Improved Soil Health Card

Focus on the lacuna found in the existing card was given to remove the deficiencies in the existing card and an improved soil health card was introduced as presented in Fig 2. In improved soil health card, In rating column instead of soil parameters status as low, medium, and high, the rating of every value done through scoring function graph was given. The scoring function graph was made for every parameter including physical, biological, and chemical properties of soil (Fig.3-12). The value of indicator is estimated from analysis of soil by following the standard procedure of analysis. Scoring function graph was prepared with the help of the critical value of indicator below and above which plant growth and yield affected Average of rating of all indicators was used for overall rating of soil. The score value for individual quality score and overall quality score referred by Gugino et al (2009) presented in table1 has been used.

Individual indicator quality score			Overall quality score	
Score value (%)	Rating	Color code	Score value	Rating
<30	Low	Red	<40	Very
30-70	Medium	Yellow	40-55	Low
70-100	High	Green	55-70	Medium
			70-85	High
			85-100	Very high

Constraints for individual parameters and their possible solution is also mentioned in the improved soil health card.

Co-ordinator
IQAC, Shri Ram College
Muzaffarnagar

Chairman
IQAC, Shri Ram College,
Muzaffarnagar

Conclusion: Soil health card is a printed document given to farmers for his field. It provides information about the soil's health conditions based on physical, chemical, and biological properties. The improved soil health card provides complete information on soil health whereas the existing soil health card simply speaks about the low, medium, and high status of chemical parameters. Besides pH, EC, Nutrients status (OC %, P, K), improved soil health card emphasize on individual and overall quality score of all three properties .A well care of physical properties like Bulk density, Porosity, Aggregate stability, Infiltration rate, hydraulic conductivity and moisture index has been taken .

Reference:

- Andrews, S.S., Karlen, D.L. and Cambardella, C.A. 2004. The soil management assessment framework: A quantitative soil quality evaluation method. Soil Science of America Journal 68: 1945-1962
- Arvind Kumar Shukla, Sanjib Kumar Behera, S.K.Chaudhari and Gajendra Singh (2022) Fertilizer use in Indian Agriculture and its Impact on Human Health and Environment .Indian Journal of Fertilizers 18(3)218-237
- Ashok Kumar ,U.P. Shahi, B.P.Dhyani and Satya Prakash (2019)Soil health assessment of Crop Research Centre through scoring function graph .Journal of soil and water conservation .18(4):334-341
- B.K. Gugino, O.J. Idowu, R.R. Schindelbeck, H.M. van Es, D.W. Wolfe, B.N. Moebius-Clune, J.E. Thies, and G.S. Abawi (2009) Cornell soil health assessment training manual . Second Edition.
- Doran, J.W., Safley, M., 1997. Defining and assessing soil health and sustainable productivity. In: Pankhurst, C., Doube, B.M., Gupta, V.V.S.R. (Eds.)Biological Indicators of Soil Health. CAB International, Wallingford, Oxon, UK, pp. 1-28.
- Lindsay, W.L. and Norvell, W.A. (1978) Development of DTPA soil test for zinc, iron, manganese and copper. Soil Science Society of America Journal 42, 421-428.
- Prashant Deo Singh, Ashok Kumar ,U.P. Shahi, B.P.Dhyani , Adesh Singh (2019) PhD Thesis
- Prashant Deo Singh, Abhilasha Pathak, Anand Singh, Pramod Kumar, Ashok Kumar, BP Dhyani, Satendra Kumar, UP Shahi and Adesh Singh () Identification of critical limits for physical properties of soils as soil physical indicators for preparing soil health card for different textured soil.The Pharma Innovation Journal 2021;10(2):577-580
- USDA-National Resources Conservation Service (NRCS) Soils ([http:// soils.usda.gov](http://soils.usda.gov)):


Co-ordinator
IQAC, Shri Ram College
Muzaffarnagar

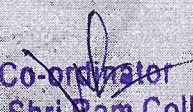

Chairman
IQAC, Shri Ram College,
Muzaffarnagar

JOINT EVENT ON
**PLANT SCIENCE AND
AGRICULTURE**

Hybrid Event

11-13
SEPT, 2023

Valencia
Spain


Co-ordinator
IQAC, Shri Ram College
Muzaffarnagar


Chairman
IQAC, Shri Ram College,
Muzaffarnagar

Venue:
Olympia Hotel, Events & Spa



Ashok Kumar*, Prashant Deo Singh, Kunal Ahluwalia
Sardar Vallabhbhai Patel University of Agriculture and Technology, India

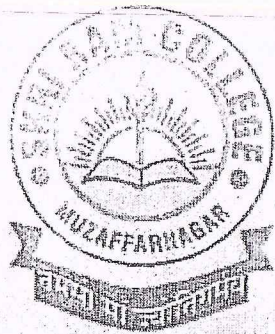
ICT application for prediction of physical properties of soil for digitization

The use of Information and Communication Technologies (ICTs) in modern agriculture has transformed farming on a different scale which has resulted in increased competence and reduced costs. It also created decision making tools that increase agricultural productivity and manage natural resources. The natural resources of most countries are under threat, and many nations are gradually worried about attaining environmental sustainability through efficient use of land and water resources. To overcome these problems land and water resources must be studied thoroughly and their records must be maintained digitally. Health status of every field must be recorded in soil health card because maintenance of soil health has become a major threat due to declining nutrients response, decreasing organic carbon, increasing bulk density due to high soil compaction, and reducing moisture retention capacity. Soil physical properties altered soil environment, which may greatly influence growth and production of crops. It is well established that unless the soil physical, chemical, and biological environment is maintained at optimum level, the genetic yield potential of a crop cannot be realized. Soil health includes study of chemical, biological and physical properties. Without studying physical properties, soil health card does not have any meaning. Among the physical properties estimation of bulk density is easy, requires few instruments and moreover has strong (positively or negatively) correlation with other physical properties. This relationship can be helpful to predict the other properties by developing an ICTs application, based on regression equation without applying extra cost and time. In this application bulk density, which is a crucial property influencing soils' other properties has been used as an independent variable. The study indicates a strong negative correlation ($r = -0.936$ to -0.999) between bulk density and different physical properties. Data shows that predicted value of different physical properties through regression equation developed in this study are close to observed values. Therefore, prediction of physical properties is reasonable also the estimation of physical properties is costly and time consuming. Measurement of properties continuously of each location throughout the sphere is difficult for digitization of global resources. Therefore, for digitalization of global soil resources, it is necessary to have a strong ICT system that can predict soil properties of a given location easily and can be stored digitally.

Under this study an application has been developed to predict infiltration rate, hydraulic conductivity, porosity, aggregate stability, and moisture limits with accurate and cost-effective manner from bulk density of soils. Prediction of properties through application is found easy and quick and will be useful because predicted values can be used to prepare the soil health card. To prepare soil health card all properties including chemical, biological, and physical values must be shown in health card and rating of these properties in 100 scale parameters must be presented. The average of these rated values is reflex as health status of the soil.

Biography

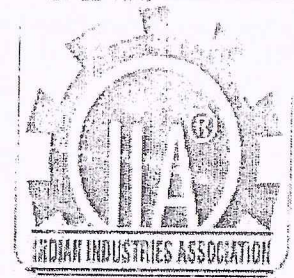
Dr. Ashok Kumar did his B.Sc. Agriculture in 1980, Master in Soil Science in 1982 and PhD in Soil science in 1986 from Govind Ballabh Pant Agriculture University, Pant Nagar Uttarakhand (India). He has 32 years of experience in the field of soil science as teacher, researcher, and extension officer. He had been Professor, Soil Science, SVPUAST, Meerut since 23rd March 2005 to June 2021. He administered five projects funded by various agencies. He visited Japan, Malaysia, two times Dubai (UAE) and presented his research papers. He has received various awards and appreciation from various societies and governments organizations. He has been nominated as a member of UP State Council Science and Technology, U.P. by the Governor of Uttar Pradesh for three years. Member of Research Advisory Committee of CTRI, Rajahmundry nominated by DG ICAR for three years. Member of Board of Governors of Mother's University, Roorkee, Uttarakhand (India) for three years. Expert member of board of studies of B.V.R.I College of Bhim Rao Ambedkar University, Agra. Presently Dr. Kumar is working as Director of Shri Ram College, Muzaffarnagar.



SHRI RAM COLLEGE

MUZAFFARNAGAR

Affiliated to Maa Shakumbhari University, Saharanpur
A++ Grade Accredited by NAAC



Sponsored by: Indian Industries Association, Muzaffarnagar

Certificate of Participation

Certified that Prof/Dr/Mr/Mrs/Ms Madhvi Kaushik
from Research Scholar, Deptt. of Comm. C.C.S.U. Meerut, participated in
National Seminar on "Empowering India: The Crucial Role of Micro, Small &
Medium Enterprises in the Viksit Bharat Mission by 2047" organized by Department of
Commerce, Shri Ram College, Muzaffarnagar on 22nd June, 2024. He/She took active part in all
the deliberations as keynote speaker/ participated/ presented a paper titled Capital Market
Financing for Small and Medium Sized Enterprises [A Study of ISE]

Dr. Mohd Shadab Khan
Convenor

Asst Prof, Commerce, Shri Ram College

Co-ordinator

IQAC, Shri Ram College
Muzaffarnagar

Dr. Ashfaq Ali

Organizing Secretary
Head, Commerce, Shri Ram College

Dr. Perna Mittal

Vice President
Principal, Shri Ram College

Chairman

IQAC, Shri Ram College,
Muzaffarnagar

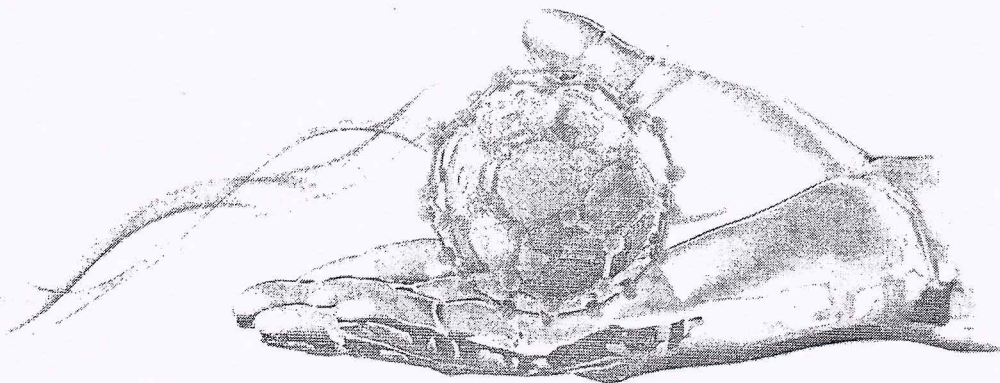


National Conference

on

Nanotechnology: India's Future Prospects
(Hybrid Mode)

23rd & 24th April, 2024



ABSTRACT & SOUVENIR

Sponsored by



Organized by

Chemistry Department

GARG (P.G.) COLLEGE, Laksar, Haridwar, Uttarakhand
(Uttarakhand) 247663

(1)

Co-ordinator
IQAC, Shri Ram College
Muzaffarnagar

Chairman
IQAC, Shri Ram College,
Muzaffarnagar

Members

Dr. D.L. Pandey	Mr. Mukesh Sharma	Mrs. Ritu Chauhan
Mrs. Manju Shukla	Mr. Bhuwan Chandra Negi	Ms. Najmus Sehar
Dr. Anju Bajpai	Mrs. Pragya	Ms. Shajadi
Dr. Hari Vallabh Maurya	Ms. Suchita Uniyal	Ms. Ikra Malik
Dr. Narendra Nagar	Ms. Alisha Siddiqui	Ms. Priya Dhiman
Dr. Bhawana Sharma	Mr. Yogesh Chauhan	
Dr. Pooja Pundir	Ms. Diksha Singh	
Dr. Manish Devrari	Mr. Vedansh Kaushik	

Advisory Committees

Dr. Manmohan S. Rawat, Scientific Officer, UCOST, Dehradun.
 Prof. P.P. Badoni, H.N.B.G.U., Srinagar.
 Prof. Ajeet Kumar, Maharana Pratap University of Agriculture and Technology, RJ
 Prof. Sushil Gupta, Risk Modeling and Insurance, Sustainability at RMSI, Noida
 Prof. Prena Kapil, Punjab Agriculture University, Punjab.
 Prof. Veena Joshi, S.R.T. Campus, Tehri.
 Prof. S.C. Sati, H.N.B.G.U., Srinagar.
 Prof. R.C. Dimri, H.N.B.G.U., Srinagar.
 Ex-Prof. R.D. Upadhyaya, SMJN P.G. College Haridwar.
 Ex-Prof. P.K. Gupta, D.A.V. P.G. College Roorkee.
 Prof. Atul Dwivedi, Hubei Polutechnic University, China.
 Prof. J.S. Jagwan, S.R.T. Campus, Tehri.
 Prof. Sanjay Pant, Kumaun University, Nainital.
 Prof. LP Purohit, G.K.V., Haridwar.
 Prof. A.V. Bajpai, D.B.S. P.G. College, Dehradun.
 Prof. Harish Chandar, G.K.V., Haridwar.
 Prof. J.P. Joshi, D.A.V. P.G. College, Dehradun.
 Prof. S.D. Padaliya, Guru Ram Rai P.G. College.
 Prof. Beer Pal, C.C.S. University, Meerut.
 Dr. Manish Kukreti, Govt. P.G. College, Gopeshwar.
 Prof. Rajesh Bijalwan, U.U.H.F. Ranichori, Tehri.
 Prof. V.K. Singh, G.K.V., Haridwar.
 Prof. Amita Bajpai, Education department, Lucknow University, Lucknow
 Ex-Prof. Shravan Kumar, G.K.V., Haridwar.
 Prof. Rakesh Joshi, Pt. L.M. Govt, P.G. College Rishikesh.
 Dr. Harshvardhan Pant, S.G.R.R. P.G. College, Dehradun.
 Dr. Y.C. Nainwal, Dr. Shivanand Nautiyal Government P.G. College, Karanprayag.
 Dr. Sheetal Tyagi, S.G.R.R. University, Dehradun.
 Dr. Mayank Gupta, Indian Institute of Technology, Bombay.
 Dr. Ketan Gattu, Dr. B.A.M. University, Chhatrapati Sambhajinaga.
 Dr. Anuj Kandwal, H.V.M. Degree College, Raisi, Haridwar.
 Prof. L.R. Dangwal, S.R.T. Campus, Tehri.
 Prof. Tribhuvan Chandra, Govt. P.G. College, Doiwala.
 Prof. Navneet, G.K.V., Haridwar.
 Dr. Satyam Shrivastav, Graphic Era University, Dehradun.
 Dr. Shweta Rathi, Shri Ram College, Muzaffarnagar.
 Dr. Snehveer Singh, Govt. Arts & Commerce College, Gujarat.
 Prof. Jasvantkumar V.R., C.C.S. University, Meerut.
 Mr. Rishabh Gupta, Co-ordinator Gupta Institute of Computer

National Conference

On

Nanotechnology: India's Future Prospect

Sponsored by

UCOST

Vigyan Dham, Jhajra, Premnagar, Dehradun, Uttarakhand

Organized by

Chemistry Department

Garg (P.G.) College, Laksar, Haridwar

(23rd, 24th April 2024)

Venue: Second Floor Hall

Program at glance

Day I – 23rd April 2024

9.00 -10.00 Am	10.00 - 11.00 Am	11.00 -11.30 Am	11.30 Am-1.00Pm	1.00 – 1.45Pm	1.45-2.15 Pm	2.15-4.15 Pm	4.15 Pm
Spot Registration	Inaugural Address	Tea	Keynote Address	Group Photo	Lunch	Invited Talk/ Oral Presentation	High Tea

Day II – 24th April 2024

9.00 -10.00 Am	10.00 -10.30 Am	10.30 -1.00 Pm	1.00 – 2.00Pm	2.00-3.30 Pm	3.30-4.40 Pm	4.30 Pm	4.45 Pm
Poster Presentation	Tea	Invited Talk/ Oral Presentation	Lunch	Invited Talk/ Oral Presentation	Valedictory	Group Photo	High Tea

(17)

Co-ordinator
IQAC, Shri Ram College
Muzaffarnagar

Chairman
IQAC, Shri Ram College,
Muzaffarnagar

inflammation & cardiac problems. Certain nanoparticles have been found to cause permanent cell damage through organ injury etc.

KEYWORDS: Nanotechnology, Nanometres, Human Health, Health Impact, Health care.

OP-II

ROLE OF NANOTECHNOLOGY IN INTERIOR DESIGNING

1. Dr. Shweta Rathi Assistance professor (Department of Home Science)
2. Mr. Amit Tyagi Assistance professor (Department of Computer Application)

Shri Ram College Muzaffarnagar

ABSTRACT

Nanotechnology has greatly contributed to major advances in computing and electronics, leading to faster, smaller, and more portable systems that can manage and store larger and larger amounts of information. Nanotechnology has the potential to significantly impact interior decoration by introducing new materials, enhancing the properties of existing materials, and enabling innovative design concepts. There are so many examples where nanotechnology influenced interior decoration.

Elegant Tops: Nanotechnology enables the creation of smart surfaces that can change color, texture, or transparency in response to external stimuli such as light, temperature, or humidity.

Progressive Materials: Nano-materials exhibit unique properties such as enhanced strength, durability, and self-cleaning abilities.

Advance Coatings: Nanotechnology offers advanced coatings that can provide stain resistance, scratch resistance, and antimicrobial properties to surfaces like countertops, upholstery, and flooring.

Energy Efficiency: Nanotechnology can contribute to energy-efficient interior design by developing materials that improve insulation and regulate indoor temperatures.

Art and Aesthetics: Nanotechnology opens up new possibilities for artistic expression in interior design. Nano-particles can be used to create materials that are stronger and more durable than traditional building materials. As a conclusion, the impact of nanotechnology on future interior design is vast and exciting. With the ability to create new materials, incorporate smart functionalities, and enhance sustainability, nanotechnology has the potential to revolutionize the way we design and interact with our living spaces. As nanotechnology continues to advance, it will be interesting to see how designers and architects incorporate it into their work and how it transforms the way we experience our built environment.

KEYWORDS: Nanotechnology, Efficiency, Aesthetics, Progressive Material.

OP-9

Green synthesized of Metallic Nanoparticles and its antibacterial activity: A review

Sheetal Tyagi¹ and Ruchika Sharma²

¹Dr. Sheetal Tyagi, Assistant Professor, Department of Chemistry, Shri Guru Ram Rai University, Dehradun, Uttarakhand.

²Ruchika Sharma, Research Scholar, Department of Chemistry, Shri Guru Ram Rai University, Dehradun, Uttarakhand.

For Oral Presentation

ABSTRACT

Green synthesis methods for metallic nanoparticles have emerged as promising alternatives to conventional chemical approaches due to their eco-friendly nature. This review provides an overview of recent advancements in the synthesis of metallic nanoparticles using green methods, such as plant extracts, microorganisms, and biomolecules. Furthermore, the antibacterial activity of these nanoparticles is extensively discussed, highlighting their potential applications in combating bacterial infections. Various factors influencing the antibacterial efficacy of green-synthesized nanoparticles, including size, shape, and surface chemistry, are explored. The review also addresses the mechanisms underlying the antibacterial action of metallic nanoparticles, shedding light on their mode of action against bacterial pathogens. Finally, future directions and challenges in the field are outlined, aiming to guide further research towards the development of effective antibacterial agents using green synthesis approaches.

Keyword: Microorganisms, Biomolecules, Nanoparticles, pathogens

OP-10

"THE IMPACT OF NANOTECHNOLOGY IN HUMAN HEALTH: A REVIEW"

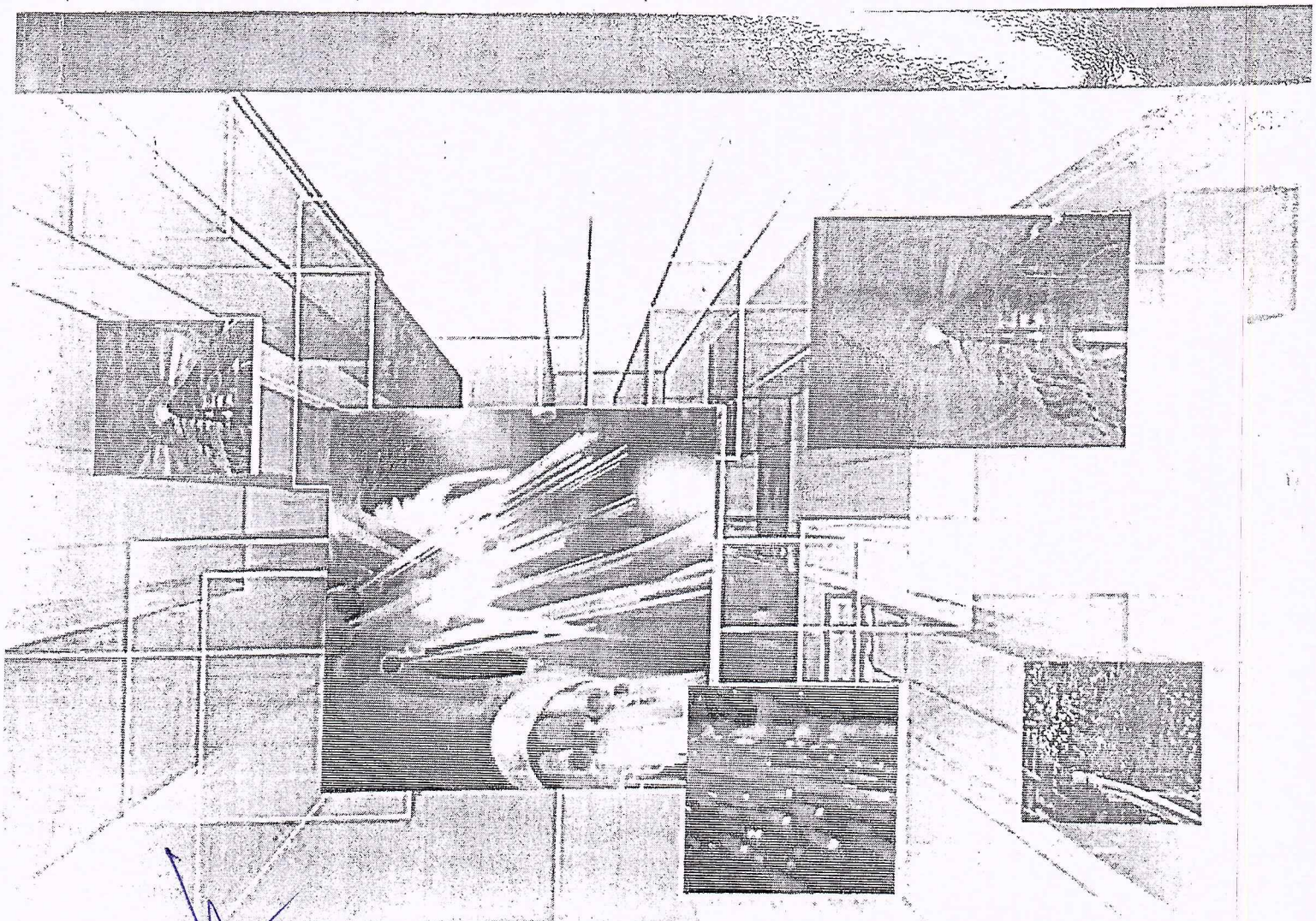
Ms. Ruby Poswal¹ Ms. Alina Siddiqui²

Assist. Prof. Shri Ram College, Muzaffarnagar

ABSTRACT

Health Care, as a basic human right, has often become the focus of the development of innovative technologies. In today's time; new technology has become the centre point of development of human health and care. However, these technologies have seen some impact on human health. Nanomaterials are now widely used in the environment including possible major issues of toxicity for humans. The toxicity of nanoparticles depends on their surface properties, coating structure size, and ability to aggregate. This study aims to review the impact of nanotechnology on Human health. The methodology used in this study to review recent study's research papers & articles related to nanotechnology in human health. In this study, we found that nanomaterial exposure to humans with a focus on impact on the human cell. Nanotechnology will affect everything the big changes coming from the inconceivably small. The different nanocarriers used to transport and release the active molecules to the target tissues should be treated as additives, with potential side effects of themselves or by their dissolution or aggregation inside the body. This technology modifies the body among many problems. Nanoparticles enter the human body through the lungs, intestinal tract, or skin & can be toxic to the brain, causing lung

Digital Electronics and Communication System



Co-ordinator
IQAC, Shri Ram College
Muzaffarnagar

Dr. Manoj Kumar Mittal

Chairman
IQAC, Shri Ram College
Muzaffarnagar

Digital Electronics and Communication System

Dr. Manoj Kumar Mittal
Associate Professor,
Shri Ram College, Muzaffarnagar



Swaranjali Publication

Address: No -1-B, Sector 10B, Vasundhara Sector 10,

Delhi - 201012, Behind Vanasthali Public School

E-mail: swaranjalipublication@gmail.com

Website: swaranjalipublication.co.in

Contact No. +91-9810749840/8700124880

iii


Co-ordinator
IQAC, Shri Ram College
Muzaffarnagar


Chairman
IQAC, Shri Ram College,
Muzaffarnagar

All rights are reserved. No part of this publication may be reproduced, stored in a retrieval system or transmitted in any form or by any means, electronic, mechanical, photocopying, recording or otherwise, without the prior permission of the copyright holder.

Author © : Dr. Manoj Kumar Mittal

Publisher : Swaranjali Publication
Sector 10-B, Vasundhara,
Ghaziabad, (U.P.) 201012

Phone : 9810749840, 8700124880

E-mail : swaranjalipublication@gmail.com

Website : www.swaranjalipublication.co.in

Book : Digital Electronics and
Communication System

Edition : 2023

ISBN : 978-93-5470-987-6

Price : 699/-

Printed By : Swaranjali Printers

Book Available on : www.buybox.me

Co-ordinator
IQAC, Shri Ram College
Muzaffarnagar

Chairman
IQAC, Shri Ram College,
Muzaffarnagar

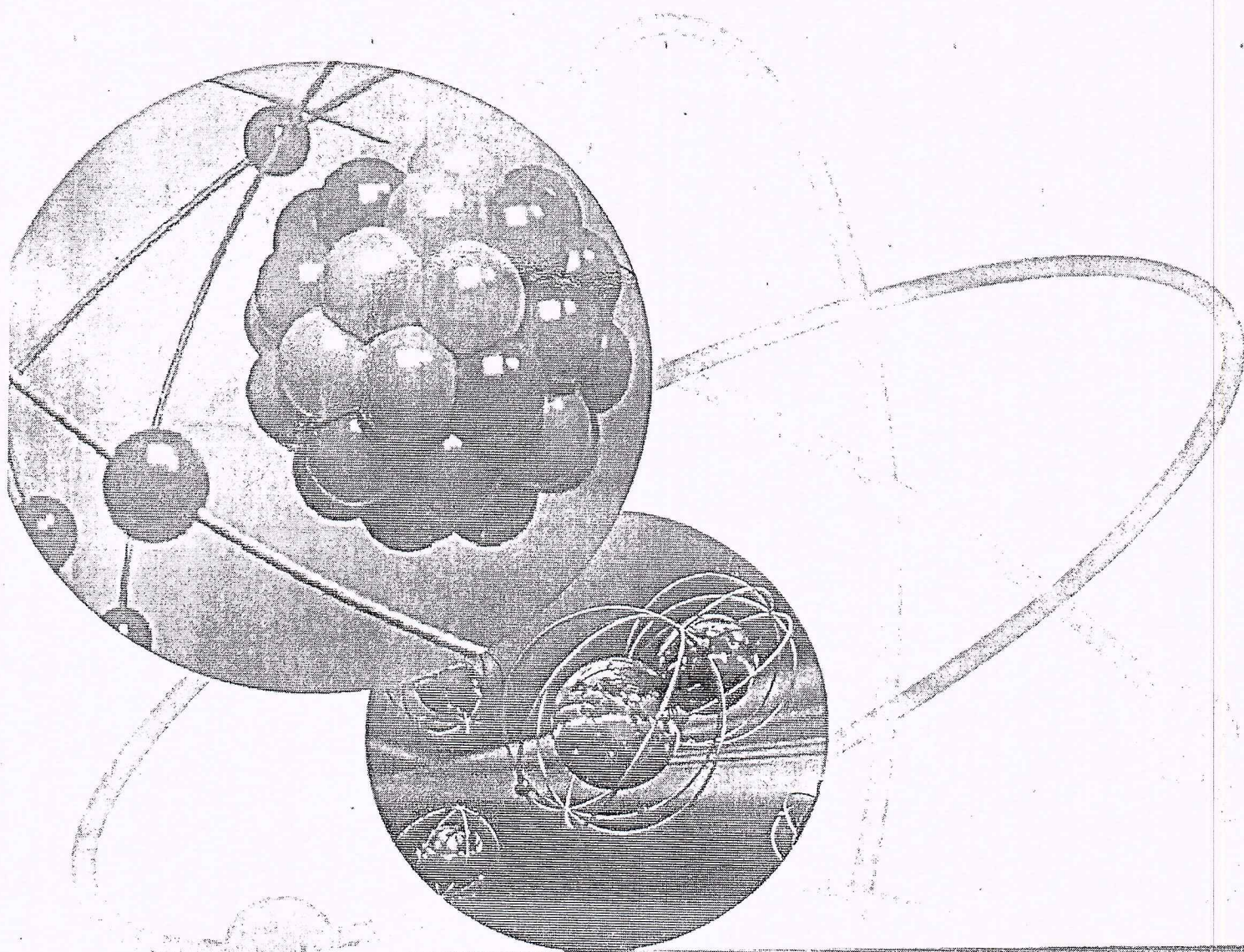
Content

Chapter- 1.....	1
Number System	
Chapter- 2.....	18
Combinational Circuits	
Chapter- 3.....	39
Flip Flop	
Chapter- 4.....	60
Register and Counter	
Chapter- 5.....	74
Analog to digital (A/ D) and digital to Analog (D / A) Conversion	
Chapter- 6.....	89
Modulation AM and FM (Transmission and Reception)	
Chapter- 7.....	112
Antenna	
Chapter- 8.....	133
Satellite Communication	


Co-ordinator
IQAC, Shri Ram College
Muzaffarnagar


Chairman
IQAC, Shri Ram College,
Muzaffarnagar

Nuclear Physics



Dr. Manoj Kumar Mittal

Co-ordinator
IQAC, Shri Ram College
Muzaffarnagar

Chairman
IQAC, Shri Ram College,
Muzaffarnagar

Nuclear Physics

Dr. Manoj Kumar Mittal

Associate Professor,
Shri Ram College, Muzaffarnagar



Swaranjali Publication

Address: No -1-B, Sector 10B, Vasundhara Sector 10,

Delhi - 201012, Behind Vanasthali Public School

E-mail: swaranjalipublication@gmail.com

Website: swaranjalipublication.co.in

Contact No. +91-9810749840/8700124880


Co-ordinator
IQAC, Shri Ram College
Muzaffarnagar

iii


Chairman
IQAC, Shri Ram College,
Muzaffarnagar

All rights are reserved. No part of this publication may be reproduced, stored in a retrieval system or transmitted in any form or by any means, electronic, mechanical, photocopying, recording or otherwise, without the prior permission of the copyright holder.

Author © : Dr. Manoj Kumar Mittal

Publisher : Swaranjali Publication
Sector 10-B, Vasundhara,
Ghaziabad, (U.P.) 201012

Phone : 9810749840, 8700124880

E-mail : swaranjalipublication@gmail.com

Website : www.swaranjalipublication.co.in

Book : **Nuclear Physics**

Edition : 2023

ISBN : 978-93-5470-981-4

Price : 699/-

Printed By : Swaranjali Printers

Book Available on : www.buybox.me


Co-ordinator
IQAC, Shri Ram College
Muzaffarnagar


Chairman
IQAC, Shri Ram College,
Muzaffarnagar

"Exploring Opportunities for Economic Empowerment through Kumauni's Traditional Folk Art –Aipan"

Reena Tyagi
Assistant Professor, Fashion design
Department of Fine Arts, Shri Ram College Muzaffarnagar
Email id textiletechnology06@gmail.com

Abstract - Aipan, a centuries-old folk art from Uttarakhand's Kumaun region, holds significant cultural, religious, and artistic value. Its intricate designs and patterns are created using natural materials and are an integral part of various religious ceremonies and events. Aipan's market demand is robust, driven by its cultural significance, religious importance, and artistic appeal. This demand has created livelihood opportunities for local artisans and entrepreneurs, making Aipan a viable source of income generation. Aipan also offers avenues for cultural preservation, job creation, skill development, and cultural exchange. By promoting Aipan, we can empower communities, revitalize rural areas, and enhance economic development while preserving a cherished cultural heritage. This paper explores Aipan's history, significance, market demand, and socio-economic potential, highlighting its importance as a traditional folk art with a promising future

Key Words-Traditional, cultural, spiritual, geru, empowerment

Introduction - Aipan, a traditional folk art deeply rooted in the Kumaun region of Uttarakhand, boasts a history spanning centuries. This art form has been an inseparable part of Kumauni life since time immemorial, playing a pivotal role in various events and religious ceremonies. Aipan's significance extends beyond its cultural and spiritual value; it also commands a substantial demand in both local and national markets due to its religious significance, adherence to tradition, and unique artistic expression.

The widespread appeal of Aipan has prompted a surge in demand not only within Uttarakhand but also in other states of India. Given its cultural significance, prevalence, and robust market demand, Aipan art has emerged as a viable source of livelihood for local communities. This art form is accessible to people of all ages and backgrounds, requiring minimal material costs, making it an attractive income-generating pursuit.

Moreover, Aipan art has transcended its traditional confines within homes and local communities. In an era marked by migration challenges in Uttarakhand, exploring alternative avenues for rural employment has become imperative. Aipan art, with its wide-ranging appeal and accessibility, presents a promising opportunity to address this issue by providing employment opportunities to rural populations.

Co-ordinator
IQAC, Shri Ram College
Muzaffarnagar

Chairman
IQAC, Shri Ram College,
Muzaffarnagar

About state -

Uttarakhand, located in the northern part of India, is indeed a state known for its stunning natural beauty, with the Himalayan Mountain ranges dominating its landscape. It was formed in 2000 as a separate state from northern Uttar Pradesh and is characterized by its rich biodiversity and religious significance, with several sacred Hindu temples like Badrinath, Kedarnath, Gangotri, and Yamunotri located in the region. Uttarakhand faces difficulties related to low agricultural productivity, water scarcity, crop damage due to wildlife, and limited access to fuel wood and fodder. These challenges, coupled with small landholdings and high levels of outmigration, have contributed to economic difficulties and unemployment in the state. Promoting traditional folk art, such as Kumauni 'aipan,' as an alternative livelihood option is a creative and potentially viable solution to help uplift the economy of the people in Uttarakhand.

Different form of Aipan Art

Aipan' is a traditional folk art widely practiced in the Kumaun region of Uttarakhand state. The history of this art in Kumaun spans centuries, making it an integral part of Kumauni culture and lifestyle. Aipan holds immense significance in various events and religious rites in Kumaun, and no ceremony is considered complete without it. Aipan designs are intricately created on different surfaces such as Chauki (wooden hardboard), floors, clothing, doors, door-frames, windows, window-frames, and interior house walls.

Distinct Aipan designs are employed for specific rituals. For example, during wedding ceremonies, 'Var Chauki' and 'Brahman Chauki' are essential components, particularly on the bride's side. Similarly, various types of Aipan are used for different ceremonies, including:

Shiva Peeth Aipan (Used for Shiva Pooja) : Lord Shiva, the revered deity of the Himalayan people, holds great significance during the months of Savan and Magh. Devotees create a sacred diagram, known as Shiv Peeth, on the ground, which features 28 or 108 Parthiv Lings placed in a copper plate. The design is aesthetically enhanced with an outer border and four corners, adding to its spiritual appeal


Co-ordinator
IQAC, Shri Ram College
Muzaffarnagar


Chairman
IQAC, Shri Ram College,
Muzaffarnagar



Fig.1 Shiva Peeth Aipan

Saraswati Chauki Aipan (Used for Saraswati Pooja): In Hindu tradition, Goddess Saraswati, the patron deity of knowledge and learning, is honored with a special puja ceremony before a child's first day of school, seeking a blessed beginning to their educational journey. The centerpiece of this ritual, known as a chowki, features a stylized design consisting of a five-pointed star encompassing a swastika flower or diya, adorned with intricate wavy or floral patterns by the artist. The swastika holds great significance in Aipan art and is an integral part of various religious rituals, symbolizing the representation of all Hindu gods and goddesses.

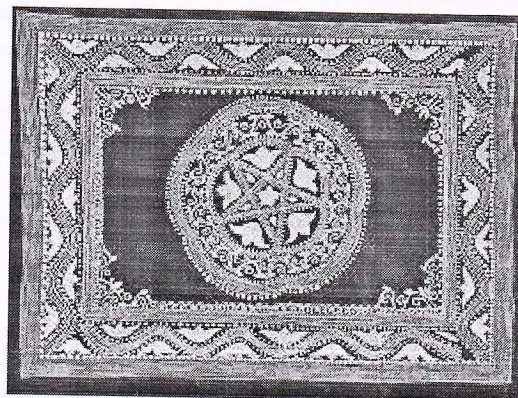


Fig.2 Saraswati Chauki Aipan

Janeu Chauki Aipan (Used in Janeu Sanskar): This intricately designed chowki is specifically created for the sacred thread ceremony, featuring a striking six-sided design with seven stars at its core. These seven stars represent the revered Sapt Rishis, while the surrounding dot-filled floral patterns add an extra layer of beauty and symbolism to the design, making it a truly unique and meaningful element of the ceremony.


Co-ordinator
IQAC, Shri Ram College
Muzaffarnagar


Chairman
IQAC, Shri Ram College
Muzaffarnagar

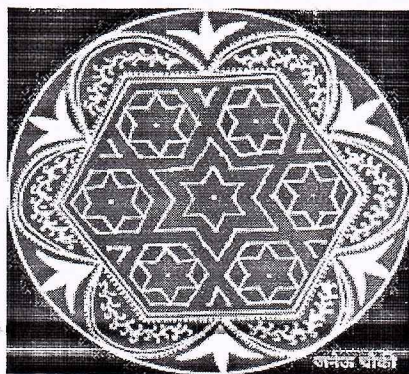


Fig.3 Janeu Chauki Aipan

Namkaran Chauki Aipan (Used in Namkaran Sanskar): The Namkarna Chowki is a sacred design created for the naming ceremony of a newborn, typically held on the eleventh day after birth. This Aipan art is drawn on the floor, featuring auspicious symbols such as the swastika, sun (surya), moon (chandra), bell (ghanti), and conch shell (shankh). In Uttarakhand, it's customary to keep the baby indoors for ten days, and on the eleventh day, the child is taken outside for their first sun exposure, known as Surya Darshan. This ceremony is also referred to as Surya Darshan Chauki, marking an important milestone in the child's life.



Fig.4 Namkaran Chauki Aipan

Dhuli Arg Chauki Aipan (Used in the groom's reception ceremony): Dhuli Chouki Aipan is a unique and traditional form of Aipan art that originates from the Kumaon region of Uttarakhand, India. The name "Dhuli Chouki" literally translates to "dust platform" or "powder square," reflecting the use of dust and natural materials in its creation. This intricate art form is characterized by elaborate designs and patterns crafted from a mixture of dust, water, and natural colors. Dhuli Chouki Aipan often features depictions of gods, goddesses, and mythological scenes, alongside geometric patterns, floral motifs, and animal designs. The art form is deeply rooted in tradition, with techniques passed down through generations and natural

Co-ordinator
IQAC, Shri Ram College
Muzaffarnagar

Chairman
IQAC, Shri Ram College,
Muzaffarnagar

materials like turmeric, vermilion, and flower extracts used for coloring. The result is a vibrant and captivating form of folk art that showcases the rich cultural heritage of the region.



Fig.5 Dhuli Arg Chauki Aipan

Additionally, local artisans craft various items like Dwar Patra, Var Chauki, Brahman Chauki, Nimbu (lemons), Shasthi (a deity), Dikare, Soop (winnowing basket), Laxmi Chauki (used for Laxmi Pooja), Vasudhara, and more.

Aipan are meticulously drawn using wet colors. Ochre, known as Geru, is used to create the background for aipan designs. Natural pigments are primarily employed for Aipan artwork. Overnight soaked rice paste is used to produce the white color, which is the sole color used in aipan.

Market Demand of Aipan Products.

Aipan enjoys a strong demand in the market owing to its rich religious symbolism, deep-rooted traditional significance, and unique artistic essence. Its popularity extends not only within Uttarakhand but also across various other states in India. Uttarakhand, renowned for its status as a popular tourist destination, showcases aipan as a cultural treasure that entices travelers with its distinctiveness and cultural heritage. Aipan products, including aipan-design clothing, home decor items, and religious paraphernalia, continue to attract a diverse range of customers. This demand can be attributed to several factors:-

Cultural Significance: Aipan products are deeply ingrained in the cultural fabric of regions like Kumaun in Uttarakhand. They are essential for various rituals and ceremonies, ensuring a consistent demand among local communities.

Religious Significance: Aipan designs hold religious significance and are used in various religious and spiritual ceremonies. This religious aspect sustains the demand for aipan products.

Co-ordinator
IQAC, Shri Ram College
Muzaffarnagar

52
Chairman
IQAC, Shri Ram College
Muzaffarnagar

Tourist Attraction: Regions where aipan is prominent, such as Uttarakhand, draw a significant number of tourists. Visitors are often intrigued by the unique art form, leading to increased sales of aipan products as souvenirs and decorative items.

Artistic Appeal: Aipan's intricate and colorful designs make it aesthetically appealing. Art enthusiasts and collectors seek out aipan products for their artistic value.

Gift and Decor Items: Aipan products, such as paintings, home decor items, and clothing, are popular choices for gifting and interior decoration. This versatility contributes to their demand.

Online Marketplaces: The accessibility of aipan products through online marketplaces has expanded their reach beyond their place of origin. Customers from various regions can now easily purchase these items.

Promotion and Awareness: Efforts to promote and raise awareness about aipan art and its significance have contributed to sustained demand. Cultural events, exhibitions, and workshops often feature aipan products.

So the market demand for aipan products remains strong due to their cultural, religious, and artistic significance, as well as their appeal to both local communities and tourists. This enduring demand ensures the continued production and availability of aipan products in the market.

The Socio-Economic Development Opportunities Presented by Aipan

Aipan, as a traditional folk art, holds significant potential for socio-economic development in the regions where it is practiced. Here are some of the key prospects and ways in which Aipan can contribute to socio-economic development:-

Cultural Preservation: Aipan plays a vital role in preserving and promoting local culture and traditions. By supporting and promoting Aipan art, communities can retain their cultural identity, which can be a source of pride and a unique selling point for cultural tourism.

Tourism: Aipan's uniqueness and cultural significance make it an attractive feature for tourists. This can boost tourism in the region, leading to increased economic opportunities such as tourism-related businesses, local crafts markets, and cultural events.

Artisan Empowerment: Aipan provides an income source for local artisans who create Aipan products. Training and skill development programs can empower these artisans, providing them with opportunities for income generation and economic self-sufficiency.

Co-ordinator
IQAC, Shri Ram College
Muzaffarnagar

Chairman
IQAC, Shri Ram College,
Muzaffarnagar

Job Creation: The production and sale of Aipan products can create jobs within the local community. This includes artists, craftsmen, and individuals involved in marketing, sales, and distribution.

Entrepreneurship: Aipan can serve as a catalyst for entrepreneurship. Individuals can start small businesses centered around Aipan, including art galleries, handicraft shops, and online stores, thus contributing to economic development.

Cultural Exchanges: Aipan can be a bridge for cultural exchanges and collaborations. It can open doors for partnerships with organizations and institutions interested in promoting traditional arts and crafts.

Skill Development: Training programs in Aipan art can provide valuable skills to the local workforce. These skills can be transferable to other art forms and industries, enhancing employability.

Marketing and Branding: Effective marketing and branding of Aipan products can create a niche market. High-quality, authentic Aipan products can attract consumers seeking unique, culturally rich items.

Community Development: Revenue generated from Aipan-related activities can be reinvested in the community. This can support infrastructure development, education, healthcare, and other social initiatives.

Cultural Tourism: Aipan can be integrated into cultural tourism packages, attracting visitors interested in experiencing and learning about local traditions. This can lead to increased spending on local businesses and services.

Exports: Aipan products, if marketed effectively, can find a global market. Exports of traditional crafts can bring foreign exchange and economic benefits to the region.

Revitalizing Rural Areas: Aipan can help revitalize rural areas by providing alternative livelihoods to agricultural work, thereby reducing migration to urban centers.

To realize the socio-economic potential of Aipan, it is essential to provide support in the form of infrastructure, training, marketing, and policy initiatives. Collaboration between government bodies, non-profit organizations, and the local community can further enhance the prospects of Aipan for socio-economic development while preserving its cultural heritage.

Conclusion


Co-ordinator
IQAC, Shri Ram College
Muzaffarnagar


Chairman
IQAC, Shri Ram College,
Muzaffarnagar

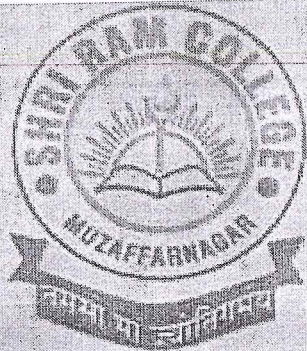
Aipan, a traditional folk art deeply rooted in the Kumaun region of Uttarakhand, has significant socio-economic potential. Its rich cultural and religious significance, coupled with its artistic appeal, has led to a robust market demand. This demand extends beyond Uttarakhand, attracting tourists and providing livelihood opportunities for local artisans and entrepreneurs. Aipan offers avenues for cultural preservation, job creation, skill development, and cultural exchange. By promoting Aipan, we can empower communities, revitalize rural areas, and enhance economic development while preserving a cherished cultural heritage.

References:

- Markuna, R.S., 2013. Aipan' designs luring domestic, global art lovers. <http://www.dailypioneer.com>
- Patnaik T., 2020. About AIPAN Art Kumaon, Uttarakhand. eSamskriti: Cultural Spirituality Trave
- Anonymous, 2021. Aipan - Understanding the ritualistic Form of folk art of Kumaon region. <https://www.indiaonroad.com/2021/08/aipan-folk-art-of-kumaon-uttarakhand.html>
- Virmani M. & Bansal, N., 2018. Seeking sustainable heights in the lives of women through Aipan: Case study of Enactus IP College Initiative. Journal Of Innovation for Inclusive Development, 3(1): 40-44.
- Kaushik A. & Gupta M., 2017. "Aipan" Creative Art of Kumaon. International Journal of Home Science, 3(2): 640-642
- Arya, A, Gahlot, M. and Rani, A. (2017). Adaptation of Aipan designs (A floor art of Uttarakhand) for designing of saree International Journal of Applied Research. 3(7): 737-743
- Baral, B. Aipan Uttarakhand: Ritual Floor Painting. Bhandari, A. 2006. The shape of my Hindu Heritage. Retrieved on March 12, 2013 from <http://www.beliefnet.com>
- Mandakini Sharma , Kapil Chowdhury , Richa Thapliyal 2021, Exploration of Aipan Art for Empowering Women of Uttarakhand
- <http://www.euttaranchal.com/culture/aipan-other-artsform>.
- <https://www.euttaranchal.com/>
- <https://artsandculture.google.com/>
- <https://niharikau123.wordpress.com/2016/07/29/a-hidden-art-Aipan/> on February 2020

Co-ordinator
IQAC, Shri Ram College
Muzaffarnagar

Chairman
IQAC, Shri Ram College,
Muzaffarnagar



SHRI RAM COLLEGE

MUZAFFARNAGAR

Affiliated to Maa Shakumbhari University, Saharanpur

A++ Grade Accredited by NAAC



Sponsored by: Indian Industries Association, Muzaffarnagar

Certificate of Participation

Certified that Prof/Dr/Mr/Mrs/Ms Rahul Arya
from Dept. of Chemistry, SRC, MZN participated in
National Seminar on "Empowering India: The Crucial Role of Micro, Small &
Medium Enterprises in the Viksit Bharat Mission by 2047" organized by Department of
Commerce, Shri Ram College, Muzaffarnagar on 22nd June, 2024. He/She took active part in all
the deliberations as keynote speaker/ participated/ presented a paper titled Vibrant Growth
Trajectory of India's Pharmaceutical Industry: Spotlight on the
Vital Role of MSMEs

Co-ordinator
IQAC, Shri Ram College
Muzaffarnagar
Dr. Mohd Shadab Khan
Convenor
Asso Prof, Commerce, Shri Ram College

Ashfaq Ali
Dr Ashfaq Ali
Organizing Secretary
Head, Commerce, Shri Ram College

Dr. Priya Mittal
Vice President
Chairman
Principal, Shri Ram College
IQAC, Shri Ram College,
Muzaffarnagar

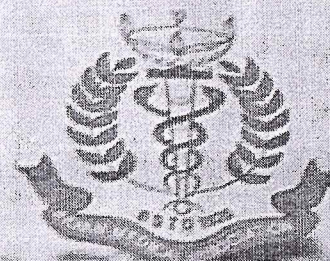


Shri Ram College

Muzaffarnagar

Affiliated to Maa Shakumbhari University, Saharanpur

A++ Grade Accredited by NAAC



Sponsored by: Indian Medical Association, Muzaffarnagar

CERTIFICATE OF PARTICIPATION

Certified that Prof / Dr / Mr / Mrs / Ms Rahul Arya (Assoc. Prof.)
from Shri Ram College, M. Nagar participated in
International Seminar on Contemporary Health Challenges in Current
Social & Environmental Context held at Shri Ram College,
Muzaffarnagar, on 30th-31st May, 2024 He/She took active part in all the
deliberations as keynote speaker/ participated/ presented a paper titled

Yogic Chemistry with Healthy Life Style

His / Her paper presentation was awarded First/Second/ Third place.

Co-ordinator
IQAC, Shri Ram College
Muzaffarnagar

Pooja Tomar
Convener
Head, Dept of Basic Science

Shweta
Dr. Shweta Rathi
Convener
Dean, Dept of Home Science

Priya
Dr. Priya Mittal
President
Chairman
Principal, Shri Ram College,
Muzaffarnagar



SHRI RAM COLLEGE MUZAFFARNAGAR

Affiliated to Maa Shakumbhari University, Saharanpur

A++ Grade Accredited by NAAC



Sponsored by: Indian Industries Association, Muzaffarnagar

Certificate of Participation

It is Certified that Prof/Dr/Mr/Ms/Ms Sachin Kumar
from Dept. of Basic Science, SRC, MZN participated in
National Seminar on "Empowering India: The Crucial Role of Micro, Small &
Medium Enterprises in the Viksit Bharat Mission by 2047" organized by Department of
Commerce, Shri Ram College, Muzaffarnagar on 22nd June, 2024. He/She took active part in all
the deliberations as keynote speaker/ participated/ presented a paper titled Medical Technology
and Equipment Manufacturing: Strengthening Healthcare MSMEs for Universal Access

Co-ordinator
IQAC, Shri Ram College
Muzaffarnagar
Dr Mohd Shadab Khan
Convenor

Asso Prof. Commerce, Shri Ram College

Ashfaq Ali
Dr Ashfaq Ali
Organizing Secretary
Head. Commerce, Shri Ram College

Chairman
IQAC, Shri Ram College,
Muzaffarnagar
Dr Preeti Mittal
Vice President
Principal, Shri Ram College