

A Brief Report
on
Online Certificate Course on
Cyber Security
(A Special On-line Training for North East Students)
(Sept.14 – 18, 2020)



Jointly Organised By



**RAJIV GANDHI NATIONAL INSTITUTE OF YOUTH
DEVELOPMENT**

Institution of National Importance by the Act of Parliament No.35/12
Ministry of Youth Affairs and Sports, Government of India
Sriperumbudur – 602 105



NATIONAL INSTITUTE OF TECHNOLOGY, JALANDHAR

Institute of National Importance under the Act of Parliament – 2007
Ministry of Human Resource Development, Government of India
Jalandhar, Punjab - 144 011

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Preface and Acknowledgements

Computer assisted technologies are continuously advancing at a rapid rate as companies are discovering new ways to reap the benefits of ICT to automate processes, increase productivity and reduce cost that would have a worldwide impact on the global market in the coming years. The Information and Communication Technology applications have reshaped various industries cutting across various disciplines ranging from medicine, engineering, research, physical and life sciences, manufacturing, finance, management, economics, agriculture to art and designing.

With the drastic shift of the global economy to a digital based platform, the large and small businesses today require skilled Cybersecurity professionals to stop phishers, hackers, and cybercriminals in their tracks. This has led to a huge demand for Cybersecurity professionals, but the supply has not kept up. Thanks to this gap, there are a large number of highly paid job opportunities for Cybersecurity professionals.

Considering the tremendous employment potential in this particular vertical of the IT Sector, the Rajiv Gandhi National Institute of Youth Development, Sriperumbudur in collaboration with the National Institute of Technology, Jalandhar, Punjab, an Institute of National Importance under the Act of Parliament – 2007 functioning under the Ministry of Human Resource Development, Government of India organized the online Short-Term Certificate Program on Cyber Security from September 14-18, 2020 exclusively for the North Eastern Youth.

The program was offered for the youth who hail from pure science, physical sciences, computer and information technology backgrounds possessing or pursuing programs at Diploma or Bachelor Degree levels or those who have completed their educational programs and looking for employment opportunities. In addition, some youth who registered from other parts of the country was also included in the program since it does cost extra expenditure and to give benefit of such program to maximum number of youth of the country.

We acknowledge our gratitude to all the esteemed resource persons for taking a session in this program and sharing their valuable experiences. We are also grateful to Ms. Usha Sharma, Secretary of the Ministry of Youth Affairs and Sports, Government of India for her support in organizing the course. We also acknowledge the support from Shri. Asit Singh, Joint Secretary (YA), MoYAS, Shri. Manoj Sethi, Joint Secretary and Financial Advisor, MoYAS in organizing this online course.

The facilitator of the course Mr. David Paul, Training Officer, RGNIYD deserves special appreciation for running the course systematically. The support from Mr. S. Balakrishnan and Mr. Ram Kumar – IT professionals of RGNIYD related to creating the link for the program and informing all the concerned persons from time to time also deserves high appreciation. We place on record our sincere thanks to the Administrative Team of RGNIYD comprising of the Registrar, Assistant Registrar and the Consultant Administration for their kind help rendered for the program from time to time. The support provided by the Officials of the Administration of the National Institute of Technology, Jalandhar, Punjab also deserve special mention and acknowledgement for their yeomen service extended to RGNIYD under this collaborative effort.

Prof. Sibnath Deb
Director, RGNIYD

Prof. Lalit Kumar Awasthi
Director, NIT, Jalandhar

Prof. S.K.Sinha
Dean, NIT, Jalandhar

Preamble

The Coronavirus pandemic has locked doors of markets, factories, offices, schools and universities in India and people, particularly the young people, are forced to confine themselves inside their homes. However in this extended lockdown India is witnessing a positive trend as e-learning platforms have opened up hundreds of windows for learning. There is a massive upsurge in the traffic of online learning platforms as more and more Indians (of all age groups) want to engage in meaningful learning. College/University Students are more inclined towards widening their range of academic learning whereas young working professionals want to utilize their time to enhance knowledge, acquire new skills or re-skill and upskill themselves so that they can stay relevant in the future. The flexibility and convenience offered by the digital platforms is the greatest advantage to the learners at large.

Going forward, reskilling and upskilling will be constantly required by working professionals and online courses will help them remain relevant in the fast-evolving employment scenarios. While working professionals and students poised to enter into the world of work require certification from reputed education brands. Considering these parameters, RGNIYD has taken advantage of the time and situation to empower the young people in terms of education, skill building and fostering employability in the modern trending skill requirement. In the online educational segment, course like Cyber Security is among the most hot-selling online IT Courses.

It is in this backdrop of vital significance, RGNIYD has partnered with the National Institute of Technology, Jalandhar, Punjab which is an Institute of National Importance under the Act of Parliament – 2007 functioning under the Ministry of Human Resource Development, Government of India to offer a short-term Certificate Course in Cyber Security.

This short duration training will help the participants to explore a hacker's state of mind through the in-depth study of cutting-edge technologies and frameworks that is necessary to protect organizations from future threats. This course will also enable professionals seeking a transition to Cybersecurity domain from other backgrounds, cybersecurity professionals looking to enhance their skillsets, entrepreneurs who want to learn Cybersecurity to safeguard their venture and enthusiasts looking to enter the exciting world of Cybersecurity.

Objective of the Course

During the period of COVID-19 pandemic, a large number of youth have lost their jobs and are looking for skilling/level up training or reskilling programs to enhance their employability skills and to secure a gainful employment. In this context, this particular course was conducted to address this dire need and to empower the youth to face employment challenges with assiduous skills and diligence in the field of Cyber Security.

Target Group for the Course

While designing this program, it was carefully thought to provide equal opportunities to the youth of the north-eastern region so as to include and mainstream them in the job market. Therefore, this program was exclusive offered to the youth belonging to the north-eastern region while other students who were interested to take up this course also registered.

The salient features of these short-term course is that, the sessions were handled by renowned faculty and experts of high acclaim from various NITs, IITs, premier universities and apex higher educational institutions across the country. This online program provides unique opportunity for the young people across the country to utilize their time most productively and to acquire or hone new employability skills during this lockdown period.

Inaugural Function of the Course

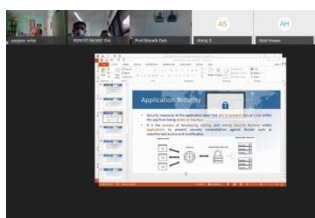
The programme was inaugurated by Ms. Usha Sharma, IAS, the Secretary (Youth Affairs), Ministry of Youth Affairs and Sports, Government of India on September 14, 2020. Shri. Asit Singh, Joint Secretary (YA), MoYAS, Shri. Manoj Sethi, Joint Secretary and Financial Advisor, MoYAS, Prof. Sibnath Deb the Director of the RGNIYD and Prof. Lalit Kumar Awasthi, Director, NIT, Jalandhar, addressed the participants.

Prof. S. K. Sinha, Dean, NIT, Jalandhar provided a brief introduction to the program and its objectives. Thereafter, the technical session of the program commenced.

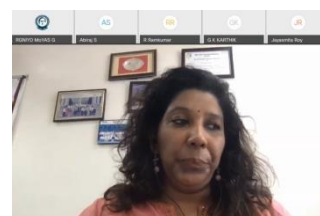


Topics Covered by the Resource Persons

Prof Sanjeev Sofat, Professor and Head, Department of Computer Science & Engineering, Punjab Engineering College (Deemed to be University), Chandigarh handled two sessions on Cyber Security – A complete framework: Part 1 and Part 2 respectively. The Resource Person provided a thorough conceptual framework of the Cyber Security issues and the currently adopted global strategies to prevent hacking.



Prof Divya Bansal, Professor, Department of Computer Science & Engineering, Punjab Engineering College (Deemed to be University), Chandigarh handled sessions on Cyber Security for critical information infrastructure protection: Part 1 and Part 2. She provided live examples why and what types of information related to infrastructure are required for cyber security and the approaches to protect the cybersecurity information infrastructure. The students felt both her sessions very lively and clearly addressed all the queries of the participants.

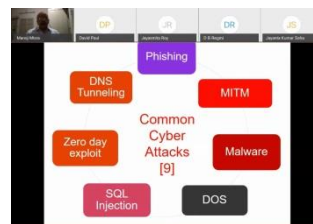


Dr. (Mrs.) Arvinder Kaur, Professor & Dean, University School of Information & Communication Technology, Guru Govind Singh Indraprastha University, New Delhi handled two sessions on Empirical research in software security: Part 1 and Part 2. While delivering the session, the Resource Person created intuitiveness among the participants to further explore the subject and to undertake small research projects at their own level. She also offered to the participants to guide them on their empirical

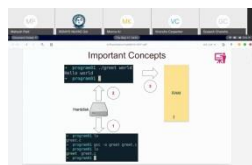


research efforts through online.

Prof. Dr. Manoj Mishra, Professor and Head, Department of Computer Science and Engineering, Indian Institute of Technology Roorkee, Uttarakhand handled a session on Authentication to cyber security. He provided practical inputs to the participants by teaching tested applicable models for authentication of cyber security. His depth of knowledge attracted the participants to seek more inputs from his lecture.



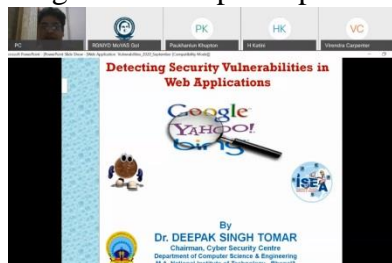
The session on Software Security was handled by Shri. Mahesh Uttam Patil, Associate Director, Centre for Development of Advanced Computing (C-DAC, Hyderabad) who took the participants through live demonstration of how the softwares are vulnerable to be hacked and provided guidance on how to write robust computer programs besides guiding the participants on implications of insecure software programs and provided useful tips on corrective actions to secure software programs.



Shri. Hari Babu P, Member Technical Staff Group A, Centre for Development of Advanced Computing (C-DAC, Bangalore) facilitated a session on Internet of Things (IOT) Security. He also showcased various working models that are vulnerable for hackers and how to secure those issues with practically demonstrated programs.



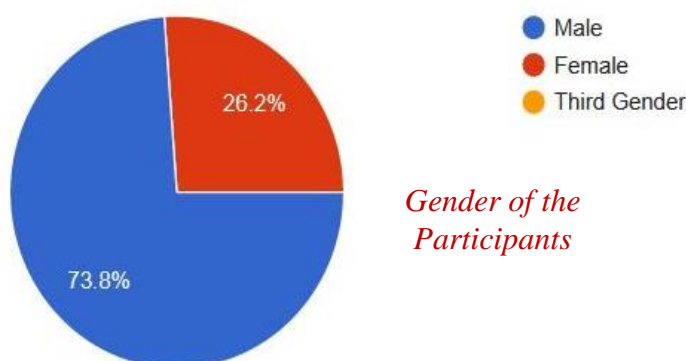
Prof Deepak Singh Tomar, Associate Professor, Department of Computer Science and Engineering, Maulana Azad National Institute of Technology, Bhopal, Madhya Pradesh enlightened the participants on Detecting Security Vulnerabilities in web applications with practical demonstrations by guiding how the hackers crash the websites of large and popular organizations including the governments and plunder the important information. He delineated and demonstrated the ways and means for detecting security vulnerabilities in websites and suggested application tools for firmly securing the websites from being hacked by external persons or agencies.



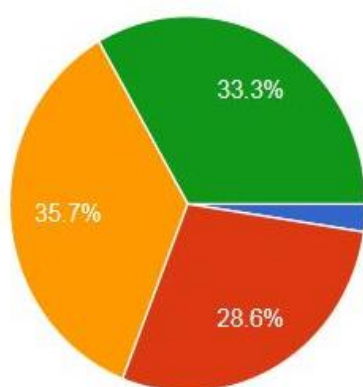
The program was attended by about 64 students of whom 20 youth were from different north eastern states. Considering the connectivity issues in the North Eastern Region, it was collectively decided by RGNIYD and NITJ that participants who have at least 70% of attendance only will be provided E-Certificates. Therefore 34 candidates who attend all the sessions and successfully complete the course requirements were issued an E-Certificate.

Feedback from the Participants

Feedback on this program was obtained from 42 participants who actively participated in the program. The following section provides the feedback on the participants of the program. Among the youth who provided feedback, 74% were male and 26% were female respectively.



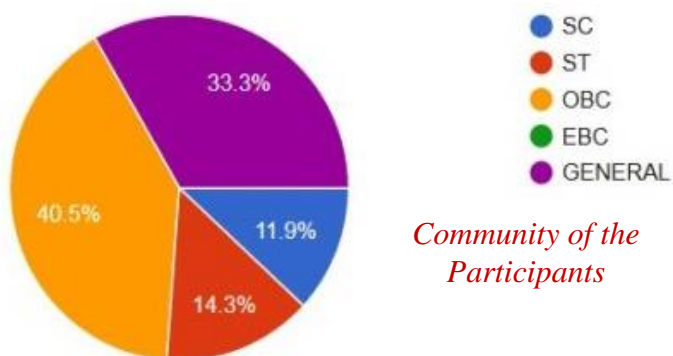
Background of the Participants



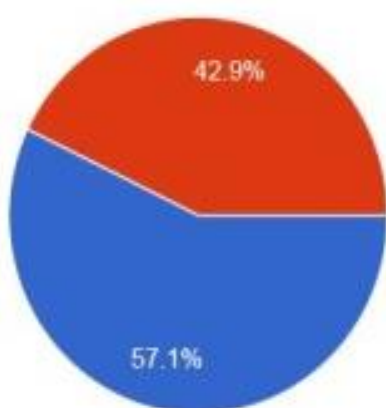
Age of the Participants

With regard to the age of the participants who provided feedback, it was ascertained that a vast majority of participants 36% were in the age brackets of 23 to 26 years, 33% of the youth were above 27 years and 29 % were between 19 to 22 years of age, while 2% were 18 years of age or below.

With regard to the community, 41% of the participants belonged to OBC categories, 33% were from general categories, 14% were from Scheduled Tribes and 12% were from the Scheduled Caste backgrounds.



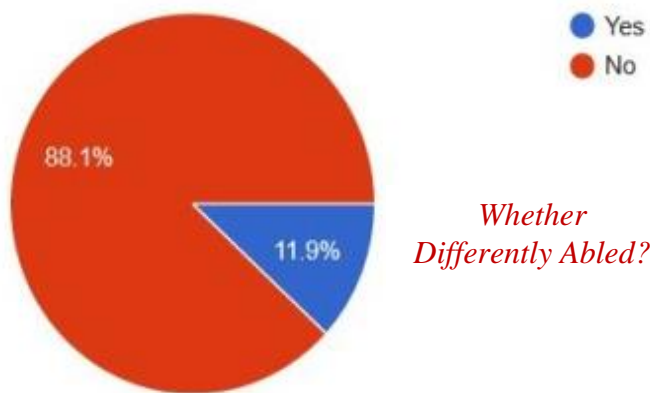
Community of the Participants



Participants belonging to North East

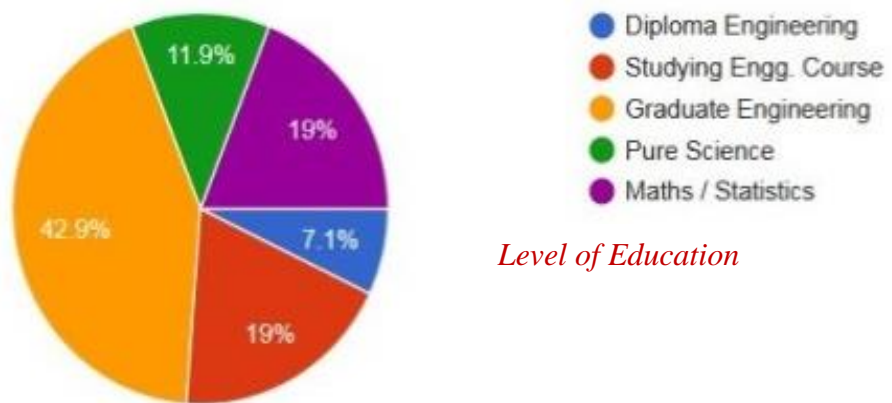
Among the participants who provided feedback, 57% of the youth were from the North Eastern Region belonging to the states of Assam, Manipur, Meghalaya, Nagaland, Sikkim and Tripura. The other 43% of the participants were from 16 States and 1 Union Territory viz., Bihar, Gujarat, Jharkhand, Karnataka, Kerala, Madhya Pradesh, Maharashtra, New Delhi, Odisha, Puducherry, Punjab, Rajasthan, Tamil Nadu, Telangana, Uttar Pradesh, Uttarakhand and West

Bengal. In total the participants were from 22 States and 1 Union Territory. The program was organized exclusively for the youth of the North Eastern States. However, the youth from other states have also applied and were permitted to attend the course as it would not incur additional cost.



Among the participants it was noticed that 12% of the participants were differently abled who attended the course on Cyber Security.

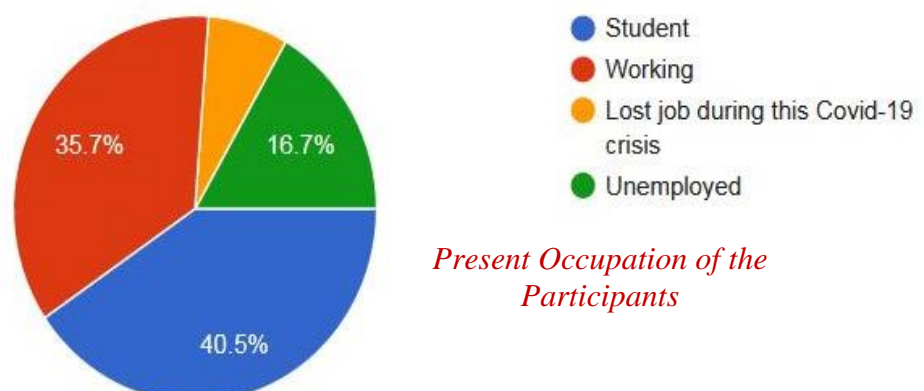
With regard to the level of education of the participants who attended this course, it was found that majority of them (43%) were graduates in Engineering, 19% were studying Engineering Courses and were in the completion stage, another 19% of the participants were graduates in either Mathematics or Statistics, while 12% of them were graduates in pure science groups and 7% have completed their Diploma in Engineering respectively.



Level of Education

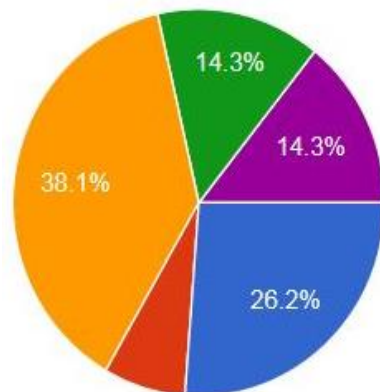
With reference to the subject specialization of the courses underwent by the participants, it was ascertained that they were from Agricultural Engineering, Computer Education, Electronics Engineering, Electronics and Communication Engineering, Computer Applications, Physical Sciences, Biotechnology, Computer Science, Mechanical Engineering, Social Work backgrounds. However, majority of the participants were from varied Engineering background, computer and IT and Mathematics fields.

Asked about the present occupation of the participants, it was found that 41% were students who were about to complete their degree programs, 36% were already employed, while 17% were unemployed and 6% of the participants who attended this program were those who lost their job during the COVID-19 pandemic.



Present Occupation of the Participants

When asked about the source of information about this Cyber Security Program, majority of the participants 38% were informed about this course by their friends, whereas 26% of the participants came to know about this program from the website of RGNIYD. 14% knew



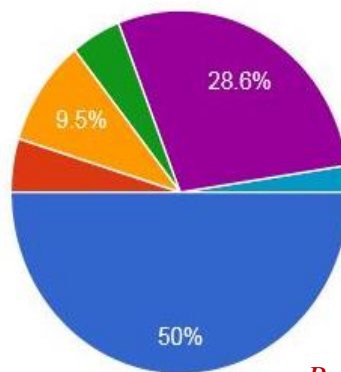
Source of Information about the Course

- From the website of RGNIYD
- From the Website of NIT, Jalandhar
- From Friends
- From Faculty
- Other source

about this course from other sources. 14% of the participants knew about the course through the faculty of RGNIYD while 8% of the participants came to know about this particular

course through the website of the National Institute of Technology, Jalandhar, Punjab.

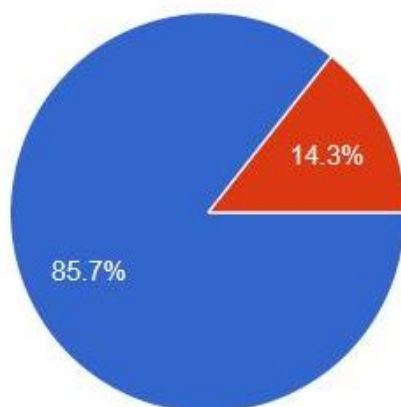
While probing on the purpose for attending the course, the participants provided a variety of responses. About half of the participants (50%) attended the course with a view to gain knowledge in the subject; where as 29% of the respondents indicated that the course certificate obtained by attending this course will be beneficial for their career growth. About 10% of them participated in this course to clarify specific queries related to the subject, while the remaining 11% of them attended this course either to refresh their knowledge, to re-skill or upskill themselves to get re-entry into the job market.



Reason for participating in the Course

- To gain knowledge in the subject
- To refresh knowledge
- To clarify specific queries related to the subject
- To re-skill to get re-entry in the job market
- Course certificate will be beneficial for career growth
- Others

While providing feedback, the participants were asked to indicate whether they attended all the online classes of the Cyber Security Course for which 86% of the respondents pointed out



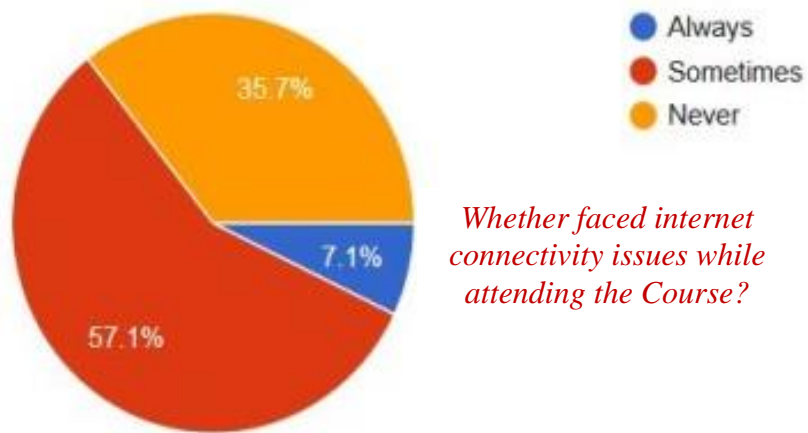
Whether attended all the sessions of the Course?

- Yes
- No

that they attended all the sessions, while 14% of them expressed that they could not attend all the sessions of this course.

Internet Connection Problems Faced by the Participants

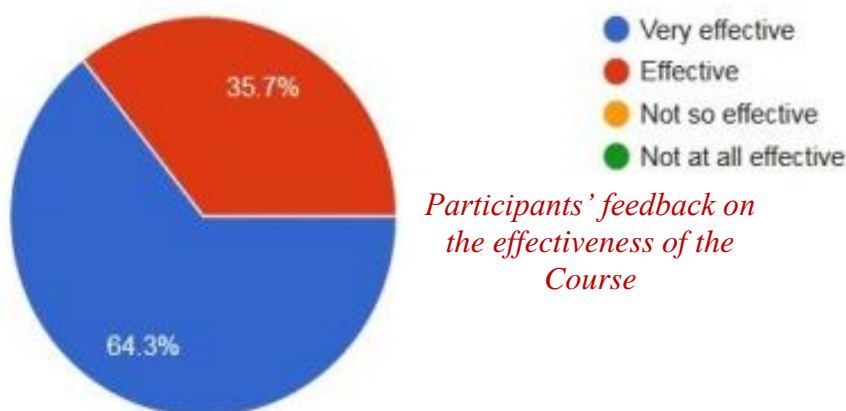
When asked about the problems faced by the participants with regard to the internet connectivity while attending the online classes of the Cyber Security Course, 36% of the participants mentioned that they never faced any internet connectivity issues, while a majority of 57% said that they sometimes faced problems with internet connectivity while attending the classes whereas, the remaining 7% of them, all from the north-eastern region cited that they had constant internet connectivity issues which deterred them from attending the classes regularly.



Whether faced internet connectivity issues while attending the Course?

Effectiveness of the Online Course on Cyber Security

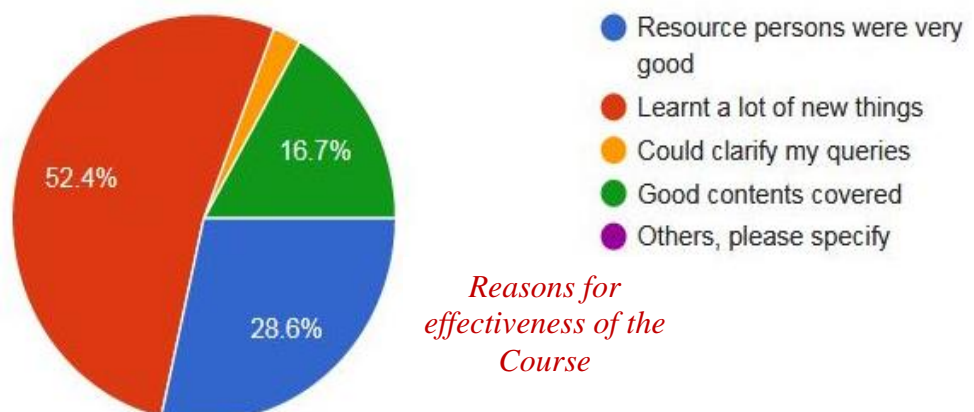
When asked about the degree of effectiveness of the Cyber Security Course, the respondents provided a very encouraging feedback. About 64% of the participants mentioned that the course was very effective and other 36% of the participants revealed that the course was effective respectively. Further, this data showed that there were no participants who said that the course was either not so effective or not at all effective. This very positive feedback provides RGNIYD every reason that the program can either be repeated for the benefit



Participants' feedback on the effectiveness of the Course

of those who could not attend the program for variety of reasons or for RGNIYD to organize advanced programs for levelling up the skills of the present participants or those others who might be interested to upscale their skillsets.

When probed with the participants on their reasons for providing a very positive feedback on the effectiveness of Cyber Security Course, a majority of 52% stated that they learnt a lot of

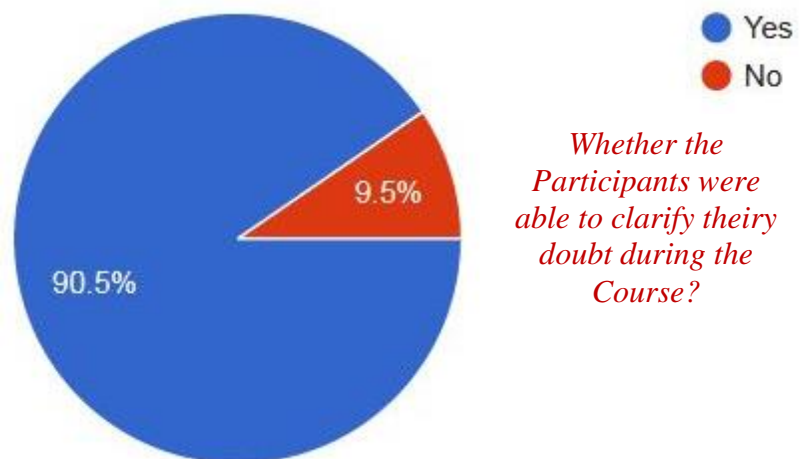


Reasons for effectiveness of the Course

new concepts and applications from the course, while 29% of the participants declared that the resource persons were very good and were of very high standard, wherein 17% said that good amount of contents were covered in the course while the remaining 2% stated that they could clarify their doubts through this program.

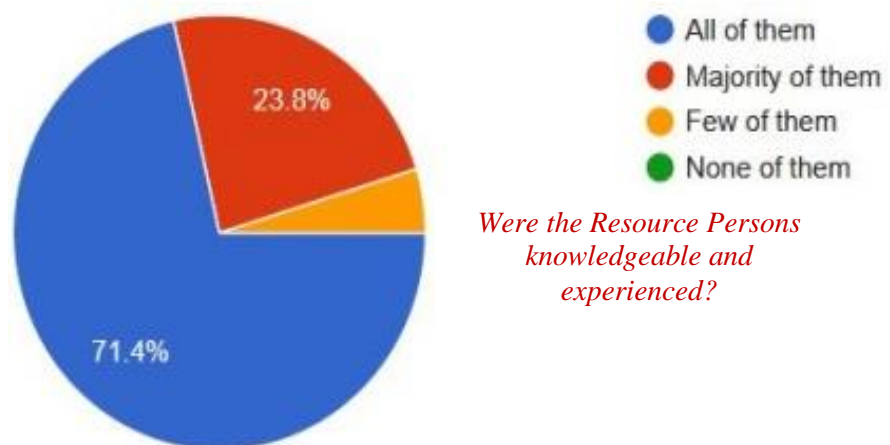
Clarification of Queries by the Participants during the Course

When the respondents were requested to provide feedback as to whether they were able to clarify their doubts and queries, 91% of the participants revealed that all their doubts were cleared and the queries that they raised during the course were keenly attended to by the Resource Persons and were addressed adequately. While 9% of the respondents mentioned that they were not able to clarify their queries during the program. It is pertinent here to mention that during each session, the last 15 minutes were exclusively devoted for Q&A Session by each Resource Person to clarify their doubts in general or in specific to what they learnt during each session. Further, as and when the doubts were raised by the participants, there were instances where the Resource Persons on and again repeated certain difficult concepts and provided more clarity to the participants. However, there were internet connectivity issues faced by a small segment of the participants therefore this may be the paramount reason that 9% of the participants were unable to get their doubts clarified.



Perception about the Resource Persons

The participants of the Cyber Security Course were asked to provide feedback on the Resource Persons who handled the sessions during the program with specific reference to their knowledge and experience manifested through their lecture. In response, 71% of the participants of the course specified that all the Resource Persons were highly resourceful and knowledgeable in their domain areas which were evident in their tech-talks. About 24% of the participants pointed out that majority of the Resource Persons were resourceful and had expertise in the subject handled by them while, 5% of the participants indicated that few Resource Persons were knowledgeable and



resourceful. The reason for this may be that these participants may not have attended all the sessions; therefore they were unable to provide exact feedback on the participants.

Views about the Online Mode of the Course

The participants were asked to indicate whether they found the online mode of classes as a good option for teaching during this phase of COVID-19 pandemic. For this, 95% of the participants opined that the online mode was the best method for teaching and learning during the lockdown period and for utilizing their time more productively to gain newer insights and



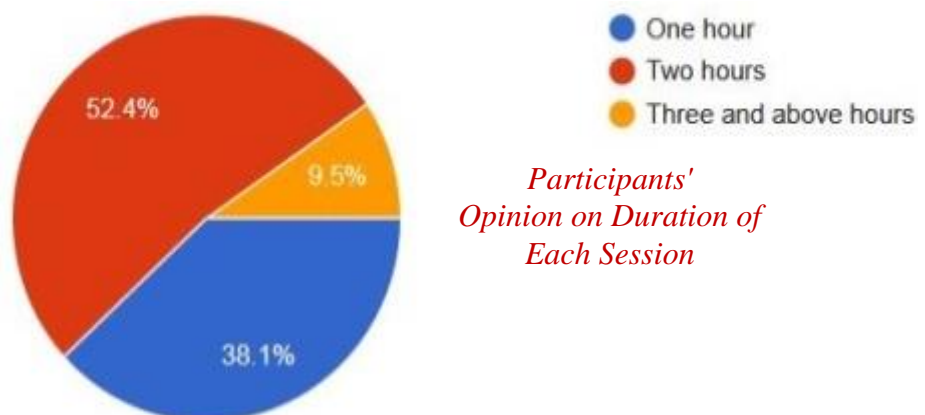
to acquire skills by safely remaining at home. Technology has enabled RGNIYD and NITJ to transcend the geographical barriers and through Cisco Webex, it was possible for the organizers to connect the Resource Persons and the participants from far flung locations across the country through one online medium for fruitful learning that will certainly enhance the

employability skills of the participants and prepare them to become employment-ready. Besides the online factor, it is the branding the participants would be able to derive from the certification they got from both the organizing Institutions viz., RGNIYD and NITJ which are Institutions of National Importance. This certification will certainly place them in a better advantageous position over others during their job interviews.

Views about Duration of the Course

With regard to the duration of the online sessions, 52% of the participants of the Cyber Security Course were of the opinion that two hours was an appropriate duration for each session while 38% of

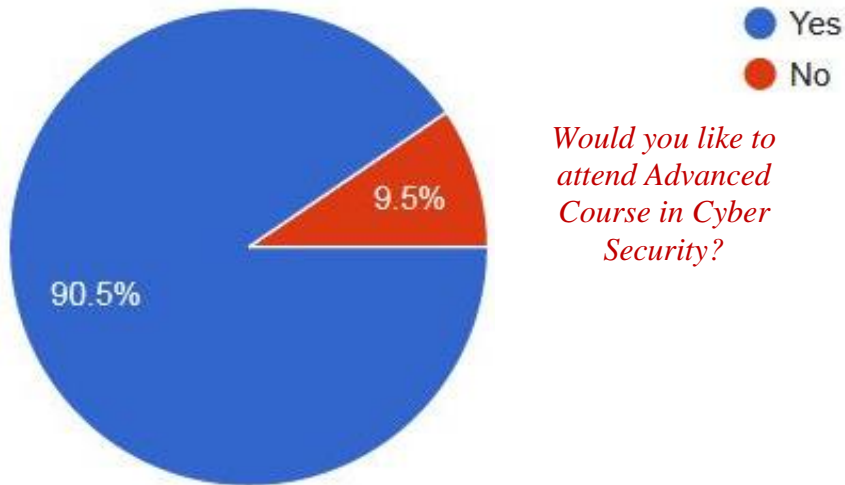
the participants felt that one hour was adequate for one session and 10% of the participants felt that three hours or above will be a suitable duration for each session.



Participants' Opinion on Duration of Each Session

Views about Attending Similar Course in Future

The participants were asked to provide their opinion on whether they would like to attend another advanced level course on Cyber Security? Consequently, 91% of the participants shared that they were will to attend another advanced level course on Cyber Security to



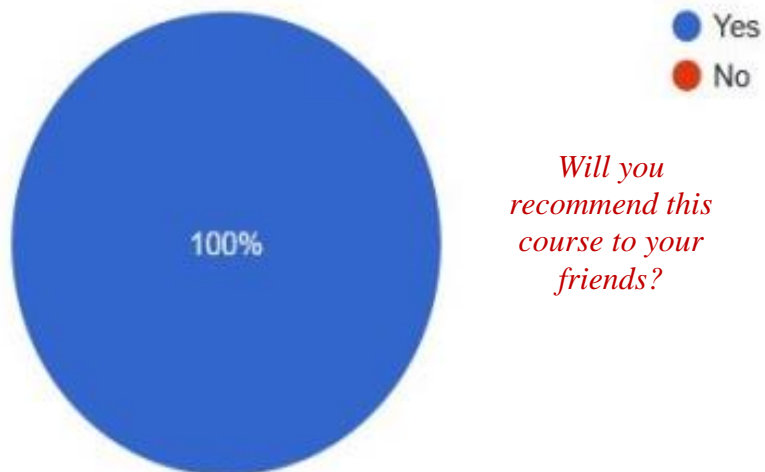
Would you like to attend Advanced Course in Cyber Security?

enhance their knowledge and skills at a higher level. However, 9% of the participants felt that the inputs received from the program is adequate for them as this course in itself was very high in standard with specialized inputs by prolific experts. When cross-checked with the educational background of the participants who

have provided this feedback, it was found that these participants were from non-technical backgrounds who might find the technical details and programs more complicated to comprehend.

Views about Sharing of Information about the Course with Others

When the participant were asked whether they would recommend their friends to attend this same course on Cyber Security in future, all the participants (100%) responded that they will highly endorse this course and inspire their friends, peers and their significant others to certainly undergo this course in the future. This indicates the success of delivery of the course. As this is a trending vertical in the Information Technology Sector and is highly job-oriented, acquiring skills in this domain will certainly empower the youth to secure a gainful employment in the world of work besides the certification by credible and premier Government of India Institutions of Higher Education such as RGNIYD and NITJ.



Will you recommend this course to your friends?

The participants were asked to mention the other courses which they would like to attend in future for which the participants indicated that they would like to attend courses such as Artificial Intelligence, Cyber Security, Data Sciences, IOT, Python Programming, Data Analytics, Ethical Hacking and other Advanced Level Computer related Programs.

Conclusion and Recommendations

In fine, it might be stated that the one-week online course on Cyber Security was highly beneficial for the participants as clearly demonstrated from the feedback of the participants in terms of gaining more knowledge in the subject and in clarification of their queries. This course enabled professionals seeking a transition to Cybersecurity domain from other backgrounds, cybersecurity professionals looking to enhance their skillsets, entrepreneurs who want to learn Cyber Security to safeguard their venture and enthusiasts looking to enter the exciting world of Cybersecurity. This program helped the participants to execute and defend against a variety of cyber-attacks, including social engineering attacks, network attacks, application attacks, and cryptographic attacks. This short duration training also benefitted the participants to explore a hacker's state of mind through the in-depth study of cutting-edge technologies and frameworks that is necessary to protect organizations from future threats.

It is recommended to continue similar short-term courses for the professionals with computer and pure science background.

Annexure 1: Program Schedule

Time	Title of the Session	Resource Person
Day 1: September 14, 2020		
10:30 am	Inauguration of the Program	<i>Introduction to the Program and its Objectives by:</i> Prof. S. K. Sinha Dean, NIT, Jalandhar <i>Address by:</i> Prof. Lalit Kumar Awasthi Director, NIT, Jalandhar <i>Address by:</i> Prof. Sibnath Deb Director, RGNIYD <i>Address by:</i> Shri. Asit Singh, IRS Joint Secretary (Youth Affairs), MoYAS <i>Address by:</i> Shri. Manoj Sethi, ICAS Joint Secretary & Financial Advisor, MoYAS <i>Presidential Address by:</i> Ms. Usha Sharma, IAS Secretary (Youth Affairs), MoYAS
11:00 am – 12:30 pm	Cyber Security – A complete framework: Part 1	Prof. Sanjeev Sofat Punjab Engineering College, Chandigarh
Lunch Break		
2:30 pm - 4:00 pm.	Cyber Security – A complete framework: Part 2	Prof. Sanjeev Sofat Punjab Engineering College, Chandigarh
Day 2: September 15, 2020		
11:00 am – 12:30 pm	Cyber Security for critical information infrastructure protection: Part 1	Prof Divya Bansal Punjab Engineering College, Chandigarh
Lunch Break		
2:30 pm - 4:00 pm.	Cyber Security for critical information infrastructure protection: Part 2	Prof Divya Bansal Punjab Engineering College, Chandigarh
Day 3: September 16, 2020		
11:00 am – 12:30 pm	Empirical research in software security: Part 1	Prof Arvinder Kaur Guru Govind Singh Indra Prasth University

Time	Title of the Session	Resource Person
Lunch Break		
2:30 pm - 4:00 pm.	Empirical research in software security: Part 2	Prof Arvinder Kaur Guru Govind Singh Indra Prasth University
Day 4: September 17, 2020		
11:00 am – 12:30 pm	Authentication to cyber security	Prof Manoj Mishra IIT, Roorkee
Lunch Break		
2:30 pm - 4:00 pm.	Software Security	Dr Mahesh Uttam Patil Associate Director, C-DAC, Hyderabad
Day 5: September 18, 2020		
11:00 am – 12:30 pm	IOT Security	Dr Hari Babu P, C-DAC, Bangalore
Lunch Break		
2:30 pm - 4:00 pm.	Detecting Security Vulnerabilities in web applications	Prof Deepak Singh Tomar Maulana Azad National Institute of Technology, Bhopal
4:00 pm	Feedback and Conclusion	

Annexure II: Profile of the Resource Persons

Prof Sanjeev Sofat,
Professor and Head,
Department of Computer Science & Engineering,
Punjab Engineering College (Deemed to be University),
Sector 12, Chandigarh.

Prof. Sanjeev Sofat is presently the Professor and Head of the Department of Computer Science and Engineering in Punjab Engineering College (Deemed to be University), Chandigarh. As a distinct Technologist and Educator, he has over three decades of experience in teaching, research and consultancy. During his distinguished career, he has held illustrious positions such as Dean - Students Affairs, Dean - Academic Affairs besides serving as the Deputy Director at Punjab Engineering College (Deemed to be University). Considering his wide professional expertise, he has been invited as Technical Consultant for several prestigious projects at state and national levels including the renowned Project on Cyber Crime and Criminal Tracking Network Systems. He is being extensively consulted and is invited to deliver prolific lectures at various high level seminars in India, UK, Malaysia and Singapore. He has published more than 75 papers in reputed journals and conferences besides authoring 3 books and has guided over 10 Ph.D. Research Scholars.



Prof. Divya Bansal
Professor, Department of Computer Science & Engineering,
Punjab Engineering College (Deemed to be University), Sector 12, Chandigarh.

Prof. Divya Bansal currently holds the position of Professor in the Department of Computer Science and Engineering at the illustrious Punjab Engineering College Chandigarh and is the Dean of Alumni, Corporate and International Relations. She has prolific experience of teaching and undertaking research for over two decades and is the Co-Founder and Head of the Cyber Security Research Centre established at Punjab Engineering College. She has spearheaded several Government sponsored research projects in the area of Information Security funded by the Government of India. She is also the National Coordinator for Cluster projects under the Cyber Security (CS), Research of Interdisciplinary Cyber Physical System (ICPS) under which she coordinates Cyber Security Projects of 20 institutions including IITs, IISc, CDACs and NITs. Having worked as a technical consultant in almost all ICT Projects of the State Police including design and implementation of GPRS/CDMA based PCR van tracking system – Dial 100, setting up of modern ICT enabled command and control room at Police Head Quarters and Cyber Crime Cell, she has also drafted the enterprise and GD policies and procedures governing InfoSec for the State Government. She has published over 70 publications in highly reputed journals and conferences.



Dr. (Mrs.) Arvinder Kaur
Professor & Dean
University School of Information & Communication Technology,
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Dr. (Mrs.) Arvinder Kaur is presently the Professor and Dean in the University School of Information Technology, Guru Gobind Singh Indraprastha University, Delhi. She has visited and delivered lectures in International conferences at Kingston College, London (U.K.), University of Tor Vergata Rome (Italy), Las Vegas (U.S.A.), Hong Kong & Phuket (Thailand). She was presented Career Award for Young Teachers by the All India Council for Technical Education (AICTE), Delhi for three consecutive years from 2006. Research Award was conferred on her successively for four years (2010- 2013, 2013) by Guru Gobind Singh Indraprastha University. Her research interests include Software Engineering, Object-Oriented Software Engineering, Microprocessors, Operating Systems, Computer Networks, Applications of Artificial Intelligence in Software Engineering, Software Project Management and Software Metrics. She has published more than 100 research publications in the area of Software Quality, software metrics, empirical software Engineering. Her seven research papers have been published as Book chapters in various Springer publications. Her Arnetminer Index is 7.

Dr. Manoj Mishra
Professor and Head
Department of Computer Science and Engineering
Indian Institute of Technology Roorkee
Roorkee, Uttarakhand - 247 667.

Dr. Manoj Mishra is a Professor at the Indian Institute of Technology Roorkee and is currently heading the Department of Computer Science and Engineering besides serving as an Engineer at CMC Ltd., New Delhi and HAL, Kanpur and H.B.T.I. Kanpur.

He was a recipient of Commonwealth scholarship for doing Ph.D. University of Newcastle Upon Tyne. He has guided his Research Scholars on imperative subject's viz., Network Forensic, Service Routing and Gateway Discovery in Mobile Ad Hoc Networks, Data Dissemination Protocols For Wireless Sensor Networks, Detection and Prevention of Phishing Attacks, Protocols for Distributed Computing Systems, Distributed Real Time Database Systems, Biological Sequences by alignment-free methods and Cache Management in Mobile Computing Environment. He has published papers centred on his core expertise areas in many Refereed National and International Journals.



Shri. Mahesh Uttam Patil

Associate Director,

Centre for Development of Advanced Computing (C-DAC, Hyderabad)

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ShivBagh, Ameerpet, Hyderabad, Telangana 500 016.

Shri. Mahesh U. Patil serves as the Associate Director and Head of the Department of Cyber Security (R&D) at the Centre for Development of Advanced Computing (C-DAC), Hyderabad. During his professional career, he has carved a niche for himself with domain expertise in research and development in Cyber Security, Mobile Security, Embedded Systems, Blockchain, Machine Learning, Education and Training. He has coordinated several research projects in Vulnerability Research, Mobile Security, Blockchain, Embedded Firmware, Security, Machine Learning for Security. He was the Co-Investigator of the project on Establishment of National Ubiquitous Computing Research Resource Centre (UCRC) at C-DAC, Hyderabad, Chennai and Bangalore which was supported by MeitY. He served as the Technical Co-ordinator of flagship Embedded Systems Course of C-DAC through which he has trained over 6000 Engineering Graduates. He was the Co-ordinator and was involved in training more than 220 Engineering College Faculty in the area of Embedded Systems and VLSI under the DIT funded project titled “Prepare Future”. He has organised and coordinated innumerable International and National Workshops in his core competent areas. His research work and research articles have been published in several national and international publications.



Dr. Deepak Singh Tomar

Associate Professor

Department of Computer Science and Engineering

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Maulana Azad National Institute of Technology

Bhopal, Madhya Pradesh.

Dr. Deepak Singh Tomar is an Associate Professor at the Maulana Azad National Institute of Technology, Bhopal, Madhya Pradesh. He is a visiting faculty at Atal Bihari Vajpayee Indian Institute of Information Technology & Management, Gwalior, Indian Institute of Information Technology, Design and Manufacturing, Jabalpur and Indian Institute of Science Education and Research, Bhopal. His specialty areas include Data Mining, Internet Technology, Computer & Network Security, Digital Forensics and Machine Learning.

He has undertaken various projects and rendered consultancy services. He is serving as an editorial member and reviewer of several internationally reputed journals and is also currently the Editorial Board Member of International Journal of Frontier in Technology, MANIT Bhopal. He has authored many research articles/books related to Data Mining, Internet Technology, Network Security, Cyber Security & Cyber Forensics. In total he has



published 81 technical papers viz., 45 papers in various International Journals, 16 papers in national level conferences, 16 papers in international level conferences besides authoring chapters in 4 books. He has guided about 10 Ph.D. Scholars, besides rendering project guidance to over 41 M. Tech Students, 15 MCA Students and 80 B.Tech students.

Mr. Hari Babu P,
Associate Director for IoT
C-DAC, Bangalore

Mr. Haribabu is working as Associate Director for IoT (Internet of Things) team as part of RTS&IoT Group at CDAC, Bangalore. His areas of expertise are in VLSI design, embedded system development, Internet of Things, Wireless sensor Networks, Energy harvesting for WSNs, FPGA design, Cryptography and Cryptanalysis. He has published more than 20 papers in International conferences and has three patents filed. He has conducted five national workshops in the area of wireless sensor networks. His research areas include energy aware routing protocols, advances in MAC protocols, automation systems for energy sector, Security in IoT. He is a senior member of IEEE.



Annexure III: List of Participants of the Course

S. No.	Participant Details
1.	Mr. Dibyajyoti Gogoi Assam
2.	Sh. Shaik Salman Asharaf Tamil Nadu
3.	Mr. Abid Hasan Bihar
4.	Sh. Ethanpa Sherpa Sikkim
5.	Mr. Mahesh. S Tamil Nadu
6.	Sh. Mohan Das Chettri Sikkim
7.	Sh. Jayanta Kumar Saha Tripura
8.	Ms. Sushama Vijayarao Admane Maharashtra
9.	Sh. Anuraag Chettri Sikkim
10.	Sh. Dhilipkumar S Tamil Nadu
11.	Sh. Subhash Yadav Uttar Pradesh
12.	Sh. Sundara Anand Tamil Nadu
13.	Ms. Shruti Sachin Nachane Maharashtra
14.	Sh. Rafwt Bismith Assam
15.	Ms.Thazhai E Shruthi Tamil Nadu

16.	Sh.Uday Pal Tripura
17.	Sh. Shreesh Kumar Sharma Uttar Pradesh
18.	Sh. M Sandeep Reddy Telangana
19.	Sh. Man Bahadur Kami Sikkim
20.	Ms. Jayasmita Roy Tripura
21.	Sh. Nasir Ahamed West Bengal
22.	Sh. Sourabh Joshi New Delhi
23.	Sh. K Guru Tamil Nadu
24.	Ms. Minara Begum Assam
25.	Ms. Mamata Choudhary Rajasthan
26.	Sh. Dheeraj Singh Uttarakhand
27.	Sh. Antony Mariya Michael Raj M Tamil Nadu
28.	Sh. Gopesh Chandra Uttar Pradesh
29.	Ms. Mohini Vitthal Patel Gujarat
30.	Ms. Keerthy K Tamil Nadu
31.	Sh. Akash Jha Madya Pradesh
32.	Ms. Ramya S Tamil Nadu

33.	Ms. Simran Sidhu Punjab
34.	Sh. G K Karthik Tamil Nadu
35.	Ms. Jayabharathi K Tamil Nadu
36.	Sh. Amit Kumar Baudh Uttar Pradesh
37.	Sh. Devi Bhakta Regmi Sikkim
38.	Ms. Vijaya Mangal Jharkhand
39.	Ms. Sureka A Puducherry
40.	Sh. Revanasiddayya Karnataka
41.	Sh. Arijit Mahato West Bengal
42.	Ms. ParthiDey Tripura
43.	Sh. Sathishkumar K Tamil Nadu
44.	Sh. Mudit Shanker Pandey New Delhi
45.	Ms. SarolineGurung Sikkim
46.	Sh. Sivakumar C Tamil Nadu
47.	Sh. Banehskhem Kharkamni Meghalaya
48.	Sh. Nirmal Kumar Jena Orissa
49.	Sh. Dawharu Brahma Assam

50.	Ms. Amenu Richa Nagaland
51.	Ms. H Katini Manipur
52.	Sh. Paukhanlun Khuptong Manipur
53.	Ms. Pushpa Ramudamu Sikkim
54.	Sh. Munna Kumar Bihar
55.	Sh. Balajiedlang Lyngkhai Meghalaya
56.	Sh. Muhammed Ashiq V K Kerala
57.	Sh. Abiraj S Tamil Nadu
58.	Sh. Santhosh K Tamil Nadu
59.	Sh. K. Bharath Tamil Nadu
60.	Sh. Agilesh R Tamil Nadu
61.	Sh. Virendra Carpenter Madhya Pradesh
62.	Smt. S Emimal Tamil Nadu
63.	Sh. Prem Chander R Tamil Nadu
64.	Sh. R. Ram Kumar Tamil Nadu