



Late Purushottam Hari (Ganesh) Patil Shikshan Sanstha's

Mauli Group of Institution's,

College of Engineering & Technology, Shegaon.

Department of Electrical (Electronics and Power) Engineering

Session: 2026-2027



ISTE Membership No : IM 2194

Faculty Chapter No : MAH-204

Student Chapter No : MH-330

Activity Report on

“ISTE Approved Short Term Training Program on Smart Grid Technologies and Digital Power System”

◆ **Title of the Program** :- ISTE Approved Short Term Training Program on
“Smart Grid Technologies and Digital Power System”

▣ **Type:** ☒ STTP ☐ FDP ☐ Workshop ☐ Webinar

✓ **Approving Body:** - Indian Society for Technical Education (ISTE)

🏛️ **Organized by** :- Electrical (Electronics and Power), MGI-COET, Shegaon

👤 **Resource Person** :- Mr. Mohan Patel

📍 **Venue** :- CAD Lab, MGI-COET, Shegaon, Maharashtra

🕒 **Duration** :- 6 Days

📅 **Dates** :- 27th July 2026 to 01st August 2026

🏠 **Mode** :- Offline

🎓 **Total Number of Students Participated:-** 75

👤 **Total Number of Faculty Participated:-** 09

👤 **Programme Coordinators** :- 1) Prof. S. R. Chauhan, 2) Prof. V. R. Trikal



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Circular or Brochure



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MAULI GROUP OF INSTITUTION'S
COLLEGE OF ENGINEERING & TECHNOLOGY SHEGAON
AICTE Approved Affiliated to Sant Gadge Baba Amravati University, Amravati, ISO 9001 2015 Certified



Department of Electrical (Electronics and Power) Engineering

ISTE Chapter
Organising
One Week Short Term Training Program(STTP)
on
“Smart Grid Technologies and Digital Power System”
from
Date: 27th July to 1st August 2026
Venue: Classroom no. 214
Name of Resource Person: Mr. Mohan Patel



Objective of the Training Program

The Training Program on Smart Grid Technologies and Digital Power Systems is a specialized workforce development initiative designed to transition traditional power systems into computerized, bidirectional, and highly automated electrical networks. The program bridges the gap between conventional electrical infrastructure and digital frameworks like SCADA, Advanced Energy Management Systems (AEMS), and cybersecurity.

Core Objectives

The primary goal is to equip utility engineers, power sector professionals, and technical researchers with the tools required to deploy and maintain digital grids.

1. **Master Modern Architecture:** Understand the design framework of two-way communication systems and computerized electric utility grids.
2. **Integrate Clean Energy:** Apply advanced techniques for syncing renewable energy sources (solar, wind), micro grids, and electric vehicles with active networks.
3. **Implement Real-Time Analytics:** Utilize Advanced Metering Infrastructure (AMI) and AI for data-driven load forecasting and grid resilience.
4. **Enforce Grid Cybersecurity:** Evaluate digital threats and deploy cyber-secure transmission tools like Advanced Distribution Management Systems (ADMS).
5. **Optimize Asset Lifecycles:** Use predictive maintenance, fault analysis, and grid automation to prevent power losses and blackouts.

Day-wise / Session-wise Summary of Proceedings



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Day 1: Monday, 27 July 2026 | Architecture & Communication Protocols.

- 09:30 AM – 11:00 AM: Inauguration Ceremony and keynote address on the evolution of digital power grids.
- 11:30 AM – 01:00 PM: Smart Grid Architecture: Comparing conventional grids with automated, bidirectional power networks.
- 02:00 PM – 03:30 PM: Communication Protocols: Core operational dynamics of IEC 61850, DNP3, and MQTT standards.
- 04:00 PM – 05:30 PM: Hands-on Lab: Simulating Intelligent Electronic Device (IED) configurations and network topographies.

Day 2: Tuesday, 28 July 2026 | Grid Automation, SCADA, & WASA

- 09:30 AM – 11:00 AM: Substation Automation: Upgrading heritage assets to digital substations using process and station buses.
- 11:30 AM – 01:00 PM: SCADA & EMS: Real-time data acquisition, control loops, and energy management frameworks.
- 02:00 PM – 03:30 PM: Wide Area Situational Awareness: Deploying Phasor Measurement Units (PMUs) and Wide Area Monitoring Systems (WAMS).
- 04:00 PM – 05:30 PM: Simulation Session: Analyzing synchro phasor data for real-time grid stability and contingency analysis.

Day 3: Wednesday, 29 July 2026 | Clean Energy Integration & Microgrids

- 09:30 AM – 11:00 AM: Renewable Penetration: Technical challenges of grid-tier synchronization for massive solar and wind plants.
- 11:30 AM – 01:00 PM: Microgrid Dynamics: Islanding mechanisms, black-start procedures, and localized peer-to-peer energy sharing.



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- 02:00 PM – 03:30 PM: Energy Storage Systems: Technical profiling of Battery Energy Storage Systems (BESS) and pumped-hydro scaling.
- 04:00 PM – 05:30 PM: Practical Lab: MATLAB/Simulink modeling of microgrid controller systems under variable load conditions.

Day 4: Thursday, 30 July 2026 | Smart Metering, ADR, & EV Charging

- 09:30 AM – 11:00 AM: Advanced Metering Infrastructure: Deployment strategies for smart meters and data concentrator units.
- 11:30 AM – 01:00 PM: Automated Demand Response: Commercial and residential load-shaping protocols during peak constraints.
- 02:00 PM – 03:30 PM: EV Infrastructure Integration: Managed V2G (Vehicle-to-Grid) charging loops and impacts on distribution transformers.
- 04:00 PM – 05:30 PM: Case Study Review: Analysis of massive AMI deployment rollouts and consumer data handling.

Day 5: Friday, 31 July 2026 | Data Analytics, Digital Twins, & AI

- 09:30 AM – 11:00 AM: Big Data in Utilities: Processing multi-source edge information from PMUs, smart meters, and weather sensors.
- 11:30 AM – 01:00 PM: AI Load Forecasting: Deploying machine learning algorithms for predictive asset state estimation and load profiles.
- 02:00 PM – 03:30 PM: Digital Twins: Constructing virtual replicas of active power networks to simulate structural failures safely.
- 04:00 PM – 05:30 PM: Coding Sandbox: Running basic Python libraries to execute a neural-network-based load forecasting model.



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Day 6: Saturday, 01 August 2026 | Grid Cybersecurity & Valedictory

- 09:30 AM – 11:00 AM: Cybersecurity Vectors: Protecting critical infrastructure against ransomware, malware, and injection attacks.
- 11:30 AM – 01:00 PM: Defense Frameworks: Implementing zero-trust utility architectures, firewalls, and encryption protocols.
- 02:00 PM – 03:30 PM: Participant Assessments: Comprehensive technical quiz and participant project presentations.
- 04:00 PM – 05:30 PM: Valedictory Session: Feedback collection, certificate distribution, and concluding remarks.



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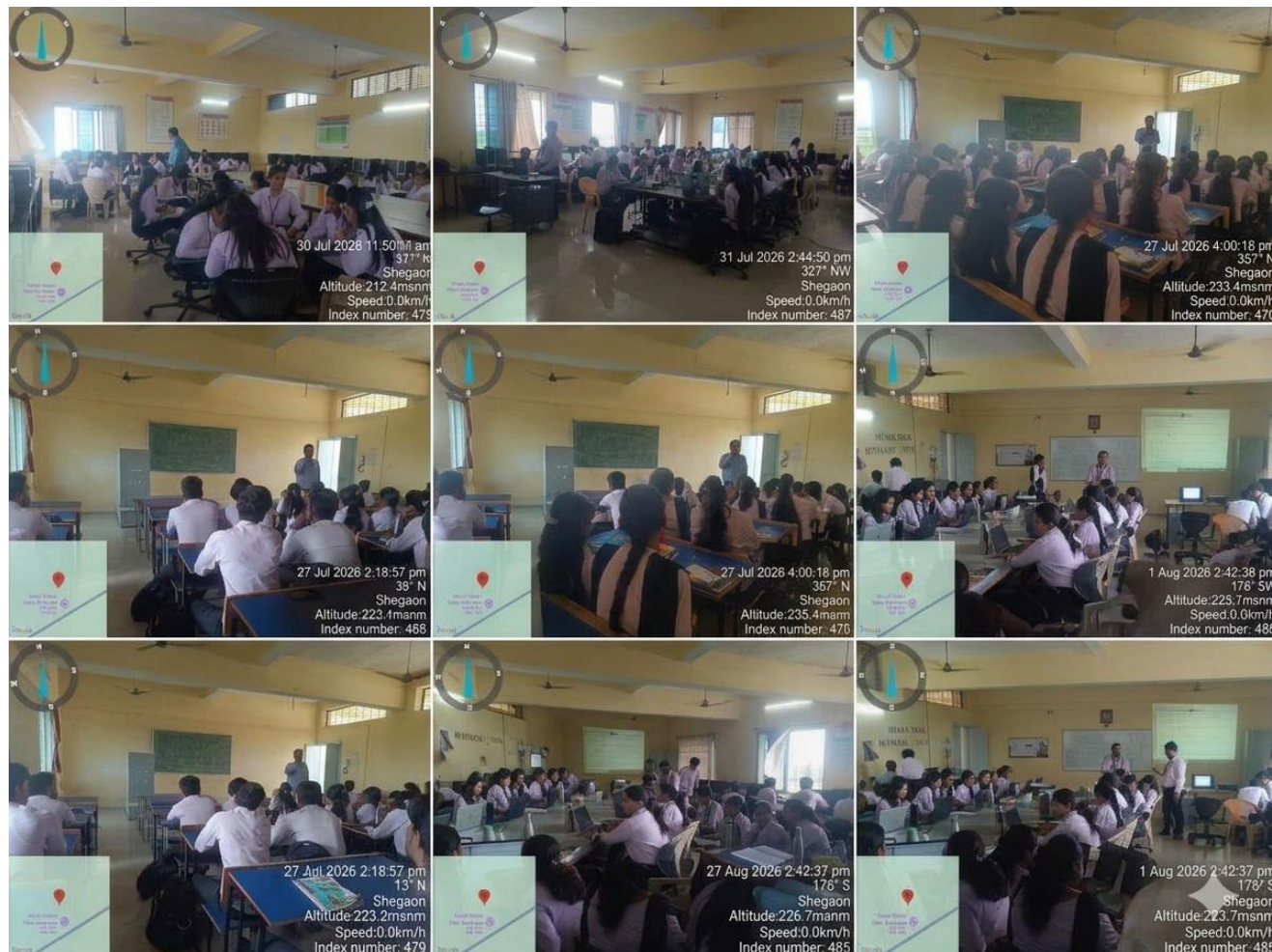
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6 Days STTP Highlights



Geotag Photos for 6 Day STTP



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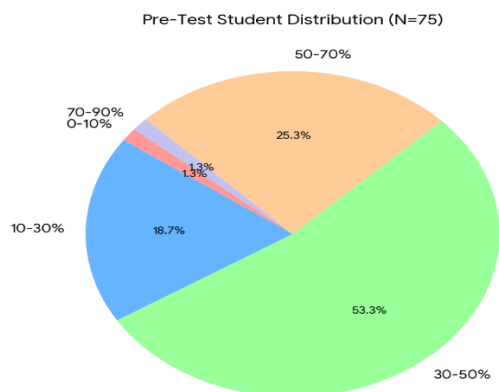
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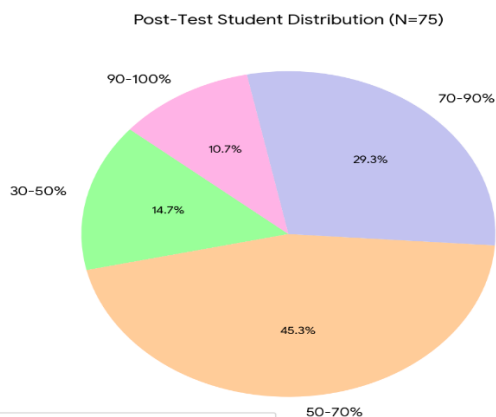
Pre-Test and Post-Test Analysis

A Pre-Test was conducted before the STTP on Smart Grid Technologies and Digital Power System to assess participants' existing knowledge. After the six-day programmed, Pre and Post-Test was conducted to evaluate ling improvement.

Score Bracket	Pre-Test Student Count	Pre-Test %	Post-Test Student Count	Post-Test %
0 - 10%	1	1.3%	0	0.0%
10 - 30%	14	18.7%	0	0.0%
30 - 50%	40	53.3%	11	14.7%
50 - 70%	19	25.3%	34	45.3%
70 - 90%	1	1.3%	22	29.3%
90 - 100%	0	0.0%	8	10.7%
Total	75	100%	75	100%



Score Brackets





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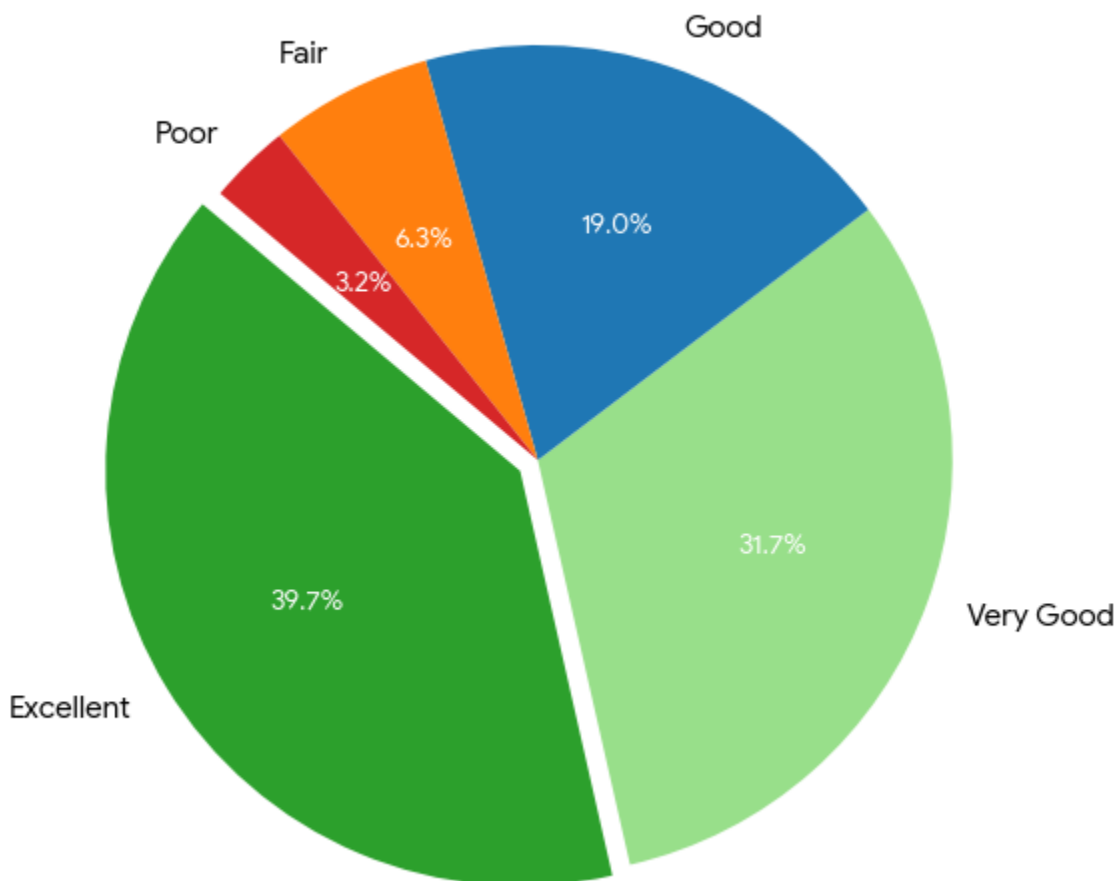
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Feedback

Participants expressed high satisfaction with the quality of the sessions and the depth of content covered. They appreciated the practical sessions, which allowed them to apply the theoretical knowledge gained during the lectures. The feedback indicated that the training program was a valuable learning experience and would be beneficial for future research and technical Skill.

Student Feedback Distribution (Total n = 63)





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Program Outcomes

After successful completion of the **ISTE Approved Short Term Training Program (STTP)** on **Smart Grid Technologies and Digital Power System**, the participants will be able to:

1. Core Technological Competencies

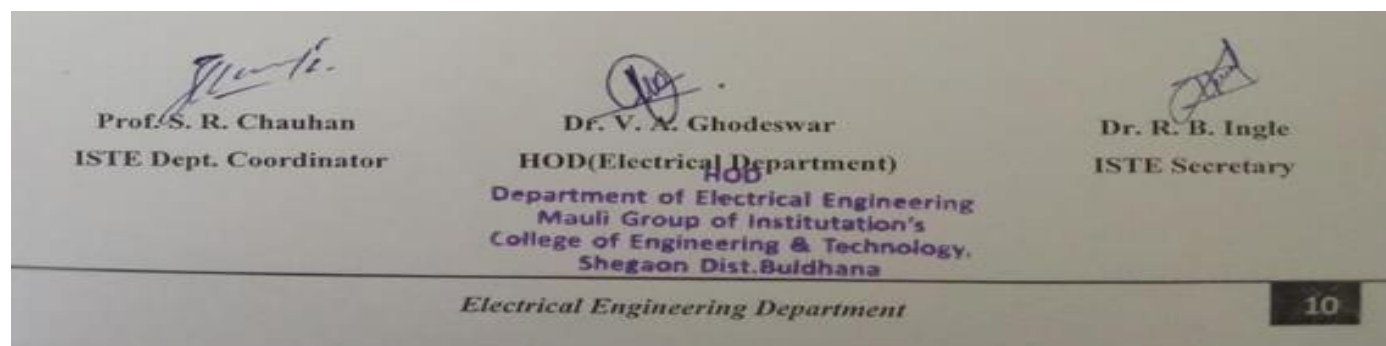
- Analyze Cyber-Physical Architectures: Evaluate the structural intersection of legacy electrical grids with modern digital communication layers and internet-of-things (IoT) frameworks.
- Implement Advanced Protection Schemes: Assess digital protection, Wide Area Monitoring Systems (WAMS), and wide-scale automation utilizing Phasor Measurement Units (PMUs).

2. Digital Data & Security Competencies

- Apply Grid Data Analytics: Utilize machine learning and data-driven algorithms for predictive maintenance, asset management, and accurate load or generation forecasting.
- Deploy Smart Market Mechanics: Formulate demand response strategies, time-of-use pricing models, and virtual power plant (VPP) architectures for modernized energy markets.

3. Academic & Practical Translation Competencies

- Master Industry Simulation Tools: Gain hands-on proficiency in modeling and executing real-time grid simulations using platforms like MATLAB/Simulink, ETAP, DIGiSILENT, or RTDS.
- Curriculum & Lab Modernization: Translate STTP technical insights into updated academic syllabi, lecture modules, and advanced laboratory experiments for undergraduate and postgraduate students.





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Attendance



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Department of Electronics & Telecommunication Engineering
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ISTE Approved Six Day's Short Term Training Program on
"Industrial Automation Using PLC And SCADA"

Speaker: Mr. Mohan Patel & Mr. Hassan Sazil

Venue: Research Lab

Date: 23/03/2025 to 28/06/2025

Time: 09:00 AM to 6:00 PM

S. No	Name of Participant	Contact Number	Signature					
			23-06-2025	24-06-2025	25-06-2025	26-06-2025	27-06-2025	28-06-2025
1	Dr. C. M. Jadhao	830884869						
2	Prof. S. S. Mhaske	9421295017						
3	Dr. Jayesh K. Kokate	8668267171						
4	Prof. Kranti S. Bhojar	8888822901						
5	Prof. Ashwini R. Patil	8638441227						
6	Prof. Pradip R. Bhakare	9075746813						
7	Prof. Sneha A. Manekar	9860408713						
8	Prof. Rachana M. Patil	9860570020						
9	Prof. Nanda Y. Mhaisagar	7875468954						
10	Prof. Abhishek P. Narkhede	9860404943						
11	Sakshi Dhanraj Satone	9322362983						
12	Samarth Narendra Pande	9172586887						
13	Shreya Sudarshan Patil	9359411423						
14	Rahul Bhumanna Sharlawar	7822827898						
15	Ankush Raju Sarode	9022452658						



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16	Gayatri Vijay Daware	766640813	<u>Gawatri</u>	<u>Gawatri</u>	<u>Gawatri</u>	<u>Gawatri</u>	<u>Gawatri</u>	<u>Gawatri</u>
17	Shruti Ravikiran Dikey	7499017243	<u>Shruti</u>	<u>Shruti</u>	<u>Shruti</u>	<u>Shruti</u>	<u>Shruti</u>	<u>Shruti</u>
18	Beena Kawdu Kolhe	8767059337	<u>Beene</u>	<u>Beene</u>	<u>Beene</u>	<u>Beene</u>	<u>Beene</u>	<u>Beene</u>
19	Gagan S. Mate	8308949151	<u>Gmate</u>	<u>Gmate</u>	<u>Gmate</u>	<u>AB</u>	<u>Gmate</u>	<u>Gmate</u>
20	Yash Anant Masne	8421573713	<u>Yash</u>	<u>Yash</u>	<u>Yash</u>	<u>Yash</u>	<u>Yash</u>	<u>Yash</u>
21	Sumit Suresh Devche	7666216291	<u>Sumit</u>	<u>Sumit</u>	<u>Sumit</u>	<u>Sumit</u>	<u>Sumit</u>	<u>Sumit</u>
22	Rucha Shailesh Joshi	9301454536	<u>Rucha</u>	<u>Rucha</u>	<u>Rucha</u>	<u>Rucha</u>	<u>Rucha</u>	<u>Rucha</u>
23	Bhagyashree S. Kadale	7020170255	<u>Bkadale</u>	<u>Bkadale</u>	<u>Bkadale</u>	<u>Bkadale</u>	<u>Bkadale</u>	<u>Bkadale</u>
24	Apurva Santosh Lahudkar	8668844019	<u>Ahudkar</u>	<u>Ahudkar</u>	<u>Ahudkar</u>	<u>Ahudkar</u>	<u>Ahudkar</u>	<u>Ahudkar</u>
25	Komal Atmaram Dali	8010422353	<u>Komal</u>	<u>Komal</u>	<u>Komal</u>	<u>Komal</u>	<u>Komal</u>	<u>Komal</u>
26	Kunal Ranjit Kubde	9373926738	<u>KKubde</u>	<u>KKubde</u>	<u>KKubde</u>	<u>KKubde</u>	<u>KKubde</u>	<u>KKubde</u>
27	Prathamesh R. Wankhade	9175100107	<u>Pwankhade</u>	<u>Pwankhade</u>	<u>Pwankhade</u>	<u>Pwankhade</u>	<u>Pwankhade</u>	<u>Pwankhade</u>
28	Trupti M. Deshmukh	8668431632	<u>T</u>	<u>AB</u>	<u>T</u>	<u>T</u>	<u>T</u>	<u>T</u>
29	Krishna Surendra Arbat	9307543605	<u>K.S.Arbat</u>	<u>K.S.Arbat</u>	<u>K.S.Arbat</u>	<u>K.S.Arbat</u>	<u>K.S.Arbat</u>	<u>K.S.Arbat</u>
30	Kanchan Gajanan Kanthale	9518708514	<u>Kanthale</u>	<u>Kanthale</u>	<u>Kanthale</u>	<u>Kanthale</u>	<u>Kanthale</u>	<u>Kanthale</u>
31	Varsha Namdeo Misal	9175980175	<u>Vmisal</u>	<u>Vmisal</u>	<u>Vmisal</u>	<u>Vmisal</u>	<u>Vmisal</u>	<u>Vmisal</u>
32	Divya Ashok Anasane	9322754018	<u>DAnasane</u>	<u>DAnasane</u>	<u>DAnasane</u>	<u>DAnasane</u>	<u>DAnasane</u>	<u>DAnasane</u>
33	Shivam Damodar Dhage	7249857953	<u>Sdhage</u>	<u>Sdhage</u>	<u>Sdhage</u>	<u>Sdhage</u>	<u>Sdhage</u>	<u>Sdhage</u>
34	Shreya Sunil Thakre	9850586464	<u>Sthakre</u>	<u>Sthakre</u>	<u>Sthakre</u>	<u>Sthakre</u>	<u>Sthakre</u>	<u>Sthakre</u>
35	Yashinavi Hase	932545378	<u>Y.Hase</u>	<u>Y.Hase</u>	<u>Y.Hase</u>	<u>Y.Hase</u>	<u>Y.Hase</u>	<u>Y.Hase</u>
36	Om V. Warade	8208193138	<u>Omwarade</u>	<u>Omwarade</u>	<u>Omwarade</u>	<u>Omwarade</u>	<u>Omwarade</u>	<u>Omwarade</u>
37	Pratik Ashok Farpat	8329253103	<u>Pfarpat</u>	<u>Pfarpat</u>	<u>Pfarpat</u>	<u>Pfarpat</u>	<u>Pfarpat</u>	<u>Pfarpat</u>
38	Trishul Shrikrishna Sarode	9529195531	<u>Tsarode</u>	<u>Tsarode</u>	<u>Tsarode</u>	<u>Tsarode</u>	<u>Tsarode</u>	<u>Tsarode</u>
39	Gauri Baban Chavan	7385037569	<u>GChavan</u>	<u>GChavan</u>	<u>GChavan</u>	<u>GChavan</u>	<u>GChavan</u>	<u>GChavan</u>



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40	Prajot Gajanan Shejole	9146897361	Pshejole	Pshejole	Pshejole	Pshejole	Pshejole	Pshejole
41	Om Chandrashekhar Sirsath	7820977317	Osirsath	Osirsath	Osirsath	Osirsath	Osirsath	Osirsath
42	Gayatri Sanjay Ghogare	8010663788	Gghogare	Gghogare	Gghogare	Gghogare	Gghogare	Gghogare
43	Akanksha Shrikrushna Javare	9822767719	A.S.Javare	A.S.Javare	A.S.Javare	A.S.Javare	A.S.Javare	A.S.Javare
44	Juilee Pravin Surose	9604260011	JSurose	JSurose	JSurose	JSurose	JSurose	JSurose
45	Sakshi Gajanan Paturde	8767044403	SPaturde	AB	SPaturde	SPaturde	SPaturde	SPaturde
46	Vijaya Dinesh Tayade	9021483444	VTayade	AB	VTayade	VTayade	VTayade	VTayade
47	Sakshi Rajesh Deshmukh	9370345433	SDeshmukh	AB	SDeshmukh	SDeshmukh	SDeshmukh	SDeshmukh
48	Tanuja Nagorao Nemade	8767926163	TNemade	AB	TNemade	TNemade	TNemade	TNemade
49	Kaveri Sanjay Jumble	8080186414	KJumble	AB	KJumble	KJumble	KJumble	KJumble
50	Shripad Vinayak Kale	7841867611	SVKale	AB	SVKale	SVKale	SVKale	SVKale
51	Manisha Mohan Borse	8766561600	MBorse	AB	MBorse	MBorse	MBorse	MBorse
52	Arati Mohan Umale	7756966928	AMUmale	AB	AMUmale	AMUmale	AMUmale	AMUmale
53	Sakshi Purushottam Rahane	7030796310	SRahane	AB	SRahane	SRahane	SRahane	SRahane
54	Arpita Manoj Sukalkar	8767853881	ASukalkar	AB	ASukalkar	ASukalkar	ASukalkar	ASukalkar
55	Neha Devanand Manwar	7972019272	NManwar	AB	NManwar	NManwar	NManwar	NManwar
56	Faizan Ahmad Khan Ashfaq Husain Khan	9511621894	FAshfaq	AB	FAshfaq	FAshfaq	FAshfaq	FAshfaq
57	Rohit Sunil Dhoran	9146897361	RDhoran	AB	RDhoran	RDhoran	RDhoran	RDhoran
58	Sakshi Anil Zope	9834503116	SAZope	AB	SAZope	SAZope	SAZope	SAZope
59	Neha Rajesh Khode	9022466849	NKhode	AB	NKhode	NKhode	NKhode	NKhode
60	Sneha Anand Deshmukh	9881343659	SDeshmukh	AB	SDeshmukh	SDeshmukh	SDeshmukh	SDeshmukh
61	Rashmi Nandu Bedekar	9730335600	RBedekar	AB	RBedekar	RBedekar	RBedekar	RBedekar
62	Snehal Shivaji Patil	8459102825	SPatil	AB	SPatil	SPatil	SPatil	SPatil
63	Gayatri Santosh Tivhare	7020121783	GTivhare	AB	GTivhare	GTivhare	GTivhare	GTivhare