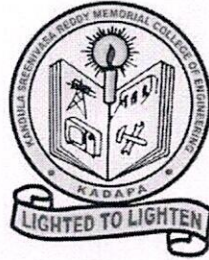


**KANDULA SRINIVASA REDDY MEMORIAL COLLEGE OF
ENGINEERING (AUTONOMOUS)**
Kadapa-516003. AP

(Approved by AICTE, Affiliated to JNTUA, Ananthapuramu, Accredited by NAAC)
(An ISO 9001-2008 Certified Institution)

DEPARTMENT OF MECHANICAL ENGINEERING



Certification Course on

“PROCESS PIPING FABRICATION”

Resource Person : Dr. B. Sudharasan, Assistant Professor, Dept. of ME, KSRMCE

Course Coordinators: P Siva Seshu, Assistant Professor, Dept. of ME, KSRMCE

Date: 10/12/2019 to 26/12/2019



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Lr./KSRMCE/ME/2019-20/

Date: 08-12-2019

To
The Principal,
KSRMCE,
Kadapa.

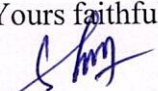
Sub: Permission to Conduct Certificate Course on “**Process Piping Fabrication**” from
10-12-2019 to 26-12-2019 – Reg.

Respected Sir,

The Department of Mechanical Engineering is planning to offer a certification course on “**Process Piping Fabrication**” to B. Tech. students. The course will be conducted from 10-12-2019 to 26-12-2019. In this regard, we are requesting you to grant permission to conduct certificate course.

Thanking you

Yours faithfully


(P. SIVA SESHU),
(Asst. Professor)

*Forwarded to Principal Sir
CO. Jant*

*Permit Head
U. S. S. Mm/4
08/12/2019*



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Lr./KSRMCE/ME/2019-20/

Date: 08-12-2019

CIRCULAR

The Department of Mechanical Engineering is offering a certification course on “**Process Piping Fabrication**” from 10-12-2019 to 26-12-2019 to B.Tech students. In this regard, interested students are required to register for the Certification Course.

Course Coordinator

P. Siva Seshu,
Department of Mechanical Engineering

Copy to:
IQAC - KSRMCE

HoD

Professor & head
Department of Mechanical Engineering
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DEPARTMENT OF MECHANICAL ENGINEERING

Certification Course on PROCESS PIPING FABRICATION

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COORDINATOR

HoD

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SYLLABUS

PROCESS PIPING FABRICATION

Chapter-1

Introduction to Piping:

Introduction to piping, Pipe classification, general definitions, length area, surface, volume, acronyms and abbreviation colour coding of piping. Concept of high point vent and low point vent drain. Duties and responsibilities of piping field engineer and role of field engineer in safety field craft supports/communications.

Chapter-2

Life Cycle of Piping Process Plants:

Introduction to the major phases of piping process plants. Feasibility study (techno-economical survey), design, construction commission/erection phase and operational/production phase

Chapter-3

Piping Components:

Pipe and tube product, pipe sizes and materials, pipes joints, bending and valves. Strainers, traps, expansion joints, threaded joints, flanges, gaskets, fasteners, welded, brazed joint and joining ductile or cast iron pipes.

Hanger and Supports (Restrain):

Concept and function, classification/types of supports, pipe support material, oversized and slotted holes, bolting installation procedure, and hanger installation guide lines, calculation for pipe supports

Chapter-4

Piping Codes and Standards:

Introductions of ASME codes, code case interpretation, introduction of ASME, Introduction of ANSI, Introduction of ASTM, introduction of API and introduction of AWS.

Chapter-5

Pipe Drawing:

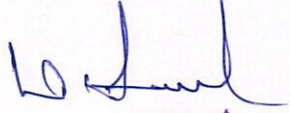
Piping drawing symbols and abbreviations, types of drawing, introduction to simple piping drawing, plot plan, G. A. drawing, process flow diagram, piping and instrumentation, piping Isometric drawing and equipment lay-out.

Pipe Coating and Insulation:

Introduction and function, definition, types, surface preparation for coating and painting, painting as coating, terminology of painting, problems related to painting and coating, definition of insulation, classification of insulation and functions and objectives of insulation.

Learning References

1. Sushil kumar srivastava; "Maintenance engineering and management", PHI learning Pvt.Ltd.
2. S. V. Nadkarni; "Modern arc welding", Oxford publication.
3. Mohinder L. Nayyar; "Piping/mechanical hand book", Peter H. O. Fischer, Manager, Pipeline operations, Bechtel.


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SCHEDULE

DEPARTMENT OF MECHANICAL ENGINEERING

Certification course on

“PROCESS PIPING FABRICATION”

| Date | Timing | Resource Person | Topic to be covered |
|------------|--------------|-------------------|---|
| 10-12-2019 | 4 PM to 6 PM | Dr. B. Sudharshan | Introduction to piping, Pipe classification, general definitions, length area, surface, volume, acronyms and abbreviation colour coding of piping |
| 11-12-2019 | 4 PM to 6 PM | Dr. B. Sudharshan | Concept of high point vent and low point vent drain. Duties and responsibilities of piping field engineer and role of field engineer in safety field craft supports / communications. |
| 12-12-2019 | 4 PM to 6 PM | Dr. B. Sudharshan | Introduction to the major phases of piping process plants.. |
| 13-12-2019 | 4 PM to 6 PM | Dr. B. Sudharshan | Feasibility study (techno-economical survey), design, construction commission / erection phase and operational / production phase |
| 14-12-2019 | 4 PM to 6 PM | Dr. B. Sudharshan | Pipe and tube product, pipe sizes and materials, pipes joints, bending and valves. |
| 16-12-2019 | 4 PM to 6 PM | Dr. B. Sudharshan | Strainers, traps, expansion joints, threaded joints, flanges, gaskets, fasteners, welded, brazed joint and joining ductile or cast iron pipes. |
| 17-12-2019 | 4 PM to 6 PM | Dr. B. Sudharshan | Concept and function, classification / types of supports, pipe support material, oversized and slotted holes, |
| 18-12-2019 | 4 PM to 6 PM | Dr. B. Sudharshan | bolting installation procedure, and hanger installation guide lines, calculation for pipe supports |
| 19-12-2019 | 4 PM to 6 PM | Dr. B. Sudharshan | Introductions of ASME codes, code case interpretation, introduction of ASME, Introduction of ANSI., |
| 20-12-2019 | 4 PM to 6 PM | Dr. B. Sudharshan | Introduction of ASTM, introduction of API and introduction of AWS. |
| 21-12-2019 | 4 PM to 6 PM | Dr. B. Sudharshan | Piping drawing symbols and abbreviations, types of drawing, introduction to simple piping drawing, plot plan, |
| 23-12-2019 | 4 PM to 6 PM | Dr. B. Sudharshan | G. A. drawing, process flow diagram, |



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Report of
Value Added Course on "PROCESS PIPING FABRICATION"
From 10th Dec 2019 to 26th Dec 2019

| | | |
|--------------------------------|---|--|
| Target Group | : | B.Tech Students |
| Details of Participants | : | 65 Students |
| Co-coordinator(s) | : | Sri P.SIVA SESHU |
| Resource Persons | : | Sri Dr. B. SUDHARSHAN |
| Organizing Department | : | Mechanical Engineering |
| Venue | : | Seminar Hall, Mechanical Department |

Description:

The Department of Mechanical Engineering conducted a certification course on "PROCESS PIPING FABRICATION" 10th Dec 2019 to 26th Dec 2019. The course duration was 30 hours. The course Resource Persons are Sri Dr. B. Sudharshan, Assistant Professor and Sri P.Siva Seshu, Assistant Professor Department Mechanical Engineering, KSRMCE.

The main objective of this course is to identify the Life cycle of piping process plants.

It involves pipe classification, duties and responsibilities of piping field Engineer and role of field engineer in safety field craft supports/communications.

It involves Piping components expansion joints, thread joints flanges, gaskets, fasteners, welded, brazed joint and joining ductile or cast iron pipes.

It involves Hanger and Supports concepts and function, classification of supports, pipe support material, overused and slotted holes, bolting installation procedure, and hanger installation guide lines, calculation for pipe supports.

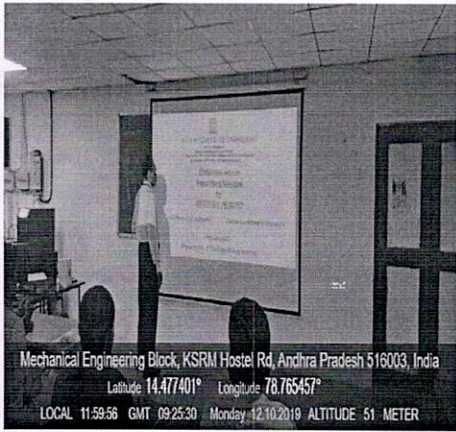
It involves Piping codes and standards, introduction of ASME codes, code case interpretation, introduction of ASME, introduction of API and introduction of AWS.

On final Day last session Value added course is Ended with oath of thanks and certificate distribution by coordinator & HOD to the Participants. Feedback from participants are collected.

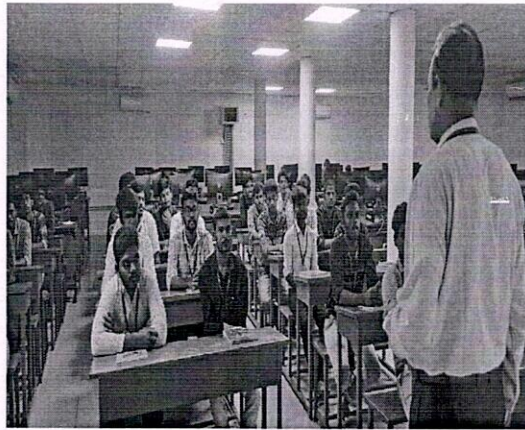


Photos

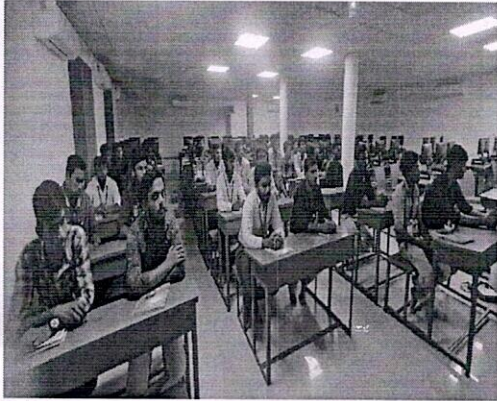
The pictures taken during the course are given below:



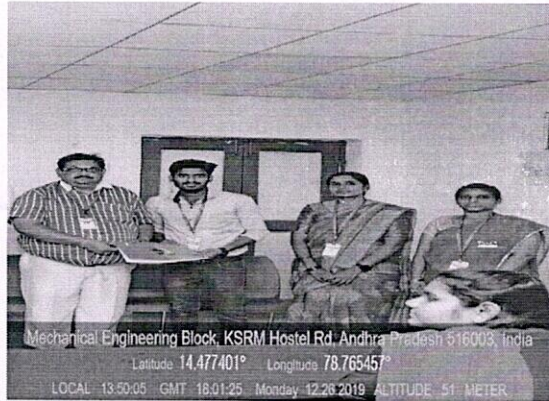
Inaguration of Programme



Students listening the lecture



Students listening the lecture



Certificate distribution to the students


Coordinators


HoD

Professor & head
Department of Mechanical Engineering
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Kadapa, Andhra Pradesh, India - 516003

Certification Course on

"PROCESS PIPING FABRICATION"

10/12/2019 to 26/12/2019

ORGANIZED BY

DEPARTMENT OF MECHANICAL ENGINEERING



K.S.R.M. COLLEGE OF ENGINEERING

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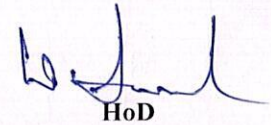
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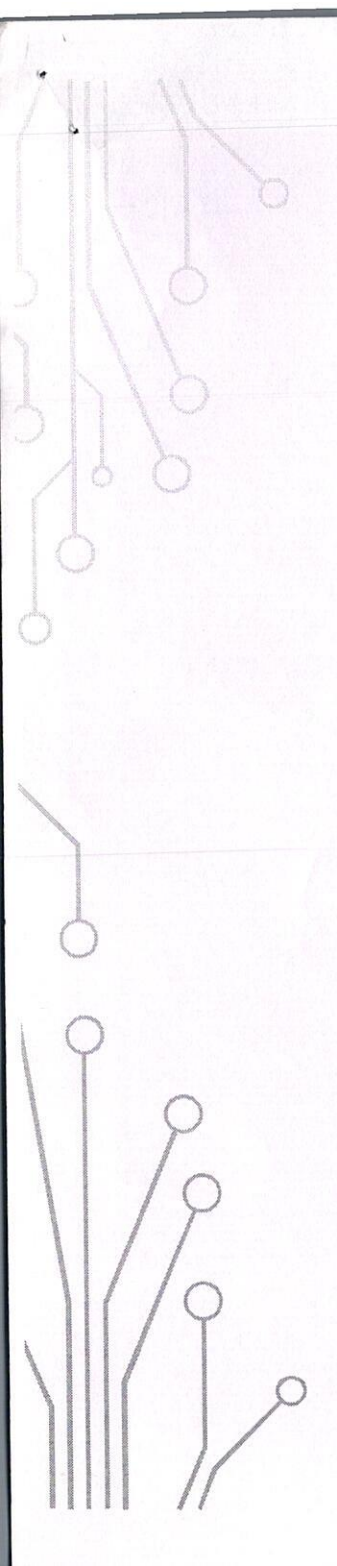
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| 65 | 189Y5A0359 | Y.RAMMOHAN | P | P | P | P | A | P | P | P | P | P | P | P | P | P | P |


COORDINATOR

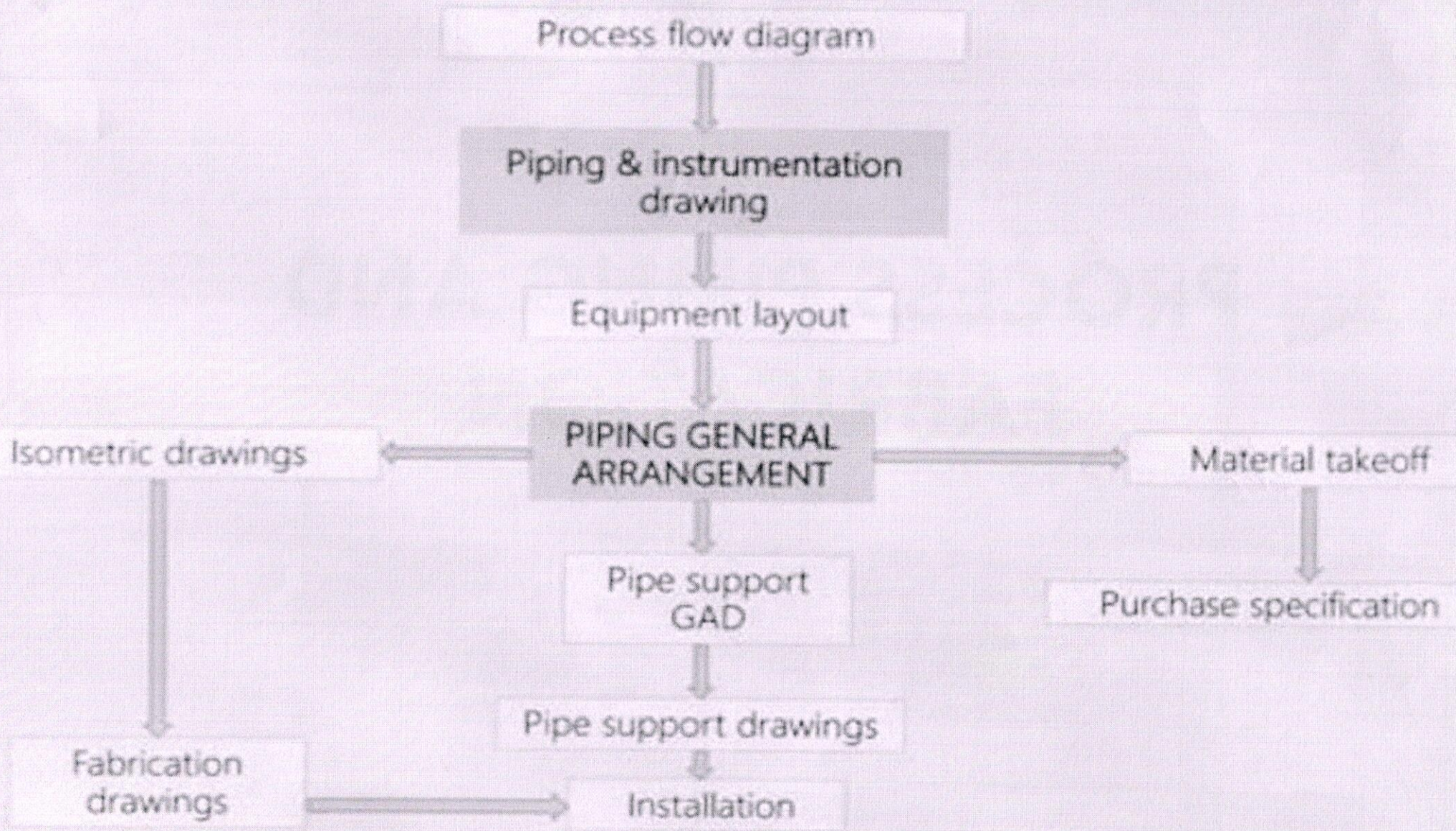

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PROCESS PIPING AND FABRICATION

BLOCK DIAGRAM OF PIPING ENGINEERING



PIPING SYSTEM

- It convey the fluids, between the various equipment and end users.
- It consists of various components such as pipes, valves, fittings, online measuring instruments, etc.

DIFFERENCE BETWEEN PIPE AND TUBE

PIPE

- It is a tubular product of circular cross section that has specific sizes and thickness governed by particular dimensional standards.

TUBE

- It is a hollow product having circular, elliptical or square cross section or cross section of any closed perimeter. Tubes are also used for heat transfer purpose.

PIPE PRODUCTS

SEAMLESS PIPE

- A wrought tubular product made without a welded seam by drawing or extrusion process

WELDED PIPES

- Welded pipes are manufactured by ERW (Electric Resistance Welded).
- Pipes in small quantities are manufactured by EFW (electric fusion - welding) process .
- The longitudinal seam is welded by manual or automatic electric arc process.

CLASSIFICATION BASED ON END USE

LINE PIPE

- It is mainly used for conveying fluids over long distances and are subjected to fluid pressure. It is usually not subjected to high temperature.

PRESSURE PIPE

- These are subjected to fluid pressure and /or temperature. Fluid pressure is generally internal pressure or may be external pressure (e.g. Jacketed piping) and are mainly used as plant piping.

STRUCTURAL PIPE

- These are not used for conveying fluids and not subjected to fluid pressures or temperature. They are used as structural components (e.g. handrails, columns, sleeves etc.) and are subjected to static loads only.

NOMINAL PIPE SIZE (NPS)

- Pipes are designated by nominal size, starting from 1/8" nominal size, and increasing in steps.
- For the nominal size up to including 12" there is one unique OD (different from nominal size) and ID would vary depending on schedule number.
- For nominal sizes 14" and above O.D is same as nominal size.

WHY PIPE SIZE IS MORE IMPORTANT

- According to American Survey 30 % of the total cost of a chemical process plant goes for piping elements and valves. Take optimum pipe size while designing the pipe size.

AVAILABILITY OF PIPE SIZES

1. Sizes in steps of $\frac{1}{8}$ " from $\frac{1}{8}$ " to $\frac{1}{2}$ "
2. Sizes in steps of $\frac{1}{4}$ " from $\frac{1}{2}$ " to $1 \frac{1}{2}$ "
3. Sizes in steps of $\frac{1}{2}$ " from $1 \frac{1}{2}$ " to 4"
4. Sizes in steps of 1" from 4" to 6"
5. Sizes in steps of 2" from 6" to 36"

WALL THICKNESS TOLERANCE

MILL TOLERANCE

- During manufacturing of seamless pipe while positioning the mandrel, this can deviate from its center by maximum of $\pm 12.5\%$. Hence minimum thickness of seamless pipe is considered $\pm 12.5\%$ less from average wall thickness.

MILL LENGTH

- Also known as random length. The usual run off mill pipe is 16 to 20 Ft. in length. Line pipe and pipe for power plant used are sometimes made in double length of 30-35 ft.

PIPE SCHEDULES & WEIGHTS

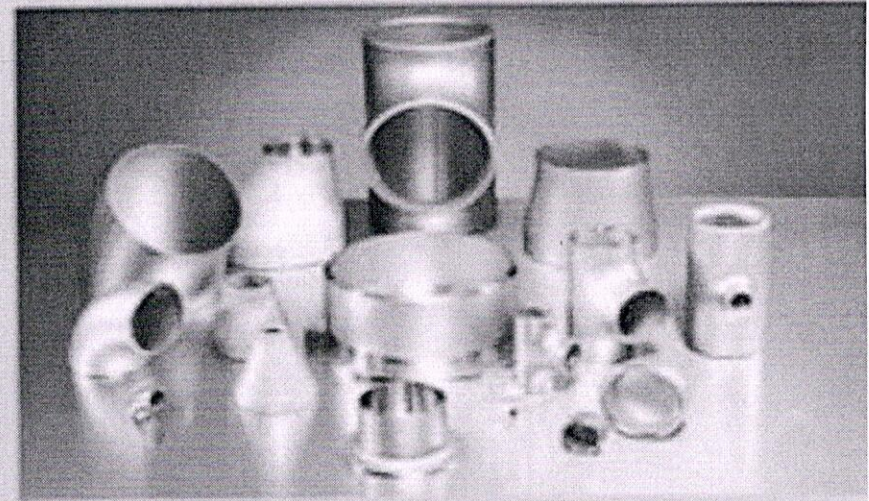
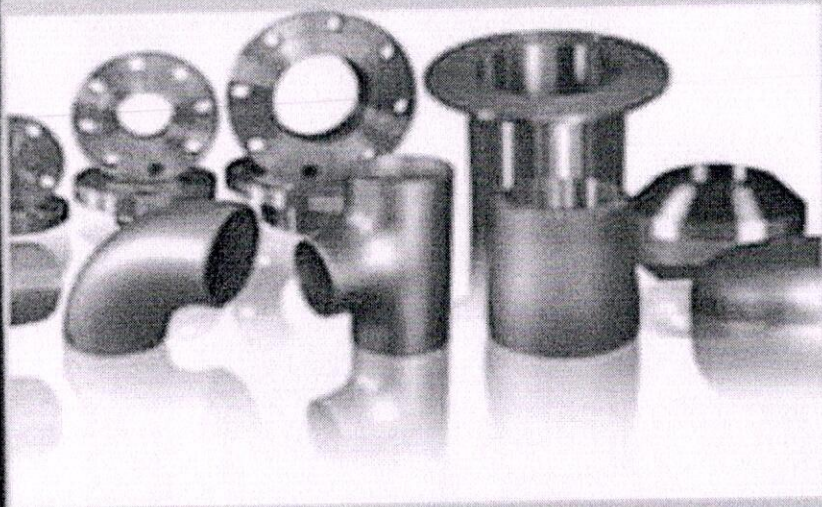
| NOMINAL PIPE SIZE | OUTSIDE DIAMETER | SCHEDULE 40 | | SCHEDULE 80 | |
|----------------------|---------------------|----------------|----------------|----------------|-------------------|
| | | Wall Thick. | Wt. Per Ft. | Wall Thick. | Weight Per Ft. |
| 1/8 | 0.405 | 0.068 | 0.245 | 0.095 | 0.315 |
| 1/4 | 0.540 | 0.088 | 0.425 | 0.119 | 0.535 |
| 3/8 | 0.675 | 0.091 | 0.568 | 0.126 | 0.739 |
| 1/2 | 0.840 | 0.109 | 0.851 | 0.147 | 1.088 |
| 3/4 | 1.050 | 0.113 | 1.131 | 0.154 | 1.474 |
| 1 | 1.315 | 0.133 | 1.679 | 0.179 | 2.172 |
| 1-1/4 | 1.660 | 0.140 | 2.273 | 0.191 | 2.997 |
| 1-1/2 | 1.900 | 0.145 | 2.718 | 0.200 | 3.631 |
| 2 | 2.375 | 0.154 | 3.653 | 0.218 | 5.022 |
| 2-1/2 | 2.875 | 0.203 | 5.793 | 0.275 | 7.661 |
| 3 | 3.500 | 0.216 | 7.576 | 0.300 | 10.250 |
| 3-1/2 | 4.000 | 0.226 | 9.109 | 0.318 | 12.510 |
| 4 | 4.500 | 0.237 | 10.790 | 0.337 | 14.980 |
| 5 | 5.563 | 0.258 | 14.620 | 0.375 | 20.780 |
| 6 | 6.625 | 0.280 | 18.970 | 0.432 | 28.570 |
| 8 | 8.625 | 0.322 | 28.550 | 0.500 | 43.390 |
| 10 | 10.750 | 0.365 | 40.480 | 0.500 | 54.740 |
| 12 | 12.750 | 0.375 | 49.560 | 0.500 | 65.420 |

COMPONENTS OF PIPING SYSTEM

1. Pipe
2. Fittings (Elbows, Tees, Reducers, Couplings, Unions, Olets)
3. Flanges
4. Gaskets
5. Fasteners
6. Valves
7. Special fittings
8. Specialty items (strainers, traps, bellows etc.)

FITTINGS

- Pipe fittings are the components which tie together pipelines, valves, and other parts of a piping system.
- Fittings may come in butt Welded, Socket welded, Screwed and flanged connections.
- They are used to change the size of the line or its direction.



REDUCERS

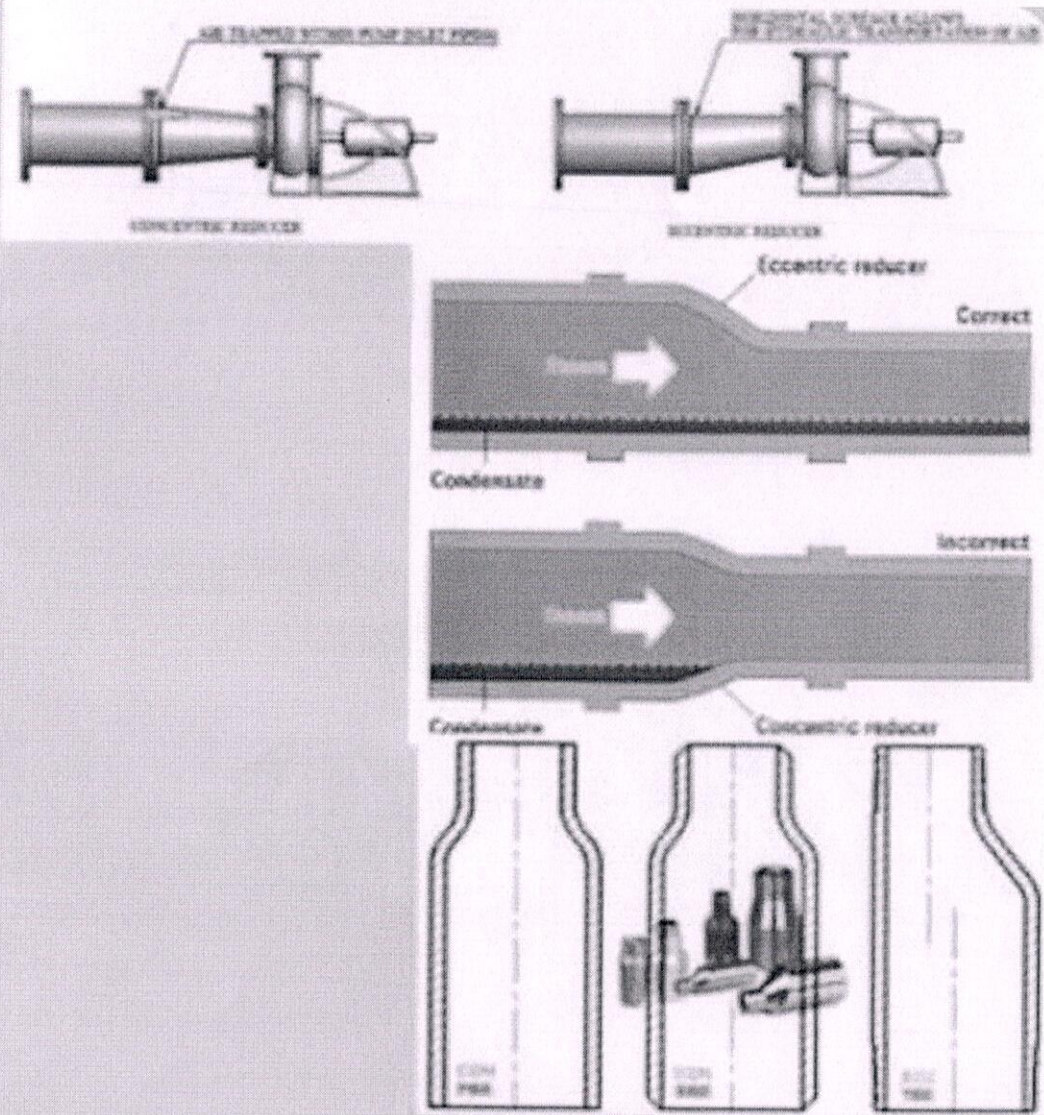
CONCENTRIC REDUCER

It is used on pump discharge, vertical pipe line etc.

SWAGE NIPPLE

It is also like a reducer, it connect butt welded pipe to smaller screwed or welded pipe .

concentric and eccentric swage nipples are also available.



THERMAL EXPANSION OF PIPE

Each material has its own coefficient of thermal expansion.

If the pipe is of carbon steel or low alloy steel, it will expand at the rate of 6 to 7mm every meter length as the temperature raises to 500 degree C.

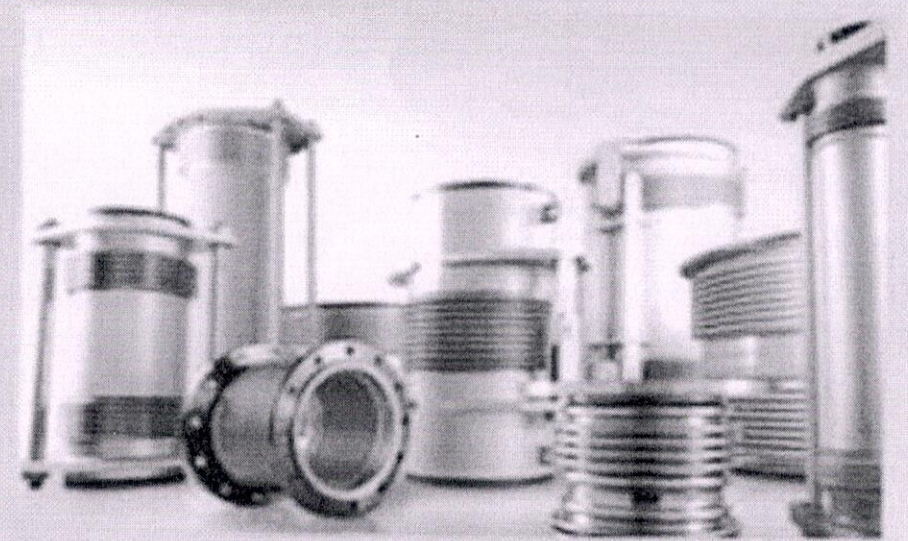
To accommodate the thermal expansion, these joints are provided.

EXPANSION JOINTS

Expansion joints are used to accommodate certain degree of linear expansion and torsional misalignments in the piping system

BELLOW TYPE

Metallic bellows of compatible materials (usually stainless steels) are used to compensate the thermal expansion. Thickness of bellows normally 1 to 2mm.



HYDROSTATIC TEST

TEST PRESSURE = $(1.5 \times \text{Design Pressure} \times \text{stress value at test temp}) / \text{stress value at design temperature}$

TEST DURATION

A leak test shall be maintained for at least 10 minutes, and all joints may be examined for leaks.

TEST MEDIUM

Water at ambient temperature is the test medium. In case of possibility of freezing exists, other fluids may be used.

PNEUMATIC TEST

TEST PRESSURE

$(1.1 \times \text{Design Pressure} \times \text{stress value at test Temperature}) / \text{stress value at design temperature}$

TEST DURATION

A leak test shall be maintained for at least 10 minutes, and all joints may be examined for leaks.

TEST MEDIUM

Air at ambient temperature is the test medium.

IMPORTANT SAFETY POINTS

- DRAIN THE PIPE ONLY WHEN TOP OUT LET IS KEPT OPEN.
- USE MINIMUM 2 GAUGES FOR ANY HYDROTEST.
- NEVER USE HIGH DISCHARGE PUMPS FOR TESTING LOW VOLUME PIPE. (VOLUM LESS THAN 10 M³).
- NEVER PRESSURISE ANY VESSEL ABOVE TEST PRESSURE.

PIPING FABRICATION

- Cutting
- Bending
- Forming
- welding

Cutting and beveling of the edges by Mechanical Methods (lathes, grinding Wheels / Thermal methods (oxy – fuel gas cutting, Arc cutting.)

PIPING THINNING

Bending results in the thinning of the outer surface (extrados) and thickening of the inner surface (intrados) of the pipe.

It can be approximated by multiplying the thickness of the pipe before bending by

$$R/(R+ r)$$

Where R - Radius of Bend &

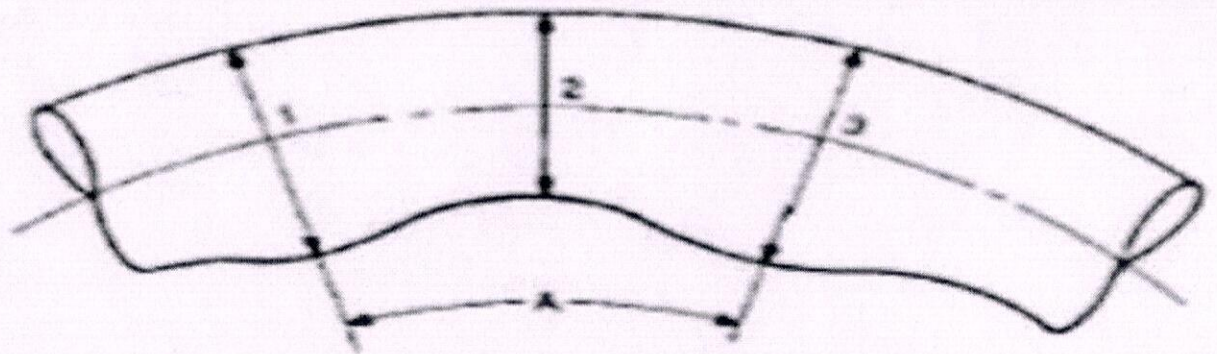
r - Pipe radius. (Half of the O.D)

BUCKLING

Bending of pipe with large diameter to thickness ratio is prevented by buckling rather than thickening of the intrados and mandrels are used.

Ratio of the distance between the crest to depth is greater than 12 ($A/\text{depth} > 12$).

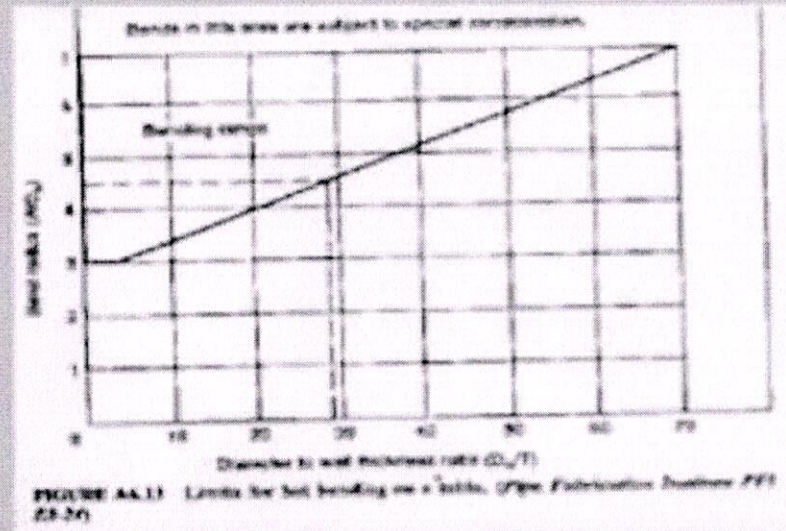
$$\text{Depth} = ((\text{OD}_1) + (\text{OD}_3)) / 2 - (\text{OD}_2)$$



HOT BENDING

Carried out in the temperature range of 1036*c to 1121*c by induction bending. Where suitable cold bending equipment is unavailable

Pipes of size NPS 3 ½ to NPS 64, radius of 8 to 400 inch and wall thickness 4" can be bend by Induction Bender .



The image features a light purple background with faint, stylized circuit board patterns in the corners. These patterns consist of thin lines and small circles, resembling electronic traces and components. There are three circular punch holes at the top of the page. The text 'THANK YOU' is centered in a bold, black, sans-serif font.

THANK YOU



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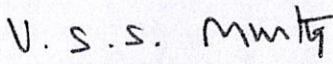
Certificate of Completion

This to certify that Mr/Ms **Y.BHARGAV** Bearing the Roll Number **189Y5A0356** has Successfully Completed Value Added Course on "**PROCESS PIPING FABRICATION**" from **10/12/2019** to **26/12/19**,

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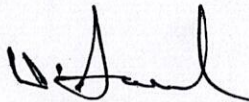
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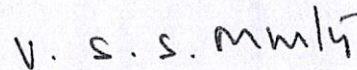
Certificate of Completion

This to certify that Mr/Ms **C.MOULA** Bearing the Roll Number **189Y5A0307** has
Successfully Completed Value Added Course on "**PROCESS PIPING FABRICATION**"
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This to certify that Mr/Ms **G.NITIN** Bearing the Roll Number **179Y1A0320** has Successfully Completed Value Added Course on "**PROCESS PIPING FABRICATION**" from **10/12/2019** to **26/12/19**,

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DEPARTMENT OF MECHANICAL ENGINEERING

FEEDBACK of Certification Course on PRODUCT AND PROCESS DESIGN from 10th December 2019 to 26th December 2019

LIST OF PARTICIPANTS

| S. No. | Roll No. | Name of the Student | Is the Course content meet your expectation | Is the lecture sequence well planned | Is the level of course high | Is the course exposed you to the new knowledge and practices | Rate the Knowledge of the Speaker | Rate the value of Course in increasing your skills | Any Issues |
|--------|------------|-------------------------|---|--------------------------------------|-----------------------------|--|-----------------------------------|--|------------|
| 1 | 179Y1A0305 | B. B. SURENDRA YADAV | Satisfactory | Excellent | Excellent | Excellent | good | Excellent | |
| 2 | 179Y1A0308 | BOLLINENI HARIKRISHNA | Excellent | Excellent | Satisfactory | Excellent | Excellent | good | |
| 3 | 179Y1A0309 | BOYA NAVEEN | Excellent | Excellent | Excellent | Excellent | Excellent | Excellent | |
| 4 | 179Y1A0310 | C .NARENDRA REDDY | Excellent | Excellent | Excellent | Excellent | Excellent | Excellent | |
| 5 | 179Y1A0311 | CHIMMANI PAVAN KUMAR | Excellent | Excellent | Excellent | Excellent | Excellent | Excellent | |
| 6 | 179Y1A0312 | DOLA PURNA VISEH SAGAR | Excellent | Excellent | Excellent | Excellent | Excellent | Excellent | |
| 7 | 179Y1A0314 | EPPARLA SARATH CHANDRA | Satisfactory | Excellent | Excellent | Excellent | good | Excellent | |
| 8 | 179Y1A0317 | G VEERASIVA REDDY | Excellent | Excellent | Satisfactory | Excellent | Excellent | good | |
| 9 | 179Y1A0319 | G.V DILIP KUMAR REDDY | Excellent | Excellent | Excellent | Excellent | Excellent | Excellent | |
| 10 | 179Y1A0320 | GURRAMPATI NITHIN | Excellent | Excellent | Excellent | Excellent | Excellent | Excellent | |
| 11 | 179Y1A0322 | J.PAVAN KUMAR | Excellent | Excellent | Excellent | Excellent | Excellent | Excellent | |
| 12 | 179Y1A0323 | KALLA VASU | Excellent | Good | Excellent | Excellent | Excellent | Excellent | |
| 13 | 179Y1A0324 | K SREENATH REDDY | Satisfactory | Excellent | Excellent | Excellent | good | Excellent | |
| 14 | 179Y1A0325 | KONDA LOKESWAR REDDDY | Excellent | Excellent | Satisfactory | Excellent | Excellent | good | |
| 15 | 179Y1A0326 | KOTAPATI DINESH KUMAR | Satisfactory | Excellent | Excellent | Excellent | good | Excellent | |
| 16 | 179Y1A0327 | KUMMITI MADDILETI REDDY | Excellent | Excellent | Satisfactory | Excellent | Excellent | good | |
| 17 | 179Y1A0328 | L VEERA LOKESH REDDY | Excellent | Excellent | Excellent | Excellent | Excellent | Excellent | |
| 18 | 179Y1A0329 | M MAHESH REDDY | Excellent | Excellent | Excellent | Excellent | Excellent | Excellent | |
| 19 | 179Y1A0332 | M PRASANTH PRANAY | Excellent | Excellent | Excellent | Excellent | Excellent | Excellent | |
| 20 | 179Y1A0333 | MEKALA NEELESH RAHUL | Satisfactory | Excellent | Excellent | Excellent | good | Excellent | |



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| | | | | | | | | | |
|----|------------|----------------------------|--------------|-----------|--------------|-----------|-----------|-----------|--|
| 21 | 179Y1A0334 | MODDI SIVA SAI | Excellent | Excellent | Satisfactory | Excellent | Excellent | good | |
| 22 | 179Y1A0335 | MUDE SURYAPRAKASH NAIK | Satisfactory | Excellent | Excellent | Excellent | good | Excellent | |
| 23 | 179Y1A0336 | MUMMADI SUMANTH REDDY | Excellent | Excellent | Satisfactory | Excellent | Excellent | good | |
| 24 | 179Y1A0338 | ODETI SHARIEF | Excellent | Excellent | Excellent | Excellent | Excellent | Excellent | |
| 25 | 179Y1A0339 | P. V. RAVINDRA REDDY | Excellent | Excellent | Excellent | Excellent | Excellent | Excellent | |
| 26 | 179Y1A0340 | P.VINOD KUMAR REDDY | Satisfactory | Excellent | Excellent | Excellent | good | Excellent | |
| 27 | 179Y1A0341 | PALLE MAHENDRA REDDY | Excellent | Excellent | Satisfactory | Excellent | Excellent | good | |
| 28 | 179Y1A0344 | P. V. A. RAM KISHORE REDDY | Excellent | Excellent | Excellent | Excellent | Excellent | Excellent | |
| 29 | 179Y1A0347 | S.V. BHARADWAJA REDDY | Satisfactory | Excellent | Excellent | Excellent | good | Excellent | |
| 30 | 179Y1A0348 | S SUNILKUMAR RAJU | Excellent | Excellent | Satisfactory | Excellent | Excellent | good | |
| 31 | 179Y1A0349 | S ABDUR REHAMAN HUSSAN | Excellent | Excellent | Excellent | Excellent | Excellent | Excellent | |
| 32 | 179Y1A0350 | SHAIK.IRFAN AHAMMAD | Excellent | Excellent | Excellent | Excellent | Excellent | Excellent | |
| 33 | 179Y1A0353 | SHAIK MOHAMMED ABBAS | Excellent | Excellent | Excellent | Excellent | Excellent | Excellent | |
| 34 | 179Y1A0354 | SHAIK MOHAMMED FAYAZ | Excellent | Excellent | Excellent | Excellent | Excellent | Excellent | |
| 35 | 179Y1A0355 | SHAIK MOHISIN AHMED | Excellent | Excellent | Satisfactory | Excellent | Excellent | Excellent | |
| 36 | 179Y1A0356 | SHAIK NAZAR HUSSAIN | Excellent | Excellent | Excellent | Excellent | Excellent | Excellent | |
| 37 | 179Y1A0357 | SHAIK SAMEER AHAMMAD | Satisfactory | Excellent | Excellent | Excellent | good | Excellent | |
| 38 | 179Y1A0358 | SHAIK SUHAL UR REHMAN | Excellent | Excellent | Satisfactory | Excellent | Excellent | good | |
| 39 | 179Y1A0359 | SHAIK ZAHEER AHAMMAD | Satisfactory | Excellent | Excellent | Excellent | good | Excellent | |
| 40 | 179Y1A0361 | S. VENKATA SAI JASWANTH | Excellent | Excellent | Satisfactory | Excellent | Excellent | good | |
| 41 | 179Y1A0362 | TALARI ABHISHEK | Excellent | Excellent | Excellent | Excellent | Excellent | Excellent | |
| 42 | 179Y1A0363 | TALARI BOYA SRINIVASULU | Excellent | Excellent | Excellent | Excellent | Excellent | Excellent | |
| 43 | 179Y1A0364 | THALAMOPIRI RAJESH | Satisfactory | Excellent | Excellent | Excellent | good | Excellent | |
| 44 | 179Y1A0367 | V. SATHISH KUMAR REDDY | Excellent | Excellent | Satisfactory | Excellent | Excellent | good | |
| 45 | 179Y1A0370 | VULLITHULA HARI PRASAD | Excellent | Excellent | Excellent | Excellent | Excellent | Excellent | |
| 46 | 179Y1A0371 | Y SHAIK SARFARAAZ | Excellent | Excellent | Excellent | Excellent | Excellent | Excellent | |
| 47 | 189Y5A0301 | B.SIVA REDDY | Satisfactory | Excellent | Excellent | Excellent | good | Excellent | |
| 48 | 189Y5A0302 | B.EERANNA | Excellent | Excellent | Satisfactory | Excellent | Excellent | good | |
| 49 | 189Y5A0307 | C.MOULA | Excellent | Excellent | Excellent | Excellent | Excellent | Excellent | |
| 50 | 189Y5A0308 | CHINNABOINA MAHESH | Excellent | Excellent | Excellent | Excellent | Excellent | Excellent | |
| 51 | 189Y5A0310 | D.ASHOK KUMAR | Excellent | Excellent | Excellent | Excellent | Excellent | Excellent | |
| 52 | 189Y5A0318 | J.MAHENDRA | Excellent | Excellent | Excellent | Excellent | Excellent | Excellent | |
| 53 | 189Y5A0319 | K.UDAY KUMAR REDDY | Excellent | good | Excellent | Excellent | Excellent | Excellent | |



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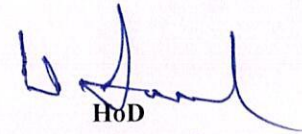
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|----|------------|-----------------------|--------------|-----------|--------------|-----------|-----------|-----------|--|
| 54 | 189Y5A0320 | K.NARASIMHA PRASAD | Satisfactory | Excellent | Excellent | Excellent | good | Excellent | |
| 55 | 189Y5A0321 | K.HARSHAVARDHAN BABU | Excellent | Excellent | Satisfactory | Excellent | Excellent | good | |
| 56 | 189Y5A0322 | K.VEERA HEMANTH KUMAR | Excellent | Excellent | Excellent | Excellent | Excellent | Excellent | |
| 57 | 189Y5A0332 | NAGA MAHESWAR REDDY E | Excellent | Excellent | Excellent | Excellent | Excellent | Excellent | |
| 58 | 189Y5A0333 | N.THARUN KUMAR REDDY | Excellent | Excellent | Excellent | Excellent | Excellent | Excellent | |
| 59 | 189Y5A0334 | N.MOHAMMED ABID | good | Excellent | Excellent | Excellent | Excellent | Excellent | |
| 60 | 189Y5A0335 | N.MAHESWARA REDDY | Excellent | Excellent | Excellent | Excellent | Excellent | Excellent | |
| 61 | 189Y5A0336 | N.PATTABHI REDDY | Excellent | Excellent | Excellent | Excellent | Excellent | Excellent | |
| 62 | 189Y5A0338 | P.SURYA PRAKASH REDDY | Excellent | Excellent | Excellent | Excellent | Excellent | good | |
| 63 | 189Y5A0355 | V.CHANDRAHASA REDDT | Excellent | Excellent | Excellent | Excellent | Excellent | Excellent | |
| 64 | 189Y5A0356 | Y.BHARGAV | Excellent | good | Excellent | Excellent | Excellent | Excellent | |
| 65 | 189Y5A0359 | Y.RAMMOHAN | Excellent | Excellent | Excellent | Excellent | Excellent | Excellent | |


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