

**INDIAN INSTITUTE OF TECHNOLOGY BOMBAY  
DEPARTMENT OF MECHANICAL ENGINEERING  
CENTRAL WORKSHOP**

**Course: ME 113, Workshop Practice**

**Academic Year: 2017 - 18**

**Semester: Autumn ( Semester I)**

DAY		Monday, LM	Tuesday, L2	WED	Thursday , LH	Friday, L4		GROUP working in				
		09:30 – 12:30	14:00 – 17:00		09:30 – 12:30	14:00 – 17:00		PATTERN MAKING	FITTING	SHAPING	LATHE	WELDING
LAB. DIVISION		P1, P3	P11, P13		P2, P4	P12, P14						
No. of STUDENTS		124 [24+24+24+24+28]	126 [24+24+24+24+30]		111 [21+21+21+24+24]	112 [21+21+24+24+21]						
Number of Available Classes	1	24.07.17	25.07.17	26.07.17	27.07.17	28.07.17	→	INTRODUCTION				
	2	31.07.17	01.08.17	02.08.17	03.08.17	04.08.17	→	A	B	C	D	E
	3	07.08.17	08.08.17	09.08.17	10.08.17	11.08.17	→	A	B	C	D	E
	4	14.08.17	22.08.17	16.08.17	17.08.17	18.08.17	→	E	A	B	C	D
	5	21.08.17	29.08.17	23.08.17	24.08.17	01.09.17	→	E	A	B	C	D
	6	28.08.17	05.09.17	30.08.17	31.08.17	08.09.17	→	D	E	A	B	C
	7	04.09.17	19.09.17	06.09.17	07.09.17	22.09.17	→	D	E	A	B	C
	8	18.09.17	26.09.17	20.09.17	21.09.17	29.09.17	→	C	D	E	A	B
	9	25.09.17	03.10.17	27.09.17	28.09.17	06.10.17	→	C	D	E	A	B
	10	09.10.17	10.10.17	04.10.17	05.10.17	13.10.17	→	B	C	D	E	A
	11	16.10.17	17.10.17	11.10.17	12.10.17	20.10.17	→	B	C	D	E	A
	12	23.10.17	24.10.17	18.10.17	26.10.17	27.10.17	→	END SEM PRACTICAL TEST				
	13	30.10.17	31.10.17	25.10.17	02.11.17	03.11.17						
	14	06.11.17	07.11.17	01.11.17	09.11.17							
	15			08.11.17								

**NOTES:**

**Dates in blue color are for repeat or to compensate missed turns.**

Mid-Semester Week: 11.09.2017 – 16.09.2017

Institute Holidays: August 15, 25; October 2, 19

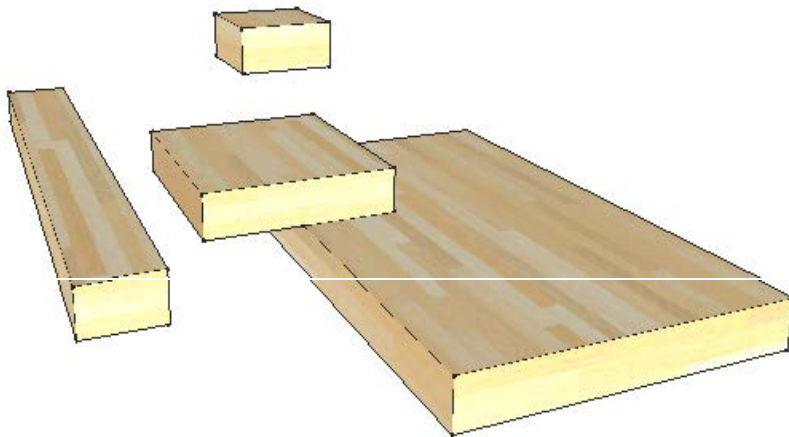
Convocation Day: August 12

Last date of Instruction: **09.11.2017 ( Thursday)**

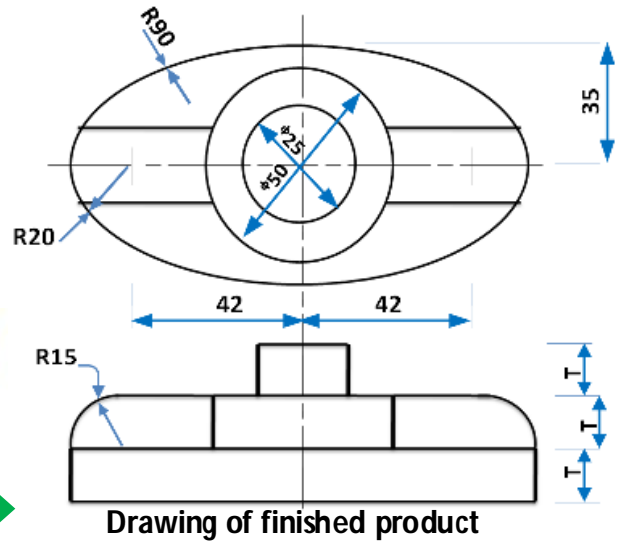
**END-Semester QUIZ:** Exact date and time will be declared later.

i.	Title of the Course	ME 113: Workshop Practice																								
ii.	Credit Structure	L(Lecture) – T(Tutorial) – P(Practical) – C(Total Credit): 0 – 0 – 3 – 3																								
iii.	Prerequisite, if any	Nil																								
iv.	Semester	Spring and Autumn																								
iv.	Course Content	<p><b>Introduction to Fitting and Pattern Making:</b> Operations with various hand tools, Introduction to bench work, fitting tools and operations, Performing simple assignments in wood working and fitting independently.</p> <p><b>Introduction to Metal cutting and Machine tools:</b> Learning of principles to work with basic machine tools e.g. lathe and shaping towards performing various machining operations, Performing simple assignments in lathe and shaping in groups.</p> <p><b>Introduction to Arc Welding:</b> Learning of principles and working with shielded metal arc welding (SMAW) process, Performing simple assignments in on welding independently.</p> <p><b>Learning of safety measures in Fitting, Pattern Making, Metal Cutting and Machine tools, and Arc Welding.</b></p>																								
v.	Texts / References	<p>Hajra Choudhury S. K., Boe S. K., Hazra Choudhury A. K., Roy Nirjhar, <i>Elements of Workshop Technology</i>, Vol. I, Media Promoters and Publishers, Mumbai. 14th Ed., 2007.</p> <p>Hajra Choudhury S. K., Boe S. K., Hazra Choudhury A. K., Roy Nirjhar,, <i>Elements of Workshop Technology</i>, Vol.II, Media Promoters and Publishers, Mumbai. 12th Ed., 2007.</p> <p>Bawa H. S., <i>Workshop Practice</i>, Tata McGraw Hill, 2004.</p> <p>Sing, Rajender, <i>Introduction to Basic Manufacturing Processes and Workshop Technology</i>, New Age International Publishers, 2008</p>																								
vi.	Instructor (s)	A. De, I H Bhaldar, Y. Sonawanne																								
vii.	Relevance to other departments	This is a compulsory course for all first year students																								
viii.	Justification	N.A.																								
ix.	Assessment Plan	<table><thead><tr><th><u>TRADE</u></th><th><u>No. of Days</u></th><th><u>Location</u></th><th><u>Weightage</u></th></tr></thead><tbody><tr><td>Pattern Making</td><td>02</td><td>F3 Shed</td><td>15%</td></tr><tr><td>Fitting</td><td>02</td><td>N3 Shed</td><td>15%</td></tr><tr><td>Lathe</td><td>02</td><td>N2 Shed</td><td>15%</td></tr><tr><td>Shaping</td><td>02</td><td>N2 Shed</td><td>15%</td></tr><tr><td>Welding</td><td>02</td><td>N3 Shed</td><td>15%</td></tr></tbody></table> <p><b>End-Semester Practical Test: 15%</b> <b>End-Semester Quiz: 10%</b></p>	<u>TRADE</u>	<u>No. of Days</u>	<u>Location</u>	<u>Weightage</u>	Pattern Making	02	F3 Shed	15%	Fitting	02	N3 Shed	15%	Lathe	02	N2 Shed	15%	Shaping	02	N2 Shed	15%	Welding	02	N3 Shed	15%
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Shaping	02	N2 Shed	15%																							
Welding	02	N3 Shed	15%																							

# PATTERN MAKING SECTION

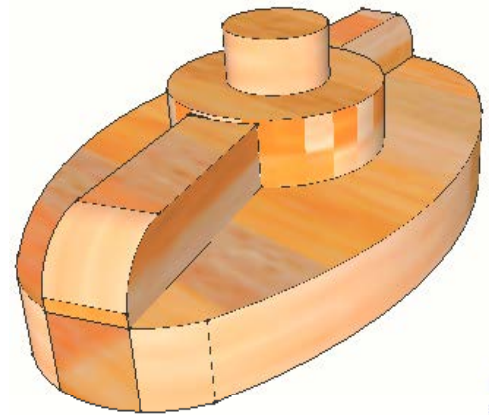


Raw Material



Drawing of finished product

Operations	Activities involved
Marking and Layout	Mark on the raw material (woods) as per drawing using marking and measuring tools.
Cutting	Cut raw material as per marking with appropriate margin for filling.
Filling	File now the parts using rasp to the final shape as per drawing.
Finishing	Finish all surfaces with wooden sand paper no. 80.
Assembly	Assemble all parts using adhesives (Fevicol) and Nails.



Expected Shape of assembled pattern

## Expected performance

- Try to match the dimensions as per drawing.
- Available time to complete the job is 6 hrs.
- Each student must perform an independent job.
- Follow all safety instructions.



Hammers, Nails, Nail remover



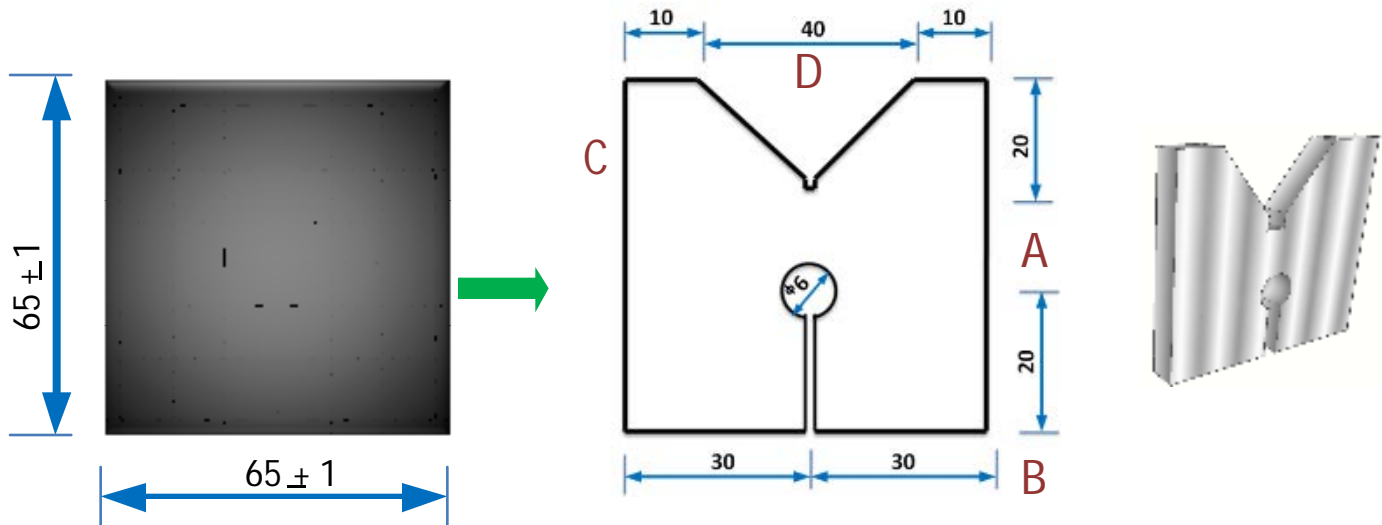
Measuring and Marking Tools



Files and Hack-Saw

**Key words (for self study):** Pattern Making and Casting, Wood Working

## FITTING SECTION



**Raw Material**

**Drawing of finished product**

Operations	Activities involved
<b>Measurement</b>	Measure raw material given to you – it should have a size of more than 60×60×6 mm.
<b>Filing</b>	Make a flat surface using a second cut file on any edge of the w/p (e.g. A). With reference to that surface, make another right angled flat surface adjacent to it (e.g. B).
<b>Marking</b>	Apply wet chalk on w/p surface and allow it to dry to increase visibility of marking lines. Mark as per the drawing with reference to the flat surfaces using Vernier height gauge, Surface Plate and Angle Plate.
<b>Punching</b>	Do permanent marking on the marked lines using Hammer and Center punch
<b>Cutting</b>	Cut all excess material from w/p using hacksaw with a 2 mm margin for filing. Make a small notch as shown.
<b>Filing</b>	File all the cut surfaces with all the edges at right angle to the adjacent surface, unless specified in the drawing.
<b>Drilling</b>	Mark a punch to drill a hole at the required location. Use a twist drill for drilling.
<b>Slitting</b>	Make a slit at mid point opening in to drilled hole as shown in drawing.
<b>Finishing</b>	File the top and bottom surfaces to remove the burrs and check with master piece for fitting.

### Expected performance

- Follow all safety instructions.
- Try to match the dimensions as per drawing.
- Time to complete the job is 6 hrs.
- Everybody must make an independent job.
- Try to remove sharp edges, burrs through proper filing operations.



**Hack Saw Blade, Flat File, Round File**



**Centre Punch, Scriber, Hammer**



**Tri Square, Scale**



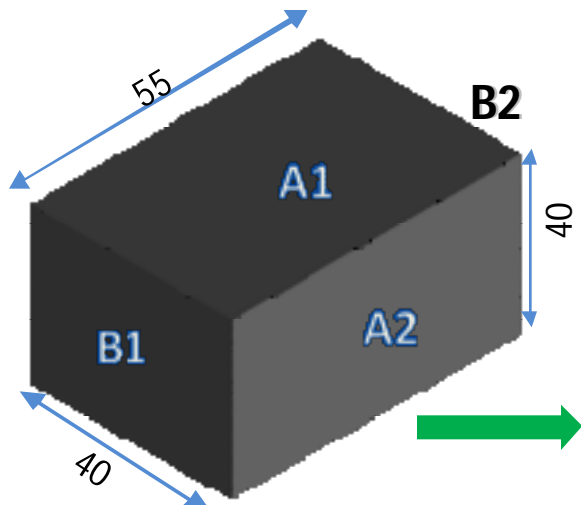
**Vernier height gauge, angle plate, surface plate**



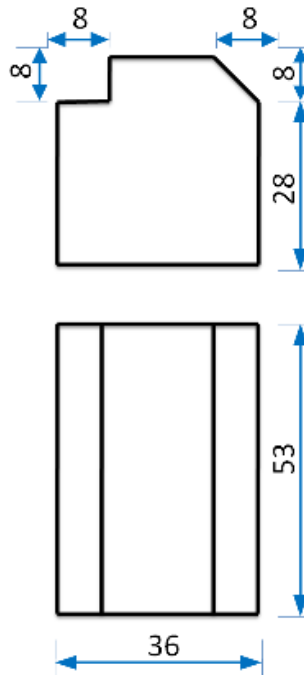
**Bench Vice**

**Key words (for self study):** Fitting and Bench working with mild steel, Different file specifications.

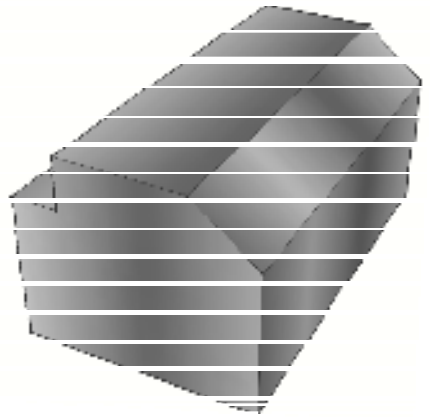
## SHAPING SECTION



Raw Material



Drawing of Finished Part



Operations	Activities involved
<b>Machining of surface</b>	Clamp w/p in Machine Vice. Machine <b>surface B1</b> using a single point cutting tool in shaper.
- do -	Machine <b>surface B2</b> with reference to B1. Use a parallel block for reference.
- do -	Machine <b>surface A1</b> . Use a parallel blocks for reference.
- do -	Machine <b>surface A2</b> with reference to A1. Use a <i>try square</i> for reference.
- do -	Machine <b>surfaces A3 and A4</b> after marking with Vernier height gauge, Hammer, Center Punch to get final job dimensions as per drawing,
<b>Machining a 8x8 square step</b>	Machine the square step in shaper – adjust tool angle and relative height using Vernier height gauge and surface plate.
<b>Machining a slant surface</b>	After marking slant edge, machine the surface by adjusting it parallel with respect to the tool motion.

### Expected performance

- Follow all safety instructions.
- Try to match the dimensions as per drawing.
- Time to complete the job is 6 hrs.
- Each group must make an independent job.
- Try to remove sharp edges, burrs through light filing operations.



Shaper



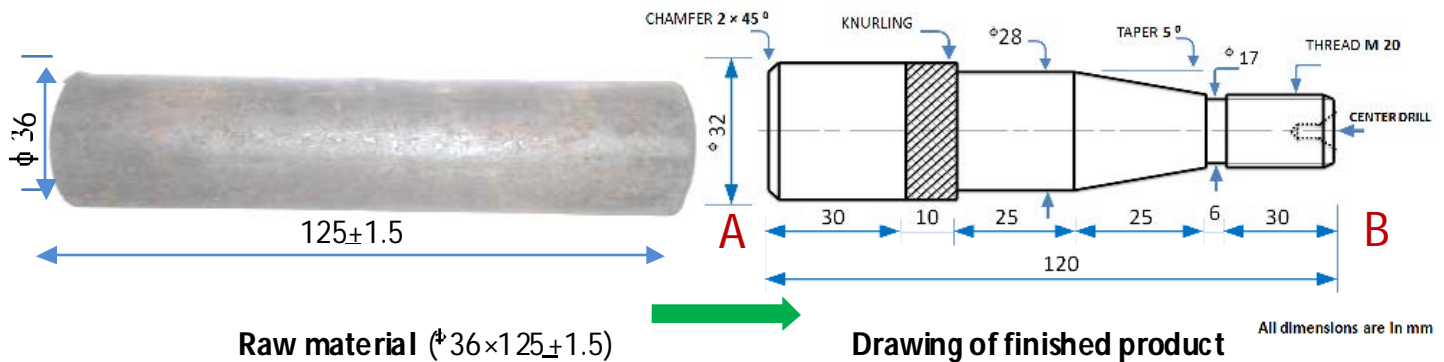
Single point cutting tool

### Key words (for self study):

Shaping machine, Quick return mechanism, Single point cutting tool



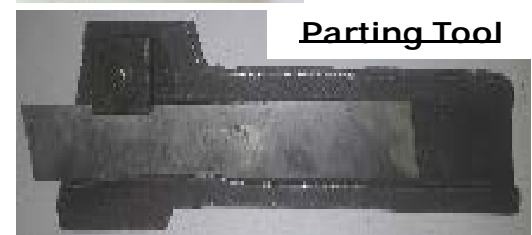
# LATHE SECTION



Operations	Activities involved
<b>Facing</b>	Clamp the job on a 3 jaw chuck with the chuck key. Perform facing using a single point cutting tool such that the machined surface (B) becomes perpendicular to the job axis.
<b>Outer diam. Turning</b>	Adjust angle of tool by tool post. Perform turning to 32 mm diameter up to a length of 50 to 60 mm. Check dimension with outside caliper.
<b>Chamfering</b>	Adjust tool edge to $45^\circ$ and perform chamfering to remove sharp edge. Unclamp the Job.
<b>Facing and Center drilling</b>	Clamp the job from the other side (A) for facing of surface B. Further, use a center drill and drill chuck to make a center drill on surface B.
<b>Step turning</b>	Unclamp and support job using a live center for step turning as per drawing i.e. $\phi 28$ on entire length and subsequently, $\phi 20$ on 36 mm length.
<b>Grooving</b>	Make a groove of $\phi 17$ diameter for a length of 6 mm as per drawing by using a parting off tool.
<b>Taper turning</b>	Set the angle of compound slide to the required taper degrees. Give feed to compound slide only. Make the chamfer on B.
<b>Thread cutting</b>	Arrange necessary gear train required for pitch of the thread to cut. Engage lathe machine in back gear and lead screw with split nut. Carry out thread cutting in steps in forward direction.
<b>Knurling</b>	By using a knurling tool do a diamond serrations on the job for better gripping.

## Expected performance

- Follow all safety instructions.
- Try to match the dimensions as per drawing.
- Time to complete the job is 6 hrs.
- Each group must make an independent job.

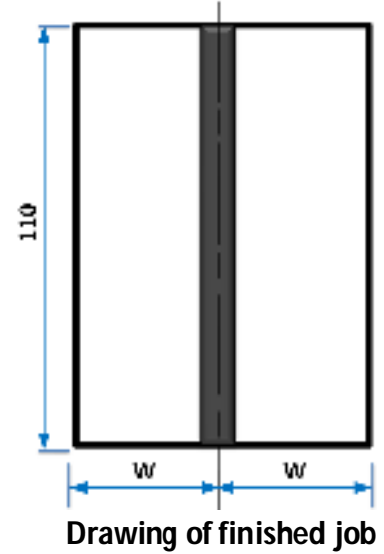
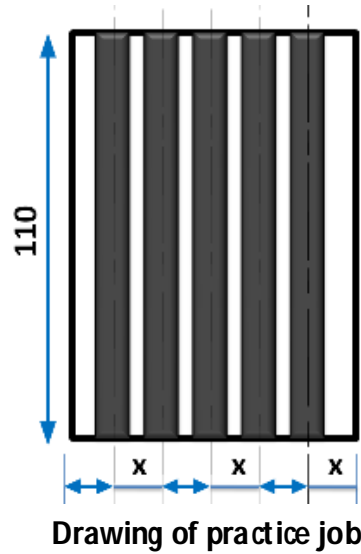
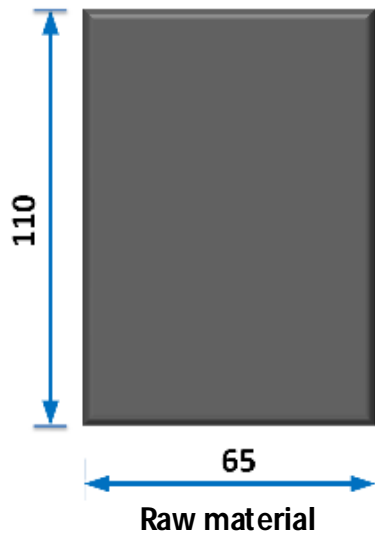


## Key words (for self study)

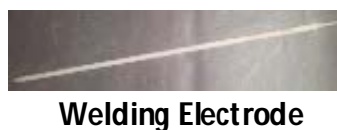
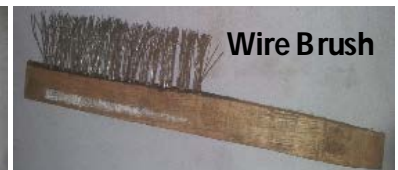
Lathe machine and tooling, lathe operation and parameters.



# WELDING SECTION



Operations	Activities involved
Practice job	Prepare beads-on-plate parallel to each other using a shielded metal arc welding (SMAW) machine and flux coated electrodes. Try to deposit as many parallel lines as you can on the plates given for practice. <b>Follow strictly all safety norms [e.g. wearing of gloves, aprons, etc., use always hand-held eye-shields during welding or observing welding of your friends]</b>
Final job	Follow the same procedure as above and prepare a single and straight bead-on-plate deposit on the final plate / job. Use a tong to hold the hot job and dip it in water tank for cooling.
Chipping off	After the job is cooled down, use the chipping hammer to remove slag and spatter.
Brushing	Brush off the weld surface for cleaning.

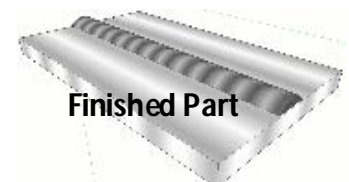


## Expected performance

- Follow all safety instructions.
- Time to complete the job is 6 hrs.
- Everybody must make an independent job.

## Key words (for self study)

Shielded metal arc welding (SMAW), Flux coated electrodes, Welding current, voltage and speed



# Safety Norms to be followed at Central Workshop

1. Shoes must be worn in the shop area. No one **wearing sandals** will be allowed to enter the shop area. **The minimum footwear must cover the entire foot.**
2. Do not operate any item of equipment unless you are familiar with its operation and authorized to operate it. If you have any question regarding the use of equipment ask the concerned staff.
3. No work may be performed using power tools unless at least two people are in the shop area and they can see each other.
4. In case of injury, no matter how slight, report it immediately to the staffs available. The IIT Bombay Hospital phone number is **7051. Ambulance - 1101**
5. Machine **must** be shut off and not moving when you are cleaning, repairing, oiling, or when you leave the area. **Never** leave a machine running unattended.
6. Do not wear ties, loose clothing, jewelry, gloves, etc. around moving or rotating machinery. Long hair must be tied back or covered to keep it away from the moving machinery. Hand protection in the form of suitable gloves should be used for handling hot objects, glass, or sharp-edged items.
7. Do not work in the shop if you are **tired, upset, or in a hurry.**
8. A brush, hook, or special tool is preferred for removal of chips, shavings, etc. from the work area. **Never use your hands.**
9. Keep fingers clear of the point of operation of machines by using special tool or devices, such as, push sticks, hooks, pliers, etc. **Never use a rag near moving machinery!**
10. **Practice cleanliness and orderliness in the shop areas.** Keep the floor around the machines clean, dry, and free from trip hazards. Do not allow chips to accumulate.
11. Think through the entire job before starting. Before starting a machine, always check it for correct setup and if the machine is clear by operating it manually, if possible.
12. Use an equipment for its intended purpose only.
13. **Do not** use cell phone while you are operating a machine tool.
14. Do not use machinery and or power hand tools without proper training. If you do not know how to operate a power tool or machine, or do not fully understand the instructions you have been given, ask an instructor or staff member for help.
15. Do not use gloves while operating machinery, since they can become entangled in rotating tools. Do not touch any rotating component of a machine until it is completely stopped.
16. Use care when handling cutting tools. Cutting tools are very sharp! Wrap tools in a rag when removing or installing cutting tools.
17. Do not distract people operating machines, which includes speaking to them or creating a sudden noise or any foul activity. Do not allow yourself to be distracted. If you must talk, bring machinery to a complete stop first. If you are asked to stop the operation of a machine, then do so immediately! Do not leave machines running while unattended.
18. Many hazards exist in a machine shop. Before you move a heavy object, swing a hammer, or engage any machine power, think about the consequences of your actions. How and where are you going to put the heavy object down? Are your fingers going to get caught? Are somebody else's fingers going to get hurt? When the power comes on, will tools fly? Will cutting tools run into things they aren't supposed to hit? **PLEASE THINK BEFORE YOU ACT!**



### Tools to Procure

Following tools are needed for the ME 113 (Workshop Practice) Course. The students are requested to procure these tools from any hardware shop. Each student should have a set of these tools. For further guidance regarding procurement of these tools, the students are requested to contact with the senior students or purchase from hardware shop or send a mail to [amit@iitb.ac.in](mailto:amit@iitb.ac.in), [bhaldar@iitb.ac.in](mailto:bhaldar@iitb.ac.in), [yogeshrsony@iitb.ac.in](mailto:yogeshrsony@iitb.ac.in). Students will work in group for lathe and Shaping. For other sections students will work individually.

#### Common Tools for Fitting (F), Pattern Making (P), Lathe (L), Shaping (S) and Welding (W)

Sr. No.	Item Description	Quantity	Reqd. for Trade
1	Steel Rule - 300 mm	1	F, P, L, S
2	Spring Divider ( Capacity 100 mm)	1	F, P
3	Outside Caliper (Capacity 100 mm)	1	F, P, L
4	Try square ( Blade length 150 mm)	1	F, P, S
5	Scriber	1	F, P, S
6	Ball Peen Hammer (Weight 200 g)	1	F, P, S

#### Additional Tools for Fitting (F)

Sr. No.	Item Description	Qty.
7	Hacksaw Frame (Size 300 mm)	1
8	HSS Bimetal Hacksaw Blades - Size: 12" * 1/2" * 0.025 (23 G) - 18 TPI or [300 * 12.5 * 0.63 mm]-18 TPI (Teeth per inch); Cutting teeth of High speed steel and flexible steel back. (BRANDS: Ultra / Irwin / Miranda / Bipico Eclipse / Lenox, etc. make)	1+1
9	Flat File - Bastard (250mm long)	1
10	Flat File Handle	1
11	Centre Punch	1
12	Triangular file (150 mm long) with handle	1

#### Additional Tools for Pattern Making (P)

Sr. No.	Item Description	Qty.
13	Ready to Cut Hand Saw. Blade size : Thickness - 0.55, Length - 300mm, Width - 75 * 25, Hardened and Blue spring blade, Plastic Moulded Handle	1
14	Half Round wood Rasp File (200mm long)	1
15	Polish Paper (No. 80)	2
16	Pencil, Sharpener	1, 1

**Each student should have set of above tools**

Workshop Sr.No.	Roll No.	Name	Lab Div	Batch	Day
1	170070001	Arvadia Kevin Dharmesh	P1	A	MON
2	170070002	Thorve Rajesh Bhaskar	P1	A	MON
3	170070003	Pawar Atharv Amar	P1	A	MON
4	170070004	Syomantak Chaudhuri	P1	A	MON
5	170070005	Diwan Anuj Jitendra	P1	A	MON
6	170070006	Manav Sanjay Batavia	P1	A	MON
7	170070007	Anshul Tomar	P1	A	MON
8	170070008	Anugole Sai Gaurav	P1	A	MON
9	170070009	Anwesh Mohanty	P1	A	MON
10	170070010	Soumya Chatterjee	P1	A	MON
<b>11</b>	<b>170070011</b>	<b>Parth Vinod Patil</b>	<b>P1</b>	<b>A</b>	<b>MON</b>
12	170070012	Vedant Anil Satav	P1	A	MON
13	170070013	Ameya Sameer Anjarlekar	P1	A	MON
14	170070014	Shriram Girish Lokhande	P1	A	MON
15	170070015	Anshul Nasery	P1	A	MON
16	170070016	Sahil Harish Walke	P1	A	MON
17	170070017	Ojas Sanjiv Thakur	P1	A	MON
18	170070018	Himanshu Baheti	P1	A	MON
19	170070019	Titas Chakraborty	P1	A	MON
20	170070020	Ghoderao Kusumit Sudesh	P1	A	MON
21	170070021	Parth Milind Shettiwar	P1	A	MON
22	170070022	Pranay Reddy Samala	P1	A	MON
23	170070023	Dipesh Hemchandra Tamboli	P1	A	MON
24	170070024	Saksham Khandelwal	P1	A	MON
25	170070025	Sunil Meena	P1	B	MON
26	170070026	Prakash Prasad	P1	B	MON
27	170070027	Priyanshu Jharwal	P1	B	MON
28	170070028	Navneet Prabhat	P1	B	MON
29	170070029	Chandra Shekhar	P1	B	MON
30	170070030	Pranjal Jain	P1	B	MON
31	170070031	Jayesh Songara	P1	B	MON
32	170070032	Jaswant Singh	P3	B	MON
33	170070033	Anurag Fogawat	P3	B	MON
34	170070034	Gaurav Anand	P3	B	MON
35	170070035	Farhan Ali	P3	B	MON
<b>36</b>	<b>170070036</b>	<b>Nilesh Kumar</b>	<b>P3</b>	<b>B</b>	<b>MON</b>
37	170070037	Anav Agrawal	P3	B	MON
38	170070038	Jayesh Choudhary	P3	B	MON
39	170070039	Vishesh Verma	P3	B	MON
40	170070040	Akshat Singhal	P3	B	MON
41	170070041	Bevara Lakshmi Kowshik	P3	B	MON
42	170070042	Pinnada Preetam	P3	B	MON
43	170070043	Chelli Gnanchand	P3	B	MON
44	170070044	Varrey Rishi	P3	B	MON

Sheet1

45	170070045	Bandaru Sri Harsha	P3	B	MON
46	170070046	Rishabh Gopichand Ramteke	P3	B	MON
47	170070047	Seeram Ram Prakash Sri Sai	P3	B	MON
48	170070048	Bojja Sai Vamseedhar Reddy	P3	B	MON
49	170070049	Modhugu Rineeth	P3	C	MON
50	170070050	Aaron John Sabu	P3	C	MON
51	170070051	Koustav Jana	P3	C	MON
52	170070052	Meruva Anjaneya Prasad	P3	C	MON
53	170070053	Ponnada Prem Sekhar	P3	C	MON
54	170070054	Uddhav Aggarwal	P3	C	MON
55	170070055	Dhruv Ishan Bhardwaj	P3	C	MON
56	170070056	Srisht Fateh Singh	P3	C	MON
57	170070057	Vaibhav Malviya	P3	C	MON
58	170070058	Rohan Bansal	P3	C	MON
59	170070059	Ranjeet Patel	P3	C	MON
60	170070060	Vishwas Bharti	P3	C	MON
61	17D070001	Rathod Harekrishna Upendra	P1	C	MON
62	17D070002	Patel Vatsal Pareshkumar	P1	C	MON
63	17D070003	Shivani Vilas Nandgaonkar	P1	C	MON
64	17D070004	Kavishwar Mihir Vikas	P1	C	MON
65	17D070005	Prajwal Subhash Barapatre	P1	C	MON
66	17D070006	Utkarsh Rajendra Bhalode	P1	C	MON
67	17D070007	Ark Modi	P1	C	MON
68	17D070008	Rishabh Atul Dahale	P1	C	MON
69	17D070009	Madhur Sudarshan	P1	C	MON
70	17D070010	Shubham Anand Jain	P1	C	MON
71	17D070011	Vaidya Mithilesh Mandar	P1	C	MON
72	17D070012	Naman Rajesh Narang	P1	C	MON
73	17D070013	Paras Vijay Bodake	P1	D	MON
74	17D070014	Nakrani Prajval Sushil	P1	D	MON
75	17D070015	Nikhil Arvind Bhaladhare	P1	D	MON
76	17D070016	Rishikesh Shuddhodhan Meshrar	P1	D	MON
77	17D070017	Pragati Shuddhodhan Meshram	P1	D	MON
78	17D070018	Abhishek Sandeep Tanpure	P1	D	MON
79	17D070019	Siddharth Chandak	P1	D	MON
80	17D070020	Rushil Shyam Heda	P1	D	MON
81	17D070021	Sakshee Anil Pimpale	P1	D	MON
82	17D070022	Sudhanshu Avinash Nimbalkar	P1	D	MON
83	17D070023	Karan Suresh Chate	P1	D	MON
84	17D070024	Prajwal Dnyaneshwar Kamble	P1	D	MON
85	17D070025	Sammed Mukesh Mangale	P1	D	MON
86	17D070026	Anubhav Agarwal	P1	D	MON
87	17D070027	Ritij Saini	P1	D	MON
88	17D070028	Tavish Mina	P1	D	MON
89	17D070029	Harsh Sharma	P1	D	MON
90	17D070030	Sarthak Jain	P1	D	MON
91	17D070031	Bhaves Garg	P1	D	MON

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92	17D070032	Sayed Zafar Uzair	P1	D	MON
93	17D070033	Shivam Agarwal	P1	D	MON
94	17D070034	Ayush Raj Mehrotra	P1	D	MON
95	17D070035	Nishant	P1	D	MON
96	17D070036	Aditya Khanna	P1	D	MON
97	17D070037	Shreyas Goenka	P1	D	MON
98	17D070038	Divyansh Ahuja	P1	E	MON
99	17D070039	Yagya Mundra	P1	E	MON
100	17D070040	Pradeep Kumar Kadela	P3	E	MON
101	17D070041	Tanmay Goyal	P3	E	MON
102	17D070042	Karan Amaliya	P3	E	MON
103	17D070043	Jaideep Kharadi	P3	E	MON
104	17D070044	Himanshi Mehta	P3	E	MON
105	17D070045	Sonal Kumar	P3	E	MON
<b>106</b>	<b>17D070046</b>	<b>Nitish Kumar Das</b>	<b>P3</b>	<b>E</b>	<b>MON</b>
107	17D070047	Mohd Safwan	P3	E	MON
108	17D070048	Abhijeet Verma	P3	E	MON
109	17D070049	Shailee Suryawanshi	P3	E	MON
110	17D070050	Deepanshu Koshta	P3	E	MON
111	17D070051	Botcha Ritesh Sadwik	P3	E	MON
112	17D070052	Etcherla Harshavardhan	P3	E	MON
113	17D070053	Aryan Lall	P3	E	MON
114	17D070054	Vemula Madhavan	P3	E	MON
115	17D070055	Agulla Surya Bharath	P3	E	MON
116	17D070056	Tirupati Saketh Chandra	P3	E	MON
117	17D070057	Prashant Kurrey	P3	E	MON
118	17D070058	J S Mahesh	P3	E	MON
119	17D070059	Yash Sharma	P3	E	MON
120	17D070060	Malladi Sree Aditya	P3	E	MON
121	17D070061	Vanapali Anirudh	P3	E	MON
122	17D070062	Jeetika	P3	E	MON
123	17D070063	Prachi Goel	P3	E	MON
124	17D070064	Manas Vashistha	P3	E	MON
125	170100058	Aman Maan	P11	A	TUE
126	170100059	Deepak Choudhary	P11	A	TUE
127	170100060	Sandeep Sagar	P11	A	TUE
128	170100061	Sunil Kumar Jat	P11	A	TUE
129	170100062	Pankaj Kumar Meena	P11	A	TUE
130	170100063	Ankur Meshram	P11	A	TUE
131	170100064	Gayatri Kumbang	P11	A	TUE
132	170100065	Anand Iyer	P11	A	TUE
133	170100066	Puneet Shrivastava	P11	A	TUE
134	170100067	Akshay Choudhary	P11	A	TUE
135	170100068	Animesh Agrawal	P11	A	TUE
136	170100069	Abhishek Dawar	P11	A	TUE
137	170100070	Pranesh Parmar	P11	A	TUE
138	170100071	Prince Sahu	P11	A	TUE

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<b>139</b>	<b>170100072</b>	<b>Gudivada Manikanta</b>	<b>P11</b>	<b>A</b>	<b>TUE</b>
140	170100073	Nollu Mohan Swaroop	P11	A	TUE
141	170100074	Sagar Chirania	P11	A	TUE
142	170100075	Tushar Agrawal	P11	A	TUE
143	170100076	Rohan Arihaan	P11	A	TUE
144	170100077	Sidhant Kabra	P11	A	TUE
145	170100078	Tarush Agarwal	P11	A	TUE
146	170100079	Ashish Kumar Singh	P11	A	TUE
147	170100080	Swastik Sahoo	P11	A	TUE
148	170100081	Nabajyoti Majumdar	P11	A	TUE
149	170100082	Arnab Jana	P11	B	TUE
150	170100083	Patnala Sanjay Kumar	P11	B	TUE
151	170100084	Manchala Manoj Kumar Reddy	P11	B	TUE
152	170100085	Ponugoti Audi Bala Vihaari	P11	B	TUE
153	170100086	Ravuri Dilip Kumar	P11	B	TUE
154	170100087	Kotnana Pavan Kumar	P11	B	TUE
155	170100088	Goggela Vaibhav	P11	B	TUE
156	170100089	Settipalli Punith Kumar	P11	B	TUE
157	170100090	Romanch Bygari	P11	B	TUE
158	170100091	Mathews Boban	P11	B	TUE
159	170100092	Jeevan G	P11	B	TUE
160	170100093	Rohan Raj	P11	B	TUE
161	170100094	Athul C D	P11	B	TUE
<b>162</b>	<b>170100095</b>	<b>Pradeep Himirika</b>	<b>P11</b>	<b>B</b>	<b>TUE</b>
163	170100096	Sunil Kumar Seth	P11	B	TUE
164	170100097	Abhimanyu Sajeevan	P11	B	TUE
165	170100098	Akaash K A	P11	B	TUE
166	170100099	N Kavın Prasath	P11	B	TUE
167	170100100	Mayuk Muthukuru Venkata Reddy	P11	B	TUE
168	170100101	Poduri Pradyumna Datta	P11	B	TUE
169	170100102	Pandikala Vivek	P11	B	TUE
170	170100103	Malla Venkata Sai Akshay	P11	B	TUE
171	170100104	Moutam Bhanu Prakash	P11	B	TUE
172	170100105	Kale Aniket Nitin	P11	B	TUE
173	170100106	Bhukya Raghu Vinay Rathod	P11	C	TUE
174	170100107	Saiteja Rudroju	P11	C	TUE
175	170100108	Shaurya Chopra	P11	C	TUE
176	170100109	Savneek Bhatia	P11	C	TUE
177	170100110	Archit Nanda	P11	C	TUE
178	170100111	Srijan Bansal	P11	C	TUE
179	170100112	Nishant	P11	C	TUE
180	170100113	Abhyuday Chauhan	P11	C	TUE
181	170100114	Hritik Sagar	P11	C	TUE
182	170100115	Sagar Singh	P11	C	TUE
183	170100116	Arvind Manimurugan	P11	C	TUE
184	17D100014	Tejas Ladhe	P11	C	TUE
185	17D100015	Mohd. Zakir Hussain	P11	C	TUE



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186	17D100016	Himanshu Gupta	P11	C	TUE
187	17D100017	Raunak Agrawal	P11	C	TUE
188	17D100018	Utkarsh Thakre	P11	C	TUE
189	17D100019	Aanjinappa M	P11	C	TUE
190	17D100020	Premkumar S Naik	P11	C	TUE
<b>191</b>	<b>17D100021</b>	<b>Rohith V H</b>	<b>P11</b>	<b>C</b>	<b>TUE</b>
192	17D100022	Prathik Reddy Gunreddy	P11	C	TUE
193	17B030001	Trivedi Mruga Harishbhai	P13	C	TUE
194	17B030002	Raj Anil Savla	P13	C	TUE
195	17B030003	Shruti Tejrao Sose	P13	C	TUE
196	17B030004	Prerak Viral Gandhi	P13	C	TUE
197	17B030005	Aliabbas Merchant	P13	D	TUE
198	17B030006	Muskaan Kochar	P13	D	TUE
199	17B030007	Sawant Sahil Vinay	P13	D	TUE
200	17B030008	Pratik Vasudev Kinage	P13	D	TUE
201	17B030009	Vivek Kumar Parte	P13	D	TUE
202	17B030010	Kshitijkumar Ashok Surjuse	P13	D	TUE
203	17B030011	Samarth Siddhartha	P13	D	TUE
204	17B030012	Shreyashree Satyen	P13	D	TUE
205	17B030013	Rohit Auti	P13	D	TUE
206	17B030014	Anushri Sachan	P13	D	TUE
207	17B030015	Sakshi Gupta	P13	D	TUE
208	17B030016	Ajay Vardhan	P13	D	TUE
209	17B030017	Devesh Singh	P13	D	TUE
210	17B030018	Rishi Tibrewal	P13	D	TUE
211	17B030019	Abhay Kanwar	P13	D	TUE
212	17B030020	Shubhanshu Jain	P13	D	TUE
213	17B030021	Purva Verma	P13	D	TUE
214	17B030022	Mrinal Agarwal	P13	D	TUE
215	17B030023	Varsha Jain	P13	D	TUE
216	17B030024	Harshvardhan Nigam	P13	D	TUE
217	17B030025	Abhishek Kumar	P13	D	TUE
218	17B030026	Kunal Meshram	P13	D	TUE
219	17B030027	Dhanya Bahadur	P13	D	TUE
220	17B030028	Niket Kumar Singh	P13	D	TUE
221	17B030029	Suraj Sahoo	P13	D	TUE
222	17B030030	Abhinav Kumar	P13	D	TUE
223	17B030031	A P Athithyan	P13	D	TUE
224	17B030032	Arshdeep Kaur	P13	E	TUE
<b>225</b>	<b>17B080001</b>	<b>Venkatesh Sanjayk Pugalia</b>	<b>P13</b>	<b>E</b>	<b>TUE</b>
226	17B080002	Akshay Satish Mandora	P13	E	TUE
227	17B080003	Toral Singh	P13	E	TUE
228	17B080004	Saurabh Meena	P13	E	TUE
229	17B080005	Prashant Chhapparwal	P13	E	TUE
230	17B080006	Kajal Verma	P13	E	TUE
231	17B080007	Shradha Bansal	P13	E	TUE
232	17B080008	Rahul Kishore Jajoriya	P13	E	TUE

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233	17B080009	Shreya Agarwal	P13	E	TUE
234	17B080010	Yashaswini Chauhan	P13	E	TUE
235	17B080011	Rohan Kumar Garg	P13	E	TUE
236	17B080012	Tushar Kumar	P13	E	TUE
237	17B080013	Nikhil Yadav	P13	E	TUE
238	17B080014	Rohit Kumar Nagar	P13	E	TUE
239	17B080015	Samarth Singh	P13	E	TUE
240	17B080016	Aashay Biyani	P13	E	TUE
241	17B080017	Sanskar Anand	P13	E	TUE
242	17B080018	Vibhor Jain	P13	E	TUE
243	17B080019	Shivang Agrawal	P13	E	TUE
244	17B080020	Yash Jaju	P13	E	TUE
245	17B080021	Aditya Singh Gehlot	P13	E	TUE
246	17B080022	Akarshi Agrawal	P13	E	TUE
247	17B080023	Alok Ranjan	P13	E	TUE
248	17B080024	Sourav Suman	P13	E	TUE
249	17B080025	Danish Sharma	P13	E	TUE
250	17B080026	Nishant Mehra	P13	E	TUE
251	170050001	Piyush Dilip Tibarewal	P4	A	THU
252	170050002	Mashkaria Satvik Mehulbhai	P4	A	THU
253	170050003	Makwana Jigar	P4	A	THU
254	170050004	Yash Ajitbhai Parmar	P4	A	THU
255	170050005	Yateesh Agrawal	P4	A	THU
256	170050006	Kalsaria Sagar Pareshbhai	P4	A	THU
257	170050007	Abhay Goyal	P4	A	THU
258	170050008	Sawant Sohan Madhukar	P4	A	THU
259	170050009	Onkar Manik Deshpande	P4	A	THU
260	170050010	Arjit Jain	P4	A	THU
261	170050011	Riya Kishor Baviskar	P4	A	THU
262	170050012	Rahul Bhardwaj	P4	A	THU
263	170050013	Shrutesh Tapeshe Patil	P4	A	THU
264	170050014	Ansh Verma	P4	A	THU
265	170050015	Akhilesh Vinay Ganeshkar	P4	A	THU
266	170050016	Himanshu Vinayrao Bhojar	P4	A	THU
267	170050017	Nikhil Rangnath Chavanke	P4	A	THU
268	170050018	Shubhamkar Bajrang Ayare	P4	A	THU
269	170050019	Akshat Chugh	P4	A	THU
<b>270</b>	<b>170050020</b>	<b>Kiran Chandrakant Dapkar</b>	<b>P4</b>	<b>A</b>	<b>THU</b>
271	170050021	Abhijeet Singh Yadav	P4	A	THU
272	170050022	Arpit Aggarwal	P4	B	THU
273	170050023	Akshay Yadav	P4	B	THU
274	170050024	Chitrang Gupta	P4	B	THU
275	170050025	Yash Khemchandani	P4	B	THU
276	170050026	Tushar Gautam	P4	B	THU
277	170050027	Aman Kansal	P4	B	THU
278	170050028	Kritin Garg	P4	B	THU
279	170050029	Devansh Garg	P4	B	THU

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280	170050030	Anurag Arun Kedia	P4	B	THU
281	170050031	Shashank Kumar	P4	B	THU
282	170050032	Krishna Yadav	P4	B	THU
283	170050033	Lakshya Kumar	P4	B	THU
284	170050034	Rajdeep Yadav	P4	B	THU
285	170050035	Ansh Khurana	P4	B	THU
286	170050036	Kushal Patil	P4	B	THU
287	170050037	Anurag Kumar	P4	B	THU
288	170050038	Shubham Atri	P4	B	THU
289	170050039	Jatin Lamba	P4	B	THU
290	170050040	Parikshit Bansal	P4	B	THU
291	170050041	Kushagra Juneja	P2	B	THU
292	170050042	Ajay	P2	B	THU
293	170050043	Aditya Sharma	P2	C	THU
294	170050044	Suraj	P2	C	THU
295	170050045	Saksham Goel	P2	C	THU
296	170050046	Nirmal Rajput	P2	C	THU
297	170050047	Milind Niranjan	P2	C	THU
298	170050048	Manaswi Rajpurohit	P2	C	THU
299	170050049	Pushpendra Jakhar	P2	C	THU
300	170050050	Mahesh Lomrar	P2	C	THU
<b>301</b>	<b>170050051</b>	<b>Lovesh Kumar Gupta</b>	<b>P2</b>	<b>C</b>	<b>THU</b>
302	170050052	Devki Nandan Malav	P2	C	THU
303	170050053	Sudhir Kumar	P2	C	THU
304	170050054	Chaw Akametta Enling	P2	C	THU
305	170050055	Yash Jain	P2	C	THU
306	170050056	Ritik Roongta	P2	C	THU
307	170050057	Arpit Menaria	P2	C	THU
308	170050058	Kalpita Veerwal	P2	C	THU
309	170050059	Saurav Yadav	P2	C	THU
310	170050060	Tushar Agarwal	P2	C	THU
311	170050061	Sameer Prajapati	P2	C	THU
<b>312</b>	<b>170050062</b>	<b>Amish Jain</b>	<b>P2</b>	<b>C</b>	<b>THU</b>
313	170050063	Arpit Prajapat	P2	C	THU
314	170050064	Anurag Maurya	P2	D	THU
315	170050065	Prashant Saroj	P2	D	THU
316	170050066	Manas Shukla	P2	D	THU
317	170050067	Rongali Ravi Teja	P2	D	THU
318	170050068	Killari Ramprasad	P2	D	THU
319	170050069	Gulla Niranjan	P2	D	THU
320	170050070	Mohit Kumar Gupta	P2	D	THU
321	170050071	Yash Raj	P2	D	THU
322	170050072	Irin Ghosh	P2	D	THU
323	170050073	Debabrata Mandal	P2	D	THU
324	170050074	Burudi Rajesh	P2	D	THU
325	170050075	Didde Harsha	P2	D	THU
326	170050076	Nakka Anil Kumar	P2	D	THU

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327	170050077	Nama N V S S Hari Krishna	P2	D	THU
328	170050078	Srikakulapu Rohan Abhishek	P2	D	THU
329	170050079	Vaddela Ashrut	P2	D	THU
330	170050080	Chagam Dileep Kumar Reddy	P2	D	THU
331	170050081	Doddi Sailendra Bathi Babu	P2	D	THU
332	170050082	Patnala Rohit Keerti Teja	P2	D	THU
333	170050083	Bonela Mahith	P2	D	THU
334	170050084	Sabbithi Naren Rahul	P2	D	THU
335	170050085	Lukka Govinda Siva Nagadev	P2	D	THU
336	170050086	Ranjana B Kasangeri	P2	D	THU
337	170050087	Satyabrata Naik	P2	D	THU
338	170050088	Sreyas Raghavan	P2	E	THU
339	170050089	Aditya Vavre	P2	E	THU
340	170050090	Vijaykrishna G	P2	E	THU
341	170050091	Amanaganti Rohan Ganesh	P2	E	THU
342	170050092	Pothula Sai Vishal	P2	E	THU
343	170050093	Somavarapu Tarun	P2	E	THU
344	170050094	Poorvi R Hebbar	P2	E	THU
345	170050095	Narisim Setti Charan Teja	P2	E	THU
346	170050096	Ramolla Nikhil Reddy	P2	E	THU
347	170050097	Mannem Sai Varshitha	P2	E	THU
348	170050098	Diddi Sai Kiran	P2	E	THU
349	170050099	B Nikhil	P2	E	THU
350	170050100	Ramya Narayanasamy	P2	E	THU
351	170050101	Ambati Satvik	P2	E	THU
352	170050102	Atla Tharun Teja	P2	E	THU
353	170050103	Penagamuri Pavan Chaitanya	P2	E	THU
354	170050104	Aashish Waikar	P2	E	THU
355	170050105	Himanshu Sheoran	P2	E	THU
356	170050106	Shashij Gupta	P2	E	THU
357	170050107	Sarvesh Mehtani	P2	E	THU
358	170050108	Ujjval Goury	P2	E	THU
359	170050109	Rachit Bansal	P2	E	THU
360	170050110	Manthan Jindal	P2	E	THU
361	170050111	Sumit	P2	E	THU
362	170100001	Kshitiz Singhal	P12	A	FRI
363	170100002	E Aakash	P12	A	FRI
364	170100003	Manani Harsh Shaileshbhai	P12	A	FRI
365	170100004	Mehta Denil Pareshbhai	P12	A	FRI
366	170100005	Manan Tayal	P12	A	FRI
367	170100006	Mehta Meet Amitkumar	P12	A	FRI
368	170100007	Harsh Hitesh Sheth	P12	A	FRI
369	170100008	Pruthak Utpal Joshi	P12	A	FRI
370	170100009	Mitvik Sunil Bhandari	P12	A	FRI
371	170100010	Rucha Rajivbhai Desai	P12	A	FRI
372	170100011	Ujjwal Agarwal	P12	A	FRI
373	170100012	Dhruv Desai	P12	A	FRI

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374	170100013	Vora Kirtan	P12	A	FRI
375	170100014	Mayank Sanjay Bhagat	P12	A	FRI
376	170100015	Radha Manoj Lahoti	P12	A	FRI
377	170100016	Saurabh Parekh	P12	A	FRI
378	170100017	Aryaman Singh Dhoot	P12	A	FRI
379	170100018	Rishabh Dinesh D'Souza	P12	A	FRI
380	170100019	Amey Bharat Gohil	P12	A	FRI
381	170100020	Kshitij Ravindra Ghormode	P12	A	FRI
382	170100021	Ananga Rana	P12	A	FRI
383	170100022	Daftary Adit Miten	P12	A	FRI
384	170100023	Bharti Ravi Kumar Hari Ram	P12	A	FRI
385	170100024	Siddhant Sundeep Shah	P12	A	FRI
386	170100025	Siddharth Saha	P12	B	FRI
387	170100026	Jian Manish Vora	P12	B	FRI
388	170100027	Shubham Suryakant Varnkar	P12	B	FRI
389	170100028	Yogender Singh	P12	B	FRI
390	170100029	Pushkar Pramod Lohiya	P12	B	FRI
391	170100030	S.S. Jatin Prasath	P12	B	FRI
392	170100031	Siddhant Suhas Patil	P12	B	FRI
393	170100032	Aman Tarachand Rai	P12	B	FRI
394	170100033	Ashay Vasant Wakode	P12	B	FRI
395	170100034	Vyankatesh Hemantrao Sawalapu	P12	B	FRI
396	170100035	Tezan Sahu	P12	B	FRI
397	170100036	Shubham Shrikant Kumbhar	P12	B	FRI
398	170100037	Sravya Devulapalli	P12	B	FRI
399	170100038	Rohan Ramesh Gulve	P12	B	FRI
400	170100039	Yash Dinesh Mandhana	P12	B	FRI
401	170100040	Shaurya Sarna	P12	B	FRI
402	170100041	Anuroop Nag	P12	B	FRI
403	170100042	Amartya Mishra	P12	B	FRI
404	170100043	Prafull Gupta	P12	B	FRI
405	170100044	Ayush Agrawal	P12	B	FRI
406	170100045	Rohit Kumar Meena	P12	B	FRI
407	170100046	Anshul Agarwal	P12	B	FRI
408	170100047	Saral Mittal	P12	B	FRI
409	170100048	Anurag Kumar	P12	B	FRI
410	170100049	Naman Agarwal	P12	C	FRI
411	170100050	Shikhar Agrawal	P12	C	FRI
412	170100051	Rishav Arjun	P12	C	FRI
413	170100052	Harshit Madan	P12	C	FRI
<b>414</b>	<b>170100053</b>	<b>Tanay Mangal</b>	<b>P12</b>	<b>C</b>	<b>FRI</b>
415	170100054	Md Saif Ansari	P12	C	FRI
416	170100055	Rajat Pitliya	P12	C	FRI
417	170100056	Bhupendra Singh Kachhawa	P12	C	FRI
418	170100057	Bhavik Suthar	P12	C	FRI
419	17D100001	Domadia Karan Laljibhai	P12	C	FRI
420	17D100002	Prabhatsinh Parsinghbhai Rathva	P12	C	FRI



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421	17D100003	Akshata Tukaram Nagare	P12	C	FRI
422	17D100004	Kanishka Sunick	P12	C	FRI
423	17D100005	Sankalp Ananda Alone	P12	C	FRI
424	17D100006	Rohan Ajay Singh	P12	C	FRI
425	17D100007	Swadesh Rath	P12	C	FRI
426	17D100008	Anish Abhijit Kulkarni	P12	C	FRI
427	17D100009	Harsh Prashant Dolhare	P12	C	FRI
428	17D100010	Aditya Shankar Paspunurwar	P12	C	FRI
429	17D100011	Shobhit Agrawal	P12	C	FRI
430	17D100012	Pawar Swaraj Sunil	P12	C	FRI
431	17D100013	Sanjoli	P12	C	FRI
432	170260001	Jigyasu Chand	P14	C	FRI
433	170260002	Ajinkya Gajanan Werulkar	P14	C	FRI
434	170260003	Ashish Kailas Dhanve	P14	D	FRI
435	170260004	Ribhav Pal	P14	D	FRI
436	170260005	Vedant Rambabu Motamarri	P14	D	FRI
437	170260006	Adeem Aryn Jassani	P14	D	FRI
438	170260007	Sanghavi Joy Kaushik	P14	D	FRI
439	170260008	Vashishtha Manish Kochar	P14	D	FRI
440	170260009	Vaibhav Sanjay Minde	P14	D	FRI
441	170260010	Nihal Rajan Barde	P14	D	FRI
442	170260011	Ruchika Rashtrapal Chavhan	P14	D	FRI
<b>443</b>	<b>170260012</b>	<b>Nikhil Vikas Khobragade</b>	<b>P14</b>	<b>D</b>	<b>FRI</b>
444	170260013	Gaurav Dey	P14	D	FRI
445	170260014	Duse Chaitrali Manoj	P14	D	FRI
446	170260015	Maitreya Milind Khandagale	P14	D	FRI
447	170260016	Prathamesh Panjabrao Borse	P14	D	FRI
448	170260017	Malti Singh	P14	D	FRI
449	170260018	Divyacharaneeswar R P	P14	D	FRI
450	170260019	Chaitanya Kumar	P14	D	FRI
451	170260020	Ayush Bhardwaj	P14	D	FRI
452	170260021	Preksha Goyal	P14	D	FRI
453	170260022	Asawari Keskar	P14	D	FRI
454	170260023	Nitish Ujjwal	P14	D	FRI
455	170260024	Kumar Shivam	P14	D	FRI
456	170260025	Guru Kalyan Jayasingh	P14	D	FRI
457	170260026	Raunak Dutta	P14	D	FRI
458	170260027	Vijay V Nenmeli	P14	E	FRI
459	170260028	Vedant Prakash Shenoy	P14	E	FRI
460	170260029	S Ramnishanth	P14	E	FRI
461	170260030	Sagar Kumar Gupta	P14	E	FRI
462	170260031	Aakash Marthandan	P14	E	FRI
463	170260032	Vabilisetti Mohan Abhyas	P14	E	FRI
464	170260033	Neeraj Ramavathu	P14	E	FRI
465	170260034	Talari Mahendra	P14	E	FRI
466	170260035	Thoutam Shiva Teja	P14	E	FRI
467	170260036	Ankush	P14	E	FRI

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468	170260037	Kanav Gupta	P14	E	FRI
469	170260038	Sumer Bawa	P14	E	FRI
470	170260039	Prashant Tomar	P14	E	FRI
471	170260040	Ram	P14	E	FRI
472	170260041	Yati Sharma	P14	E	FRI
473	170260042	Kunal Patel	P14	E	FRI
474	16K410001	Ajeet Katiyar	P14	E	FRI
475	16K410002	Soham Mukhopadhyay	P14	E	FRI
476	16K410003	Abhishek Mall	P14	E	FRI
477	16K410005	Shirshendu Ghosh	P14	E	FRI
478	16K410006	Owaish	P14	E	FRI
479	16K410007	Anand Kumar	P14	E	FRI
480	16K410008	Tanazza Khanam	P14	E	FRI
481	16K410009	Soumya Saha	P14	E	FRI