



AISSMS
COLLEGE OF ENGINEERING

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Department of Engineering Science and Humanities
AY 2025-26
Rubrics for Blog Writing

Writing blogs helps students practice expressing their thoughts clearly. It improves vocabulary, sentence structure, and the ability to explain technical as well as non-technical ideas effectively. When students write about engineering concepts in simple language, they develop a deeper understanding of the subject. Explaining a concept to others often clarifies one's own knowledge.

Sr Nos	Criteria	Excellent (4)	Good (3)	Satisfactory (2)	Needs Improvement (1)
A	Content Quality	Information is accurate and relevant, shows deep understanding of the topic.	Mostly accurate and relevant; shows good understanding of the topic.	Somewhat accurate, but some important points are unclear.	Content is inaccurate, irrelevant, or shows poor understanding.
B	Content Organization & Structure	Clear, logical flow with well-organized paragraphs and smooth transitions.	Generally organized; minor lapses in flow or paragraph structure.	Somewhat disorganized; ideas or paragraphs lack focus.	Poorly organized; hard to follow the ideas or structure is missing.
C	Technical Language & Terminology	Uses correct engineering terms appropriately; language is technical	Uses technical terms but with minor errors.	Limited or incorrect use of technical language.	Technical language is mostly missing.
D	Citation	Accurately cites all the sources of Information	Most Information sources are cited	Few Information sources are cited	Does not provide any information about the sources
E	Reader Engagement & Style	Writing is engaging, and appropriate for the intended reader and encourages interest.	Mostly clear and engaging with some attempt to connect with readers.	Writing is somewhat inconsistent and do not encourage the reader.	Writing is dull, or inappropriate for the reader.



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Department of Engineering Science and Humanities AY 2025-26 SEM I Rubrics for Case Study

A **case study** is like a real-life example used to understand a concept better. A case study is a detailed look at a specific problem, situation, or project. Instead of just reading theory, students can look at how that theory works in actual situations in case studies. Case studies show how engineers think through problems step by step. It helps bridge the gap between classroom learning and real-world engineering. Many case studies are discussed in groups, helping students learn to share ideas and work together. Also case study helps students exploring the higher level PO's.

Sr Nos	Criteria	Excellent (4)	Good (3)	Satisfactory (2)	Needs Improvement (1)
A	Understanding of the Case/problem	Thorough understanding	Good understanding	Adequate understanding	Limited understanding
B	Application of Engineering Concepts	Effectively applies relevant engineering concepts.	Applies some relevant engineering concepts	Applies basic concepts with limited relevance.	Incorrect and Non relevant application
C	Analysis and its Interpretation	Thorough and logical analysis with clear interpretation.	Good analysis, some interpretation may lack clarity.	Basic analysis, limited interpretation.	No analysis; interpretation is missing.
D	Communication & Presentation	Well-organized, clear, and well-presented.	Organized with minor formatting issues.	Acceptable structure but may lack clarity or flow.	Disorganized, unclear, or hard to follow.
E	Teamwork and Contribution	Excellent participation and active contribution.	Good participation and less contribution	Uneven participation and very less contribution	No Participation and no Contribution



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AY 2025-26

Rubrics for Course Activity

Course Activity is a (small-scale/ Creative) task that students undertake to apply the concepts they've learned in their course. This Activity help students to bridge the gap between theory and technical application, allowing them to gain valuable skills, enhance creativity, and get a taste of what working as an engineer might be like. Course Activity can cover various fields, such as electronics, software, mechanics, applied Science and even environmental issues, providing a practical and creative way to learn their technical knowledge.

Sr Nos	Criteria	Excellent (4 Marks)	Good (3 Marks)	Satisfactory (2Marks)	Needs Improvement (1 Mark)
A	Understanding of Course Material	Thorough understanding	Good understanding	Adequate understanding	Limited understanding
B	Application of Concepts	Concepts applied accurately and in various contexts	Concepts applied accurately in most contexts	Concepts applied accurately in some contexts	Concepts applied inaccurately
C	Problem-Solving Skills	excellent problem-solving skills with logical reasoning	good problem-solving skills with logical reasoning	adequate problem-solving skills with some logical reasoning	limited problem-solving skills with ineffective solutions
D	Communication & Presentation	Well-organized, clear, and well-presented.	Organized with minor formatting issues.	Acceptable structure but may lack clarity or flow.	Disorganized, unclear, or hard to follow.
E	Teamwork and Contribution	Excellent participation and active contribution.	Good participation and less contribution	Uneven participation and very less contribution	No Participation and no Contribution



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Rubrics for Group Discussion

A Group Discussion (GD) is a structured form of communication where a small group of participant's exchange ideas, opinions, and knowledge on a specific topic. It is commonly used in academics, recruitment processes, and professional environments to evaluate both subject knowledge and soft skills. In a GD, students are expected to listen actively, think critically, communicate effectively, and work collaboratively to reach a meaningful conclusion or develop diverse perspectives on a topic.

Sr Nos	Criteria	Excellent (4 Marks)	Good (3 Marks)	Satisfactory (2Marks)	Needs Improvement (1 Mark)
A	Content Knowledge	Shows deep understanding of the topic; provides relevant, points with examples.	Shows good knowledge; most points are relevant and correct.	Shows partial knowledge; few points are correct	Incorrect knowledge; irrelevant or minimal contribution.
B	Communication Skills	Communicates clearly, confidently, fluently with proper vocabulary, easy to understand	Communicates clearly with minor errors in vocabulary; mostly understandable.	Hesitant to Communicates, vocabulary errors; difficult to understand.	Very unclear Communication, or incorrect language usage; hard to understand.
C	Critical Thinking & Creativity	Presents original, logical, and well-reasoned arguments; offers creative insights.	Provides logical points with less originality.	Few logical arguments; limited originality or reasoning.	Lacks logical reasoning; no original or creative input.
D	Confidence & Body Language	Maintains excellent posture, eye contact, gestures, and confidence throughout.	Shows confidence with minor lapses in posture/eye contact.	Appears nervous; limited eye contact; weak body language.	Very nervous, no eye contact, poor posture and body language.
E	Behaviour	Students never display disruptive behavior during group Discussion	Students rarely display disruptive behavior during group Discussion	Students occasionally display disruptive behavior during group Discussion	Students always display disruptive behavior during group Discussion



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Rubrics for Model making Activity

Model making is not just an activity—it's a holistic learning experience that enhances technical knowledge, creativity, teamwork, and professional skills. For first-year engineering students, it serves as a foundation for becoming innovative and industry-ready engineers.

Sr Nos	Criteria	Excellent (4 Marks)	Good (3 Marks)	Satisfactory (2Marks)	Needs Improvement (1 Mark)
A	Accuracy & Functionality	Model accurately represents the concept/design and functions well (if applicable).	Model mostly accurate; minor deviations; functions adequately.	Model partially accurate; some errors affect functionality.	Model inaccurate or non-functional.
B	Creativity , Innovation & Knowledge	Shows high creativity and originality in design and execution with deep knowledge.	Demonstrates some creativity; design shows thought and most of the knowledge.	Basic design with limited creativity or originality with less knowledge.	Lacks creativity; very basic or copied design with no knowledge.
C	Cost-effectiveness	Completed the model within or below planned cost; justified all expenses effectively	Budget prepared with minor gaps; materials mostly cost-effective; little wastage observed	Material choice not very economical; noticeable wastage; final cost significantly above estimate with weak justification..	Materials selected without cost consideration; high wastage of resources; final cost not monitored or justified
D	Communication & Presentation	Clearly explains the model's purpose, features, and engineering concepts.	Explains most aspects; minor gaps in understanding.	Basic explanation; some parts unclear or incomplete.	Unable to explain model or concepts clearly.
E	Teamwork and Contribution	Excellent participation and active contribution.	Good participation and less contribution	Uneven participation and very less contribution	No Participation and no Contribution



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Rubrics for Project Activity

Projects allow students to apply classroom knowledge to real-life problems. This strengthens their understanding of engineering concepts and shows them how theory works in practice. Project-based activities encourage students to identify problems, analyze them, and design solutions. This nurtures analytical and critical thinking abilities.

Sr Nos	Criteria	Excellent (4 Marks)	Good (3 Marks)	Satisfactory (2Marks)	Needs Improvement (1 Mark)
A	Problem Definition & Objectives	Clear, well-defined problem statement and focused objectives.	Problem and objectives mostly clear but somewhat broad	Problem or objectives are unclear or too broad.	Problem and objectives poorly defined or missing.
B	Design & Implementation	Innovative design; and effective implementation; meets project requirements fully.	Good design and implementation with minor issues or gaps.	Basic design and partial implementation; some requirements missing.	Poor design and incomplete or ineffective implementation.
C	Technical Knowledge & Application	Demonstrates strong understanding and correct application of engineering principles.	Shows good understanding with minor errors in application.	Limited understanding and some technical errors.	Little or no understanding of technical concepts demonstrated.
D	Presentation & Documentation	Clear, well-organized report/presentation with thorough explanations and visuals.	Mostly clear and organized; some details or visuals missing.	Somewhat disorganized; explanations unclear or incomplete.	Poorly presented and documented; lacks clarity or visuals.
E	Teamwork & Timeliness	Excellent collaboration; project completed on time or early.	Good collaboration; minor delays or coordination issues.	Some teamwork issues; project completed late or rushed.	Poor teamwork; project incomplete or very late.



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Guidelines and Rubrics for Seminar

A seminar presentation is when student present a topic in front of a group to share ideas, information, or research. It helps student learn new things, think deeply, and ask questions. Giving a seminar also builds confidence and improves communication skills. Also it helps students understand subjects better, and in workplaces, it allows student to share knowledge and come up with new ideas together.

Sr Nos	Criteria	Excellent (4)	Good (3)	Satisfactory (2)	Needs Improvement (1)
A	Content Knowledge	Shows deep understanding of the topic with accurate information.	Good understanding with minor errors.	Basic understanding with limited depth.	Lacks understanding; several errors in content.
B	Applications of the topic presented	Mentioned and explained Clearly	Mentioned Limited and explained	Mentioned very few and not clearly explained	Not mentioned and Explained
C	Presentation Skills	Communicate clearly, and confidently	Mostly clear and confident, some hesitation.	Some clarity issues; lacks of confidence.	Poor delivery, hard to understand.
D	Visual Aids/Materials	Uses well-designed slides/posters that support the topic clearly.	Uses slides/posters that are mostly relevant.	Slides are basic or not very clear.	Visuals are missing or poorly designed.
E	Response to Questions	Answers questions confidently and accurately.	Answers most questions correctly.	Tries to answer but lacks clarity and confidence.	Unable to answer questions properly.



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Rubrics for Survey

Surveys help students connect classroom learning with real-life situations by collecting data. Data related to technical and product-related aspects, infrastructure, environment, social, and community needs. In an educational field, surveys are often used to assess student perceptions and learning outcomes and evaluate the course's effectiveness.

Sr Nos	Criteria	Excellent (4)	Good (3)	Satisfactory (2)	Needs Improvement (1)
A	Understanding of Topic	Shows very clear understanding of the survey topic; explains ideas well.	Shows good understanding of the survey topic; with minor errors.	Basic understanding of the survey topic; some important points missing.	Poor understanding of the survey topic; many errors or confusion.
B	Data Collection	Data collected is complete and accurate	Data is mostly complete and minor accurate.	Data has some missing or incorrect parts.	Data is incomplete and not reliable.
C	Data Analysis	Data is well- clearly analyzed; conclusions are strong.	Data is analyzed well with less conclusion	Data analysis is basic and conclusions are weak.	No proper analysis; conclusions are missing
D	Presentation of Findings	Findings are presented clearly, neatly, and creatively.	Findings are clear and neat.	Findings are understandable but not well-presented.	Findings are unclear or poorly presented.
E	Teamwork and Contribution	Excellent participation and active contribution.	Good participation and less contribution	Uneven participation and very less contribution	No Participation and no Contribution



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DEPARTMENT OF ENGINEERING SCIENCES AND HUMANITIES

First Year B. Tech. (2025 Pattern), AY 2025-26

Continuous Comprehensive Assessment (CCA)

Course: Engineering Mechanics	Code: ESC-104- CVL	Course Teacher: Mr. A V Wakchaure
Semester: I	Class: F Y B Tech	Division: 4 th Comp B

- **CCA 1** : Consist of **Course Activity** which could be industry application-based, internet-based, workshop-based, and laboratory-based or field based.
- **CCA 2** : Consist of **Case Study /Survey** based on applications or content beyond Course Contents of the respective course.
- **CCA 3** : Consist of **Group Discussion/Seminar/Blog writing**.
- **Cognitive Level:** **R:** Remember, **U:** Understand, **AP:** Apply, **AN:** Analyse, **E:** Evaluate, **C:** Create
- **Knowledge Category:** **F:** Factual, **C:** Conceptual, **P:** Procedural, **MC:** Meta-cognitive, **FDP:** Fundamental Design Principles, **C&S:** Criteria & Specifications, **PC:** Practical Constraints, **DI:** Design Instrumentalities

S N	Roll Number	Activity Assigned to students (CCA1/CCA2/CCA3)	COs	PO's/PSO's	Cognitive Level	Knowledge Category
1	25CO071	CCA1= Comparison of Beam Materials	2	PO1/PO3	U/AN	C&S / PC
2	25CO072					
3	25CO073					
4	25CO074					
5	25CO075					
6	25CO076					
7	25CO077	CCA2= Study of Structure of Chenab River Bridge	3	PO1/PO2	AP/AN	C/C&S/PC
8	25CO078					
9	25CO079					
10	25CO080					
11	25CO081					
12	25CO082					

S N	Roll Number	Activity Assigned to students (CCA1/CCA2/CCA3)	Cos Mapped	PO's/PSO's Mapped	Cognitive Level	Knowledge Category
13	25CO083	CCA1= Effect of Truss Geometry on Structural Stability.	3	PO1/PO2	AP/AN	C/P/PC
14	25CO084					
15	25CO085					
16	25CO086					
17	25CO087					
18	25CO088	CCA 1= Frictional Analysis of Different Surfaces	3	PO1/PO2	U/AP/AN	C/P/PC
19	25CO089					
20	25CO090					
21	25CO092					
22	25CO093					
23	25CO094	CCA1= Study and application of different types of Trusses	3	PO1/PO2	AP/AN	C/C&S/PC
24	25CO095					
25	25CO096					
26	25CO097					
27	25CO098					
28	25CO099	CCA1 = Study and application of different types of Trusses.	3	PO1/PO2	AP/AN	C/C&S/PC
29	25CO100					
30	25CO101					
31	25CO102					
32	25CO103					
33	25CO104					
34	25CO105					
35	25CO106					
36	25CO107		1	PO1/PO2	AN/E/C	C/FDP/PC
37	25CO108					
38	25CO109					
39	25CO110					
		CCA1= Wind force on tall buildings				

S N	Roll Number	Activity Assigned to students (CCA1/CCA2/CCA3)	Cos Mapped	PO's/PSO's Mapped	Cognitive Level	Knowledge Category
40	25CO112	CCA 1= Frictional Analysis of Different Surfaces	3	PO1/PO2	U/AP/AN	C/P/PC
41	25CO113					
42	25CO114					
43	25CO115					
44	25CO116					
45	25CO117	CCA1=Study and application of different types of Trusses	3	PO1/PO2	AP/AN	C/C&S/PC
46	25CO118					
47	25CO119					
48	25CO120					
49	25CO121					
50	25CO122					
51	25CO123	CCA 1= Comparison of Beam Materials	2	PO1/PO3	U/AN	C&S / PC
52	25CO124					
53	25CO125					
54	25CO126					
55	25CO127					
56	25CO128					
57	25CO129	CCA 1= Frictional Analysis of Different Surfaces	3	PO1/PO2	U/AP/AN	C/P/PC
58	25CO130					
59	25CO131					
60	25CO132					
61	25CO133					
62	25CO134					
63	25CO135					
64	25CO136	CCA 1= Frictional Analysis of Different Surfaces	3	PO1/PO2	U/AP/AN	C/P/PC
65	25CO137					

66	25CO138					
67	25CO139					
68	25CO140					

Name and Sign of Course Teacher:

Remarks by Module Coordinator (If any):

Name and Sign of Module Coordinator:

Head of Department:

CCA Photos



Model Photograph



Model Photograph



CCA Presentation for Engineering Mechanics



CCA Presentation for Engineering Mechanics



CCA Presentation for Engineering Mechanics



CCA Presentation for Engineering Mechanics



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Department of Engineering Sciences and Humanities (DESH)

Continuous Comprehensive Assessment (CCA)

				SEMESTER-I					Academic Year: 2025-26														
CLASS:F.Y. B.Tech (Computer-B)		DIV: IV		BATCH: A		SUBJECT: Engineering Mechanics					NAME OF FACULTY: A V Wakchaure												
Sr. No	Roll No.	Name of the Student	CCA1						CCA2					CCA3					CCA Marks Out of 20				
			Mark the Criteria on the scale of 4 to 1					Total Marks(20)	Mark the Criteria on the scale of 4 to 1					Total Marks (20)	Mark the Criteria on the scale of 4 to 1					Total Marks (20)			
			A	B	C	D	E		A	B	C	D	E		A	B	C	D			E		
1	25CO071	MUTKULE VIREN SANTOSH	4	4	4	4	3	19	4	4	4	4	3	19						0	19		
2	25CO072	NACHIKET DHANESH KODYA	4	4	4	3	3	18	4	4	4	3	3	18						0	18		
3	25CO073	NARUTE PRATHAMESH HANUMANT	4	4	4	4	3	19	4	4	4	4	3	19						0	19		
4	25CO074	NEMADE KETAN VIVEKANAND	4	4	4	3	3	18	4	4	4	3	3	18						0	18		
5	25CO075	NIKHIL SHANKAR DHORE	4	4	4	3	3	18	4	4	4	3	3	18						0	18		
6	25CO076	NINAWE NISCHAY VARUN	4	4	3	3	3	17	4	4	4	3	3	18						0	18		
7	25CO077	OM HARISH SHELKE	4	4	4	4	3	19	4	4	4	4	3	19						0	19		
8	25CO078	PADMASHRI ABHIJEET HINGE	4	4	4	4	3	19	4	4	4	4	3	19						0	19		
9	25CO079	PALNITKAR ADWAAIT SWANAND	4	4	4	4	3	19	4	4	4	4	3	19						0	19		
10	25CO080	PANHALE PAARTH SACHIN	4	4	4	4	3	19	4	4	4	4	3	19						0	19		
11	25CO081	PARDESHI GAURI AMOL	4	4	4	4	3	19	4	4	4	4	3	19						0	19		
12	25CO082	PATIL ATHARVA SANJAY	4	4	4	4	3	19	4	4	4	4	3	19						0	19		
13	25CO083	PATIL JANHAVI ANIL	4	4	4	4	3	19	4	4	4	4	3	19						0	19		
14	25CO084	PATIL ROSHANI SAMBHAJI	4	4	4	4	3	19	4	4	4	4	3	19						0	19		
15	25CO085	PATKAROD SAI CHARAN	4	4	4	4	3	19	4	4	4	4	3	19						0	19		
16	25CO086	PAWAR VISHAL MANSUKH	4	4	4	4	3	19	4	4	4	3	3	18						0	19		
17	25CO087	POL GANESH EKNATH	4	4	4	3	3	18	4	4	4	3	3	18						0	18		
18	25CO088	PRANJAL BHARAT THORAT	4	4	4	4	3	19	4	4	4	4	3	19						0	19		
19	25CO089	PRASAD DIKSHA SANTOSH	4	4	4	4	3	19	4	4	4	4	3	19						0	19		
20	25CO090	PUJARI SHRIPADMA VIDYADHAR	4	4	4	4	3	19	4	4	4	4	3	19						0	19		
21	25CO091	RAJGURU HRUSHIKESH ANIL						0						0						0	0		
22	25CO092	RATHOD ADITYA ANIL	4	4	4	4	3	19	4	4	4	4	3	19						0	19		
23	25CO093	RIDDHIMA VIJAYWARGIYA	4	4	4	4	3	19	4	4	4	4	3	19						0	19		

Note: 1)Total Marks are 20 for CCA. 2) Student shall perform any two componenets out of CCA1/CCA2/CCA3. 3) Rubrics are to be followed while assessing CCA.

4) Excellent - 4 marks , Good - 3 marks , Satisfactory- 2 marks, Needs Imprvement - 1 marks



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Department of Engineering Sciences and Humanities (DESH)

Continuous Comprehensive Assessment (CCA)

				SEMESTER-I					Academic Year: 2025-26												
CLASS:F.Y. B.Tech (Computer-B)		DIV: IV		BATCH: B		SUBJECT: Engineering Mechanics					NAME OF FACULTY: A V Wakchaure										
Sr. No	Roll No.	Name of the Student	CCA1						CCA2						CCA3						CCA Marks Out of 20
			Mark the Criteria on the scale of 4 to 1					Total Marks(20)	Mark the Criteria on the scale of 4 to 1					Total Marks (20)	Mark the Criteria on the scale of 4 to 1					Total Marks (20)	
			A	B	C	D	E		A	B	C	D	E		A	B	C	D	E		
1	25CO094	RITESH VIJAY PATIL	4	4	3	3	3	17	4	4	4	3	3	18						0	18
2	25CO095	RITVIK SAINI (JKSSS)	4	4	3	3	3	17	4	4	4	3	3	18						0	18
3	25CO096	ROKADE PRATHAMESH SHIVRAM	4	4	3	3	3	17	4	4	4	3	3	18						0	18
4	25CO097	RUDRA MANOJ SHIRSATH	4	4	4	4	3	19	4	4	4	4	3	19						0	19
5	25CO098	SACHIN SOMNATH KHED	4	4	3	3	3	17	4	4	4	3	3	18						0	18
6	25CO099	SAHIL AJAY BASSAIYE	4	4	4	4	3	19	4	4	4	4	3	19						0	19
7	25CO100	SAMRUDDHI SANTOSH MORE	4	4	4	4	3	19	4	4	4	4	3	19						0	19
8	25CO101	SANVED BABASAHEB JEJURKAR	4	4	4	3	3	18	4	4	4	3	3	18						0	18
9	25CO102	SAPATE OM BHALCHANDRA	4	4	4	4	3	19	4	4	4	4	3	19						0	19
10	25CO103	SARPE MRUNAL KIRAN	4	4	4	3	3	18	4	4	4	3	3	18						0	18
11	25CO104	SAVATE SNEHA DEVIDAS	4	4	4	3	3	18	4	4	4	3	3	18						0	18
12	25CO105	SHAH HRISHIKESH ASHWIN	4	4	4	3	3	18	4	4	4	3	3	18						0	18
13	25CO106	SHALHALKAR OWEE SANDEEP	4	4	4	4	3	19	4	4	4	4	3	19						0	19
14	25CO107	SHARWARI GHANASHYAM MANE	4	4	4	4	3	19	4	4	4	4	3	19						0	19
15	25CO108	SHINDE ANISH SHYAM	4	4	4	3	3	18	4	4	4	3	3	18						0	18
16	25CO109	SHINDE ANURAG SHANKAR	4	4	4	4	3	19	4	4	4	4	3	19						0	19
17	25CO110	SHITOLE PRATHMESH MOHAN	4	4	4	4	3	19	4	4	4	4	3	19						0	19
18	25CO111	SHLOK SATISH AKOLKAR						0						0						0	0
19	25CO112	SHREYAS PRASHANT KULKARNI	4	4	4	4	3	19	4	4	4	4	3	19						0	19
20	25CO113	SHREYASH SHRIKANT GHULE	4	4	4	3	3	18	4	4	4	3	3	18						0	18
21	25CO114	SHREYASH SURESH LONDHE	4	4	4	3	3	18	4	4	4	3	3	18						0	18
22	25CO115	SHRUTI KAMALAKAR BHOSALE	4	4	4	4	3	19	4	4	4	4	3	19						0	19
23	25CO116	SHUBHAM LAXMAN MANE	4	4	4	3	3	18	4	4	4	3	3	18						0	18

Note: 1) Total Marks are 20 for CCA. 2) Student shall perform any two components out of CCA1/CCA2/CCA3. 3) Rubrics are to be followed while assessing CCA.

4) Excellent - 4 marks , Good - 3 marks , Satisfactory- 2 marks, Needs Improvement - 1 marks



						SEMESTER-I					Academic Year: 2025-26										
CLASS:F.Y. B.Tech (Computer-B)		DIV: IV		BATCH: C		SUBJECT: Engineering Mechanics					NAME OF FACULTY: A V Wakchaure										
Sr. No	Roll No.	Name of the Student	CCA1						CCA2						CCA3						CCA Marks Out of 20
			Mark the Criteria on the scale of 4 to 1					Total Marks(20)	Mark the Criteria on the scale of 4 to 1					Total Marks (20)	Mark the Criteria on the scale of 4 to 1					Total Marks (20)	
			A	B	C	D	E		A	B	C	D	E		A	B	C	D	E		
1	25CO117	SIDDHARTH AMOL PATIL	4	4	4	4	3	19	4	4	4	4	3	19						0	19
2	25CO118	SOHAM DASHRATH WAGH	4	4	4	4	3	19	4	4	4	4	3	19						0	19
3	25CO119	SOHAM VIJAY SAWANT	4	4	4	4	3	19	4	4	4	4	3	19						0	19
4	25CO120	SRUSHTI SUHAS DHUMAL	4	4	4	4	3	19	4	4	4	4	3	19						0	19
5	25CO121	SURADKAR VISHAKHA VIJAY	4	4	4	3	3	18	4	4	4	3	3	18						0	18
6	25CO122	SURAVI ANAND NAMJOSHI	4	4	4	3	3	18	4	4	4	3	3	18						0	18
7	25CO123	SURWADE RUSHABH SHANKAR	4	4	4	3	3	18	4	4	4	3	3	18						0	18
8	25CO124	TALLAM SAICHARAN VAMSI MOHAN	4	4	4	4	3	19	4	4	4	4	3	19						0	19
9	25CO125	TAMBE MANTHAN MAHESH	4	4	4	4	3	19	4	4	4	3	3	18						0	19
10	25CO126	TANISHKA BHUTDA	4	4	4	3	3	18	4	4	4	4	3	19						0	19
11	25CO127	TANMAY HARSHVARDHAN AERON	4	4	4	4	3	19	4	4	4	4	3	19						0	19
12	25CO128	TAWARE ROHAN AMBADAS	4	4	4	3	3	18	4	4	4	3	3	18						0	18
13	25CO129	THOKE MAHENDRA MANOHAR	4	4	3	3	3	17	4	4	3	3	3	17						0	17
14	25CO130	THORAT SUPRIYA SHRIRAM	4	4	4	4	3	19	4	4	4	4	3	19						0	19
15	25CO131	UDHANE SOHAM NARAYAN	4	4	4	4	3	19	4	4	4	3	3	18						0	19
16	25CO132	UKARDE SAKSHI KRUSHNA	4	4	4	3	3	18	4	4	4	4	3	19						0	19
17	25CO133	UPLENCHWAR OM PRAFUL	4	4	4	3	3	18	4	4	4	4	3	19						0	19
18	25CO134	VEDPATHAK SHRADHA SATISH	4	4	4	3	3	18	4	4	4	4	3	19						0	19
19	25CO135	VEDSHREE PARESH NASHIKKAR	4	4	4	3	3	18	4	4	4	4	3	19						0	19
20	25CO136	WALE PARTH SOMNATH	4	4	4	3	3	18	4	4	4	4	3	19						0	19
21	25CO137	YASH SAJAN DHAWARE	4	4	3	3	3	17	4	4	3	3	3	17						0	17
22	25CO138	YAWALKAR VAISHNAVI PRADIP	4	4	4	3	3	18	4	4	4	3	3	18						0	18
23	25CO139	YELE KIRAN TATYARAM	4	4	4	3	3	18	4	4	4	3	3	18						0	18
24	25CO140	YOGESH TUSHAR SONAWANE	4	4	4	3	3	18	4	4	4	4	3	19						0	19

Note: 1)Total Marks are 20 for CCA. 2) Student shall perform any two componenets out of CCA1/CCA2/CCA3. 3) Rubrics are to be followed while assessing CCA.

4) Excellent - 4 marks , Good - 3 marks , Satisfactory- 2 marks, Needs Impvement - 1 marks



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Department of Engineering Sciences and Humanities

CERTIFICATE

This is to certify that the following Students of **F.Y. B. Tech** have successfully completed the **CCA-1 / ~~CCA-2~~ / ~~CCA-3~~** activity in the Course **ENGINEERING MECHANICS (ESC104)** as prescribed by **AISSMS College of Engineering, Pune**, an autonomous institute affiliated with **Savitribai Phule Pune University (SPPU)**, during **Semester ~~I~~ / II** of the **Academic Year 20 25 - 20 26**.

Title of activity: (**CCA-1** / ~~CCA-2~~ / ~~CCA-3~~): **FRictional ANALYSIS OF DIFFERENT SURFACES**

Sr. No.	Roll No.	Name of Student	Signature
1	25C0088	Pranjal Bharat Thorat	P.B.Thorat
2	25C0089	Prasad Diksha Santosh	Diksha
3	25C0090	Pujari Shripadma Vidyadhar	Spadma
4	25C0092	Rathod Aditya Anil	ARathod
5	25C0093	Riddhima Vijaywargiya	Riddhima
6	—	—	—

Date:


A.V. Wakchaure
Faculty In-charge
(Signature & Name)


Head of Department
(Signature & Seal)



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Title of activity: (CCA₁): Study and application of Trusses

Sr. No.	Roll No.	Name of Student	Signature
1	25C0094	Ritesh Patil	
2	25C0095	Ritvik Saini	
3	25C0096	Prathamesh Rokade	
4	25C0097	Rudra Shirsath	
5	25C0098	Sachin Khed	
6	25C0099	Sahil Bassaiye	
7			
8			

Date:

A. V. Waghmare
Faculty In-charge
(Signature & Name)

Head of Department
(Signature & Seal)



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DEPARTMENT OF ENGINEERING SCIENCES AND HUMANITIES

First Year B. Tech. (2025 Pattern), AY 2025-26

Continuous Comprehensive Assessment (CCA)

Course: Engineering Graphics	Code: ESC-103	Course Teacher: Mr. Gade S T
Semester: I	Class: Mech-B	Division: Div-IX

- **CCA 1** : Consist of **Course Activity** which could be industry application-based, internet-based, workshop-based, and laboratory-based or field based.
- **CCA 2** : Consist of **Case Study /Survey** based on applications or content beyond Course Contents of the respective course.
- **CCA 3** : Consist of **Group Discussion/Seminar/Blog writing**.
- **Cognitive Level:** **R:** Remember, **U:** Understand, **AP:** Apply, **AN:** Analyse, **E:** Evaluate, **C:** Create
- **Knowledge Category:** **F:** Factual, **C:** Conceptual, **P:** Procedural, **MC:** Meta-cognitive, **FDP:** Fundamental Design Principles, **C&S:** Criteria & Specifications, **PC:** Practical Constraints, **DI:** Design Instrumentalities

S N	Roll Number	Activity Assigned to students (CCA1/CCA2/CCA3)	COs	PO's/PSO's	Cognitive Level	Knowledge Category
1	25ME066	CCA-1-3D model of solid object using an orthographic and/or isometric drawings by using card board or any other suitable material.	CO4	PO1, PO2, PO3, PO5, PO9	C	P, FDP, DI
2	25ME067					
3	25ME068					
4	25ME069					
5	25ME070					
6	25ME071	CCA-1- Model making for Development of Surfaces by using card board or any other suitable material.	CO-3	PO1, PO2, PO3, PO5, PO9	C	P, FDP, DI
7	25ME072					
8	25ME073					
9	25ME074					
10	25ME075					

S N	Roll Number	Activity Assigned to students (CCA1/CCA2/CCA3)	Cos Mapped	PO's/PSO's Mapped	Cognitive Level	Knowledge Category
11	25ME076	CCA-1- 3D Model using CAD Software	CO-4, CO-5	PO1, PO3, PO5, PO9, PO11	C	P, FDP, DI
12	25ME077					
13	25ME078					
14	25ME079					
15	25ME080					
16	25ME081	CCA-2- Reading & Interpretation of Industrial Part Drawing	CO-1	PO1, PO2, PO5	U	C, P, C&S
17	25ME082					
18	25ME083					
19	25ME084					
20	25ME085					
21	25ME086	CCA-1- 3D Model Object using Engineering Curves	CO-3	PO1, PO3, PO5	C	P, FDP, DI
22	25ME087					
23	25ME088				U	C, FDP
24	25ME089					
25	25ME090					
26	25ME091	CCA-2-Case Study – Industrial visit to create awareness of ISO drawing Standard	CO-1	PO6, PO7, PO8, PO11	U / AN	C, C&S, FDP
27	25ME092					
28	25ME093					
29	25ME094					
30	25ME095					
31	25ME096	CCA-1-Orthographic Projections of Mechanical Component	CO-4	PO1, PO2, PO3, PO5	AP	P, FDP
32	25ME097					
33	25ME098					
34	25ME099					
35	25ME100					

S N	Roll Number	Activity Assigned to students (CCA1/CCA2/CCA3)	Cos Mapped	PO's/PSO's Mapped	Cognitive Level	Knowledge Category
36	25ME101	CCA-1-Model Making on Projection of Line	CO-1	PO1, PO2, PO3	C	P, FDP, DI
37	25ME102					
38	25ME103					
39	25ME104					
40	25ME105					
41	25ME106	CCA-1-Model Making on Projection of Plane	CO-2	PO1, PO2, PO3	C	P, FDP, DI
42	25ME107					
43	25ME108					
44	25ME109					
45	25ME110					
46	25ME111	CCA-2-Survey – Analysis of Dimensioning Practices	CO-1	PO1, PO2, PO5, PO11	AN	C, C&S
47	25ME112					
48	25ME113					
49	25ME114					
50	25ME115					
51	25ME116	CCA-1-3D Model of Solid Object using Engineering Curves	CO-3	PO1, PO3, PO5	C	P, FDP, DI
52	25ME117					
53	25ME118					
54	25ME119					
55	25ME120					
56	25ME121	CCA-2-Survey of industrial component along with part drawing & its analysis (repeat – same as #4)	CO-1	PO2, PO4, PO5, PO11	AN	C, C&S, PC
57	25ME122					
58	25ME123					
59	25ME124					
60						

S N	Roll Number	Activity Assigned to students (CCA1/CCA2/CCA3)	Cos Mapped	PO's/PSO's Mapped	Cognitive Level	Knowledge Category
61	25ME126	CCA-1-3D Model by Using CAD Software	CO-4 CO-5	PO1, PO3, PO5, PO9, PO11	C	P, FDP, DI
62	25ME127					
63	25ME128					
64	25ME129					
65	25ME126					

Mr. S T Gade

Name and Sign of Course Teacher:

Remarks by Module Coordinator (If any):

Name and Sign of Module Coordinator:

Head of Department:



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DEPARTMENT OF ENGINEERING SCIENCES AND HUMANITIES

First Year B. Tech. (2025 Pattern), AY 2025-26

Continuous Comprehensive Assessment (CCA)

Course: Engineering Graphics	Code: ESC-103	Course Teacher: Mr. Gade S T
Semester: I	Class: Mech-B	Division: Div-IX

- **CCA 1** : Consist of **Course Activity** which could be industry application-based, internet-based, workshop-based, and laboratory-based or field based.
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- **Cognitive Level:** **R:** Remember, **U:** Understand, **AP:** Apply, **AN:** Analyse, **E:** Evaluate, **C:** Create
- **Knowledge Category:** **F:** Factual, **C:** Conceptual, **P:** Procedural, **MC:** Meta-cognitive, **FDP:** Fundamental Design Principles, **C&S:** Criteria & Specifications, **PC:** Practical Constraints, **DI:** Design Instrumentalities

S N	Roll Number	Activity Assigned to students (CCA1/CCA2/CCA3)	COs	PO's/PSO's	Cognitive Level	Knowledge Category
1	25ME066	CCA-2 -Study real-world examples where drawing inaccuracies led to significant issues in manufacturing or construction/failure of component	CO1	PO2, PO6, PO7, PO8	E	C, C&S, PC
2	25ME067					
3	25ME068					
4	25ME069					
5	25ME070					
6	25ME071	CCA-2 - Survey of industrial component along with part drawing & its analysis.	CO-1	PO2, PO4, PO5, PO11	AN	C, C&S, PC
7	25ME072					
8	25ME073					
9	25ME074					
10	25ME075					

S N	Roll Number	Activity Assigned to students (CCA1/CCA2/CCA3)	Cos Mapped	PO's/PSO's Mapped	Cognitive Level	Knowledge Category
11	25ME076	CCA-3 -Group Discussion – Manual Drawing vs. CAD: Pros and Cons	CO-3, CO-4, CO-5	PO9, PO10, PO12	U	MC, DI
12	25ME077					
13	25ME078					
14	25ME079					
15	25ME080					
16	25ME081	CCA-3 - Seminar on Impact of Engineering Drawings on Quality Control	CO-1	PO7, PO8, PO10, PO12	E	C, C&S, PC
17	25ME082					
18	25ME083					
19	25ME084					
20	25ME085					
21	25ME086	CCA-2 - Survey – Applications and significance of different engineering curves in engineering sectors.	CO-3	PO1, PO2, PO7	U	C, FDP
22	25ME087					
23	25ME088					
24	25ME089					
25	25ME090					
26	25ME091	CCA-3 -Blog – Best Practices for Accurate & Clear Engineering Drawings	CO-1	PO8, PO10, PO12	E / C	MC, C&S
27	25ME092					
28	25ME093					
29	25ME094					
30	25ME095					
31	25ME096	CCA-3 -Seminar – Role of Engineering Graphics in Mechanical Engg.	CO-1	PO10, PO12	U / E	C, FDP
32	25ME097					
33	25ME098					
34	25ME099					
35	25ME100					

S N	Roll Number	Activity Assigned to students (CCA1/CCA2/CCA3)	Cos Mapped	PO's/PSO's Mapped	Cognitive Level	Knowledge Category
36	25ME101	CCA-2-Survey – Representation of Various Bearing Symbols	CO-1	PO1, PO5, PO11	U	F, C, C&S
37	25ME102					
38	25ME103					
39	25ME104					
40	25ME105					
41	25ME106	CCA-3-Group Discussion – Importance of Standardization in Drawings	CO-1	PO6, PO8, PO9, PO10	E	MC, C&S
42	25ME107					
43	25ME108					
44	25ME109					
45	25ME110					
46	25ME111	CCA-3-Blog – Role of AI in Engineering Drawing and Design	CO-1	PO5, PO10, PO12	C	MC, DI, PC
47	25ME112					
48	25ME113					
49	25ME114					
50	25ME115					
51	25ME116	CCA-2-Case Study – Conventional Representation of Mechanical Elements	CO-1	PO1, PO6, PO7, PO8	AN	C, C&S
52	25ME117					
53	25ME118					
54	25ME119					
55	25ME120					
56	25ME121	CCA-3-Study and reading of industrial drawings to understand standard industrial practice (dimensioning, GD&T, surface finish, welding symbols etc.)	CO-1	PO1, PO2, PO5, PO11	U / AN	C, C&S, FDP
57	25ME122					
58	25ME123					
59	25ME124					
60	25ME125					

S N	Roll Number	Activity Assigned to students (CCA1/CCA2/CCA3)	Cos Mapped	PO's/PSO's Mapped	Cognitive Level	Knowledge Category
61	25ME126	CCA-3-Blog – Recent Developments and Features in CAD Software	CO-1	PO5, PO10, PO12	U / C	MC, DI
62	25ME127					
63	25ME128					
64	25ME129					
65	25ME126					

Name and Sign of Course Teacher:

Remarks by Module Coordinator (If any):

Name and Sign of Module Coordinator:

Head of Department:



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(Id.No. PU / PN/ Engg. / 093 (1992)
(Accredited by NAAC with grade A+)



CCA 2 SURVEY OF INDUSTRIAL COMPONENT ALONG WITH PART DRAWING AND ITS ANALYSIS

Department : Mechanical Engineering

Subject : Engineering Graphics

Division : Mechanical B

Batch : A

CA Group : 2

Group Representatives :

Pranav More : 25ME071

Mosami Borawake : 25ME072

Aryan Mundhe : 25ME073

Vaibhav Mune : 25ME074

Neha Patil : 25ME075

18
20

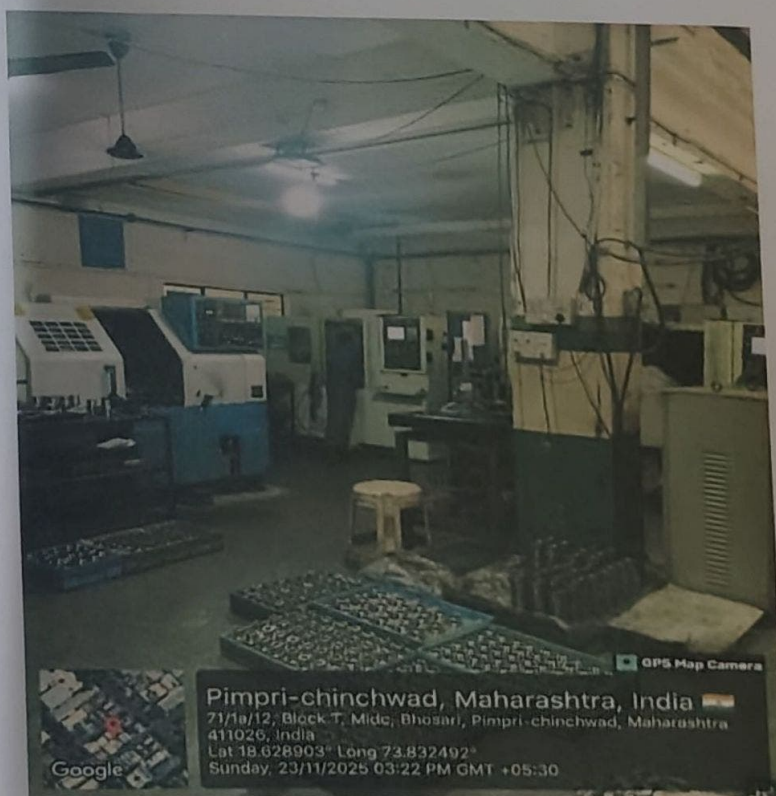
[Signature]

INTRODUCTION :

Here, our CCA group 2 has been given a topic for survey of industrial component along with part drawing and its analysis . We had visited a industry which manufactures such industrial components. There we got to know about the drawings which are used to design.

The **survey of an industrial component** is an important activity in Engineering Graphics that helps students understand how real world machine parts are designed, represented, and analyzed. In industries, every component whether small like a nut and bolt or complex like a gear assembly is created based on precise engineering drawings. These drawings provide complete information about its part drawing and manufacturing process steps.

This survey aims to bridge the gap between **theory** and **practical industrial applications** by studying an actual component from a manufacturing or mechanical setup. The selected component i.e neckpiece is observed, measured, and sketched to understand its geometry and features such as holes, fillets, ribs, threads, and surface finishes. Using this



information, a detailed **part drawing** is prepared following standard conventions (IS/ISO norms) like orthographic projections, sectional views, dimensioning rules, and tolerances.
Industry : GLOBAL TECHNO ENGINEERS



During our industrial visit, we toured a manufacturing company that specializes in producing neckpiece components which are used to join parts, shafts, hydrolic lines, or machine assemblies where accurate alignment and secure fastening are required .

This type of component widely used in :

1. Automobile industry
2. Hydraulic and pneumatic systems
3. Pipe fittings and connectors
4. Machinery and equipment assembly
5. Tool holders and jigs

6. Rotational and motion transfer system
7. Industrial automation components

Industrial component :

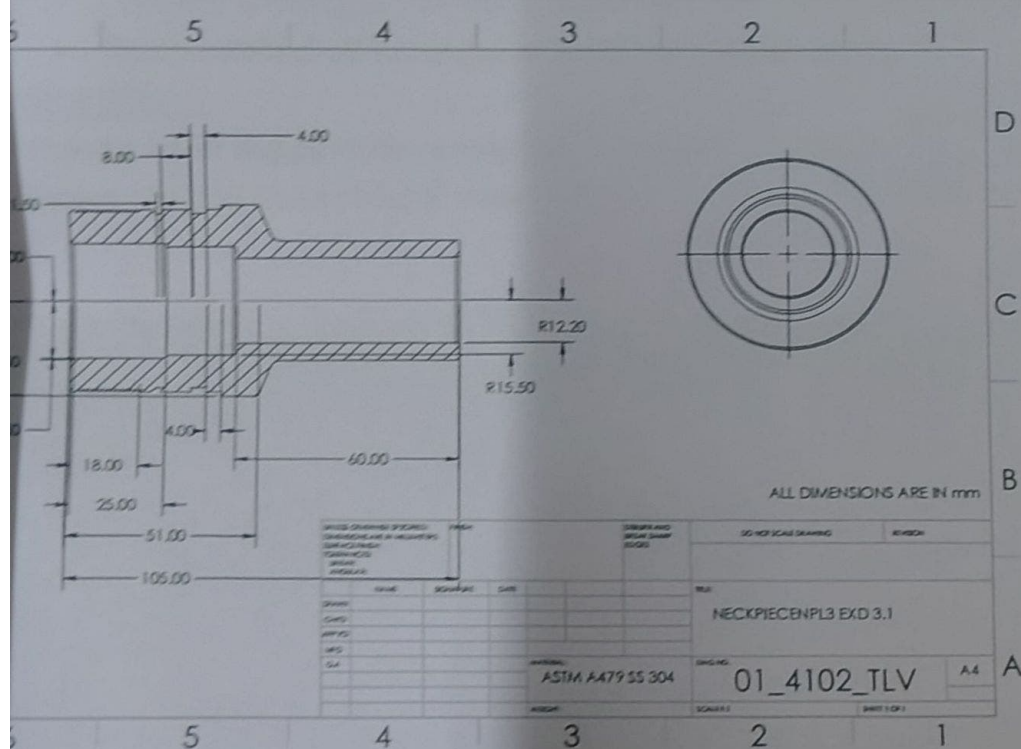


This component is typically used to join pipes, shafts, hydraulic lines or machine assemblies where accurate alignment and secure fastening are required.

PART DRAWING OF GIVEN COMPONENT :

If this part were drawn for Engineering Graphics, the drawing would include:

Front view (showing steps and threads), Top View (showing inner diameter), sectional view (to show internal bore details)
Thread symbols, Dimensions (OD, ID, thread pitch, length) Material specification, Surface finish, Tolerance



Geometric Features Identified in the Drawing
External Thread :

- Located on the upper section
- Requires thread profile representation
- Needs accurate pitch and class of fit

Stepped Outer Surfaces :

- Three distinct diameter levels (large → medium → small)

- Provide seating surfaces or restricted movement in assembly

Internal bore :

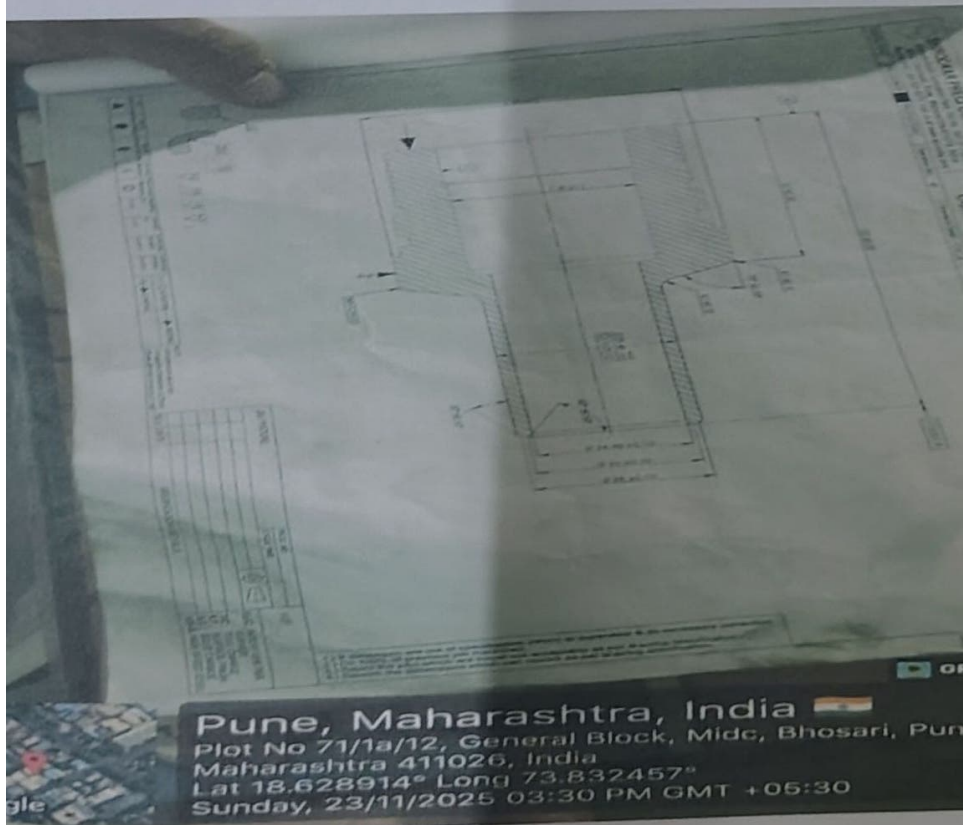
- Clean, smooth finish
- requires boring + reaming for precision

Chamfers :

- Present at edges for easy assembly and reduced stress
- Represented using angular dimension in drawing

Shoulders :

Provide axial support in assembly
shown clearly in sectional view .



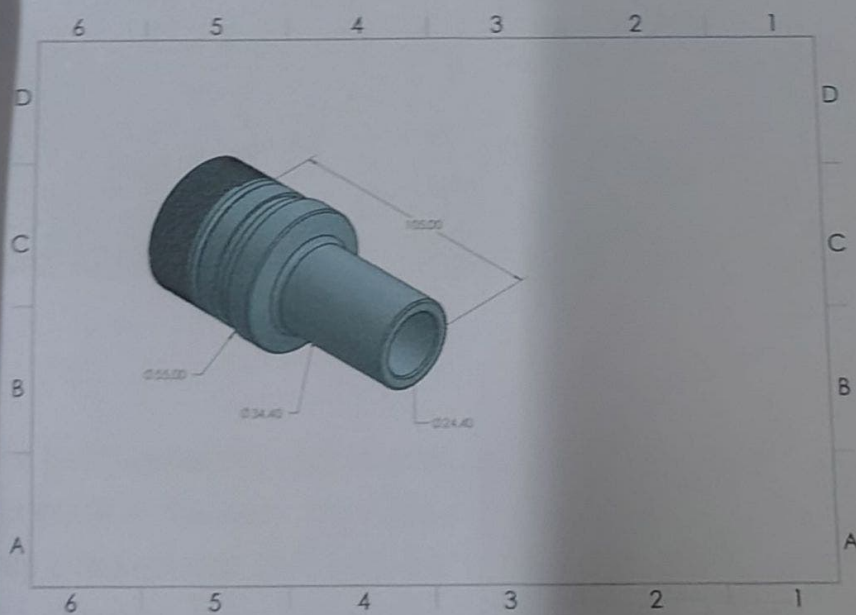
From the part drawing analysis, we understand: The threads allow the component to engage with a mating part like a housing, coupling, or pipe.

Stepped diameters ensure proper positioning, alignment, or sealing in assembly.

The internal bore suggests it may act as a fluid passage, bearing seat, or shaft guide.

Chamfers ensure smooth assembly and reduce damage during tightening.

High surface finish suggests rotation or pressure applications, common in hydraulic or mechanical systems.

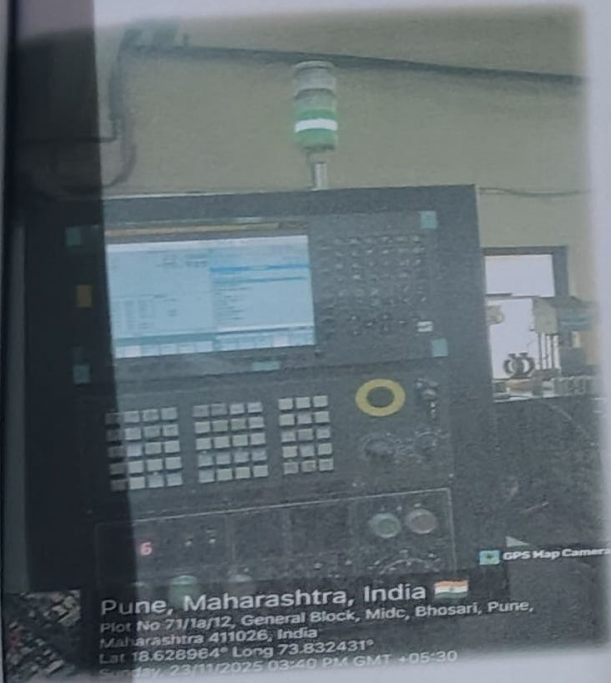


Images during survey in industry :

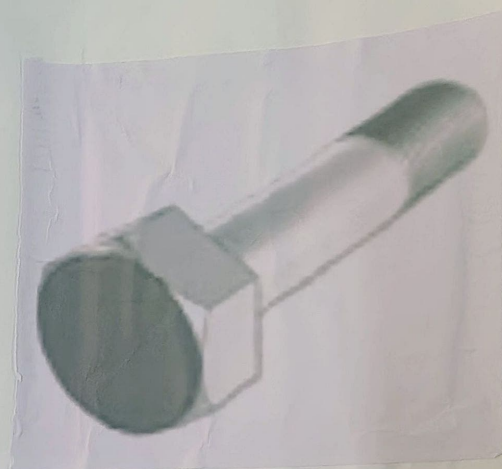
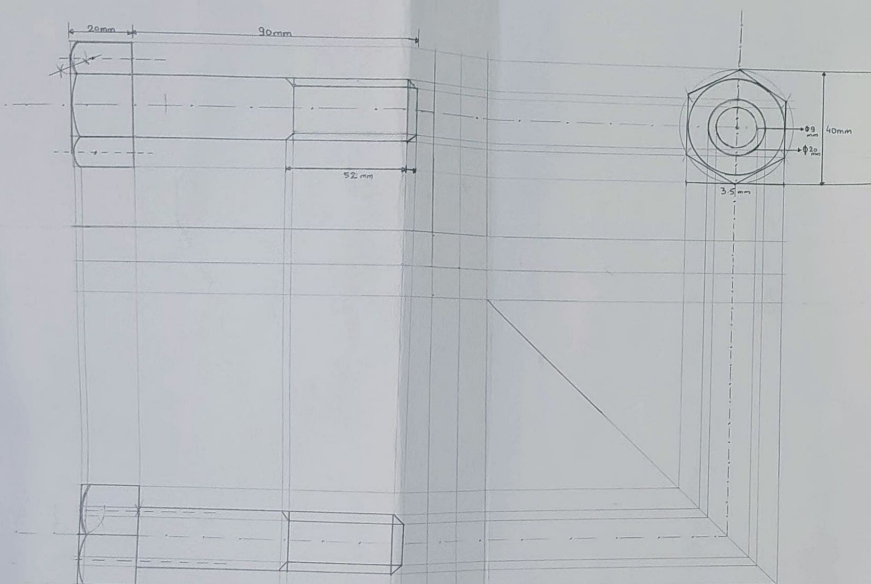


The part drawing analysis shows that this industrial component is a precision-turned, threaded connector sleeve requiring accurate step dimensions, internal bore finishing, and external threading. The drawing includes orthographic views, sectional views, thread details, tolerances, and symbols according to BIS/ISO standards. By studying the drawing, the manufacturing process sequence, functional use, and quality requirements of the component can be clearly understood.

Some other images of industry :



* ORTHOGRAPHIC PROJECTION OF HEXAGONAL BOLT..



ALL DIMENSIONS IN MM

AISSMS's			
NAME: CCA-02		ROLL NO.:	
PROGRAMME SEM. MASTER:		DIV.: B	
COURSE NAME:		COURSE CODE:	
TITLE: Orthographic Projection of hexagonal bolt			
SHEET NO.		SCALE:	
STARTING DATE		COMPLETION DATE	
CO-		PRO-	
MARKS OBTAINED			
PROCESS RELATED (15)	PRODUCT RELATED (15)	TOTAL (25)	DATED SIGN OF COURSE

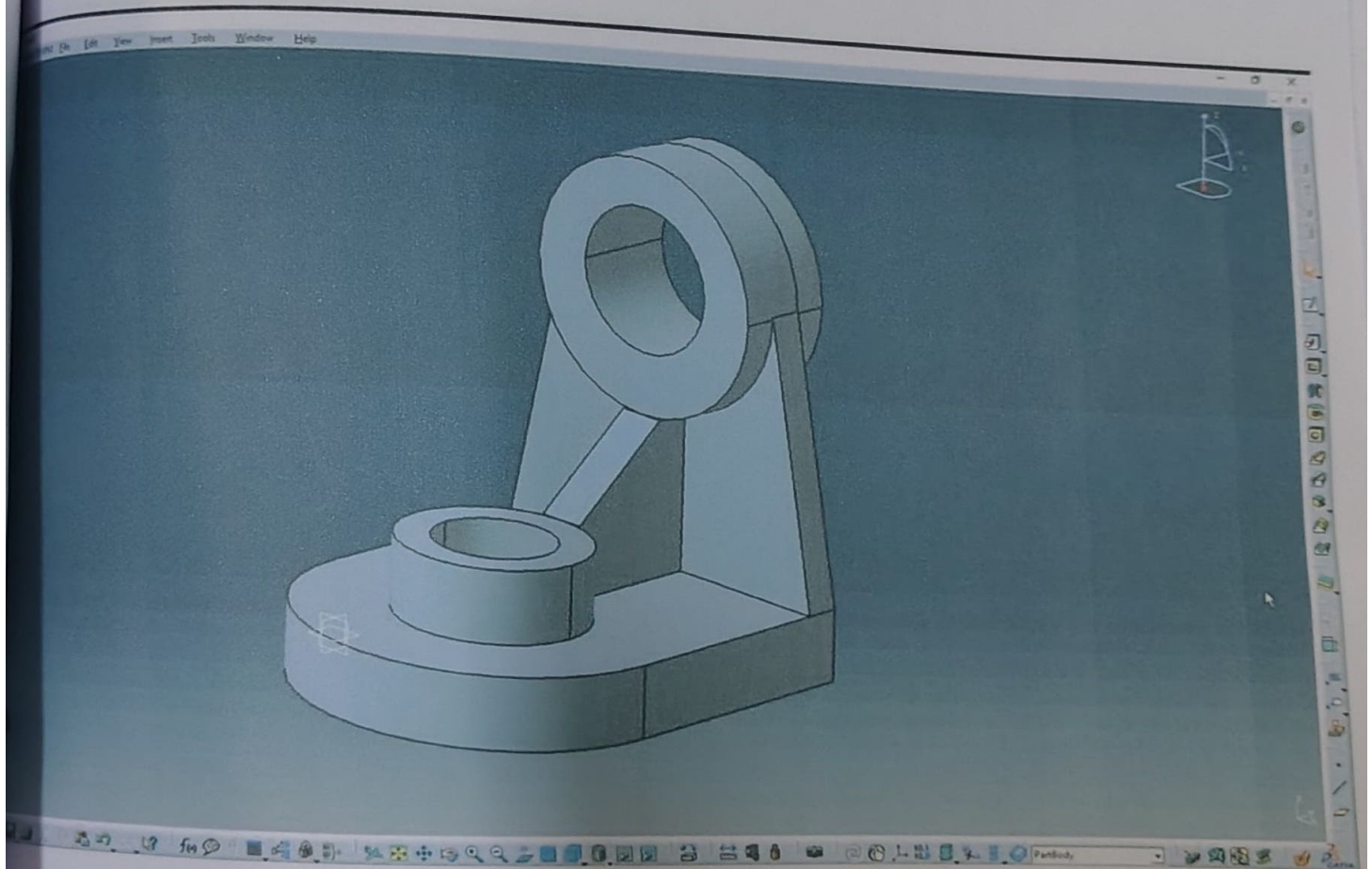
0/2
20

- 1> Chinmay Rithe (25ME96)
- 2> Rohan Shejwal (25ME97)
- 3> Saham Salunke (25ME98)
- 4> Amruta Samarth (25ME99)
- 5> Amar Sarade (25ME100)



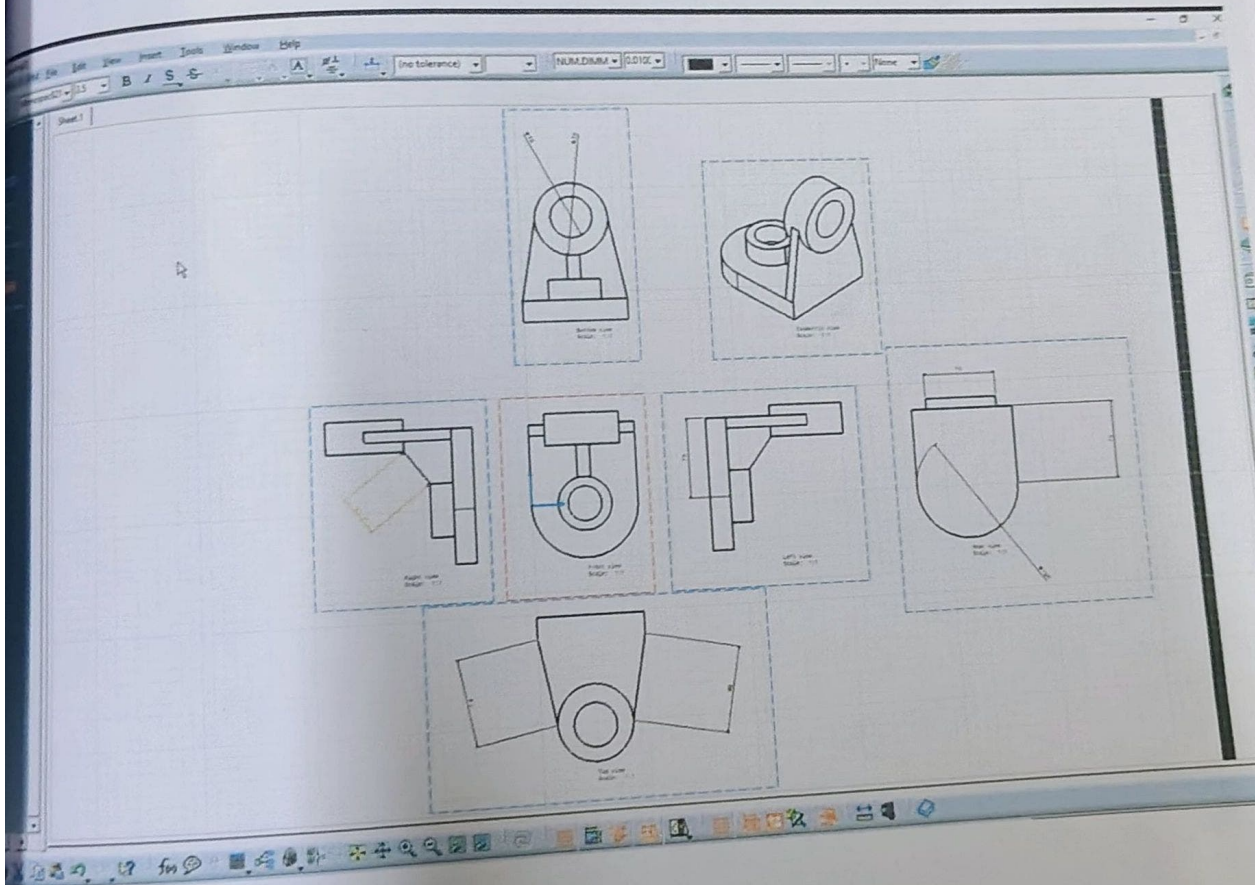


E - Voral Samuddhi Rasesaheb
NO - 257 E127



18
20

E - VARAL SAMRUDDHI RAO SAHER
- 25ME127



18/20



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Department of Engineering Sciences and Humanities

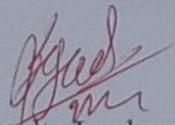
CERTIFICATE

This is to certify that the following Students of **F.Y. B. Tech** have successfully completed the **CCA-1 / CCA-2 / CCA-3** activity in the Course Engineering Graphics, as prescribed by **AISSMS College of Engineering, Pune**, an autonomous institute affiliated with Savitribai Phule Pune University (SPPU), during **Semester I / II** of the Academic Year 2025 - 2026.

Title of activity: (CCA₁ / CCA₂ / CCA₃): Conventional Representation of Mechanical Elements

Sr. No.	Roll No.	Name of Student	Signature
1	25ME116	Suyash Nikam	Suyash
2	25ME117	Suyash B. Supane	S. B. Supane
3	25ME118	Swaraj Dhengle	Swaraj
4	25ME119	Aditya D. Talajiya	Aditya
5	25ME120	Tanmay G. Tambat	Tanmay
6			

Date:


Faculty In-charge
(Signature & Name)

Head of Department
(Signature & Seal)

EG CCA **CONVENTIAL** **REPRESTATION OF** **MECHANICAL ELEMENTS**

Conventional representation of mechanical elements means the **standard symbols or simplified drawings** used in **engineering drawings and diagrams** to represent machine parts. These symbols make drawings easy to understand, universal, and less time-consuming to draw.

In engineering drawing, it is **not necessary to draw every machine part in full detail**. To save time and maintain uniformity, **conventional representations** are used. These are **standardized simplified symbols and drawings** accepted universally in mechanical engineering.

1} Screws, Bolts, and Nuts

- Threads are **not drawn in actual shape**.
- External threads:
 - Major diameter → **thick continuous line**
 - Minor diameter → **thin line**
- Internal threads:
 - Major diameter → **thin line**
 - Minor diameter → **thick line**
- Nut and bolt heads are usually shown as **hexagonal** in top view.
- Chamfers and thread details are omitted.

Purpose: Simplifies complex threading details.

2} Springs

- Represented using **conventional zig-zag or helical lines**.
- Types:
 - Compression spring
 - Tension spring
- Exact coil spacing is not shown.

3} Gears

- Teeth are **not drawn individually**.
- Represented by:
 - Pitch circle
 - Root circle
- For meshing gears, center distance is shown accurately.

4} FILLETS

- Fillets are shown by a **simple arc** joining two surfaces.
- The **radius of fillet (R)** is specified.
- In sectional views, fillets are **not hatched**.
- Small fillets may be omitted and assumed unless specified.

5} Bearings & Knurling

a) Ball Bearings

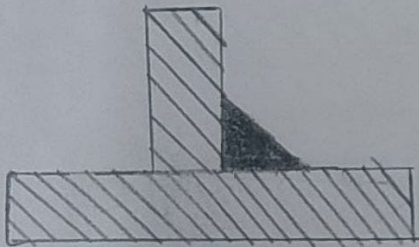
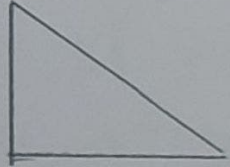
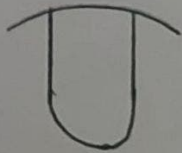
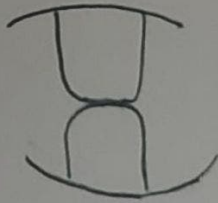
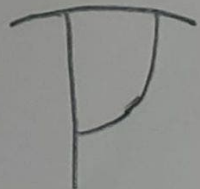
- Represented by:
 - Two concentric circles (inner and outer races)
 - Balls shown as **small circles**
- Balls not drawn to exact number.

b) Journal Bearings

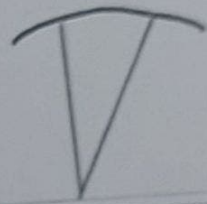
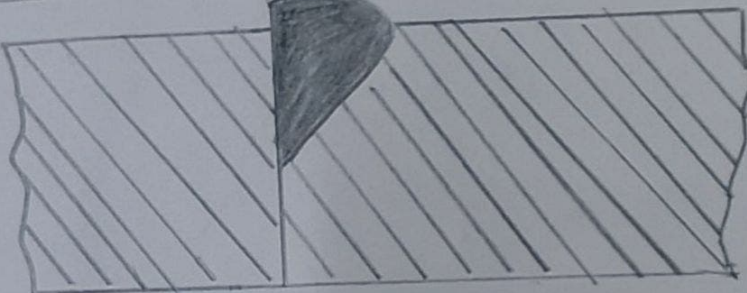
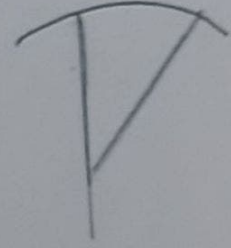
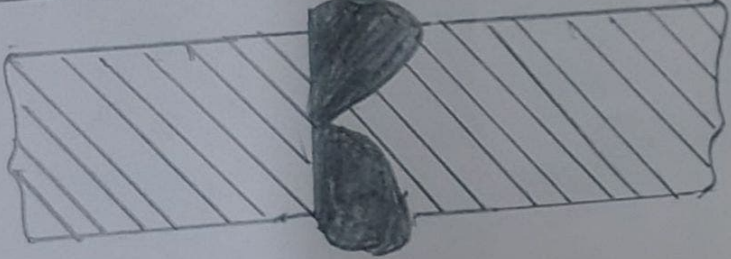
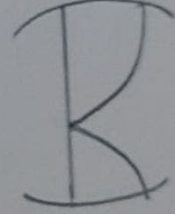
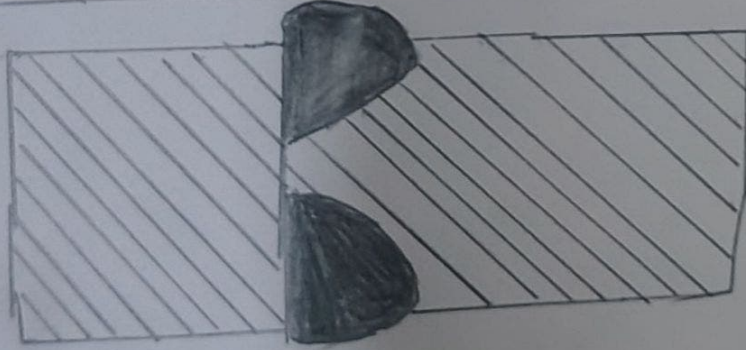
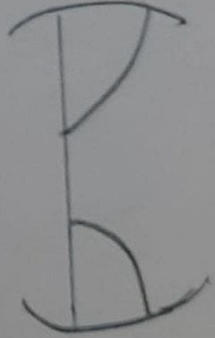
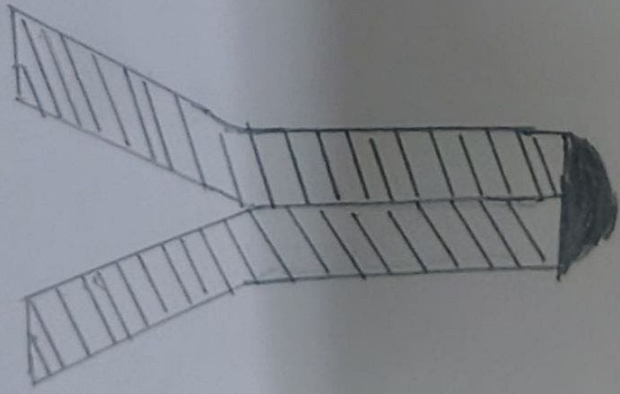
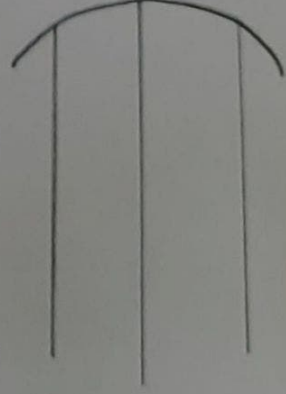
- Represented by a **rectangular housing** around the shaft.
- No oil grooves or fine details shown.

Knurling

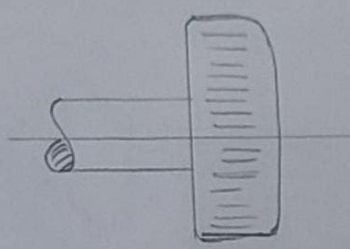
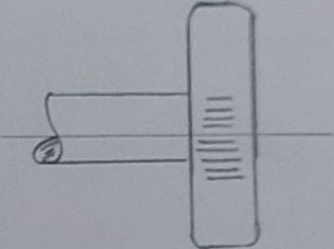
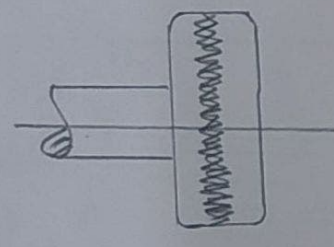
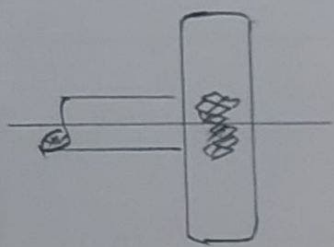
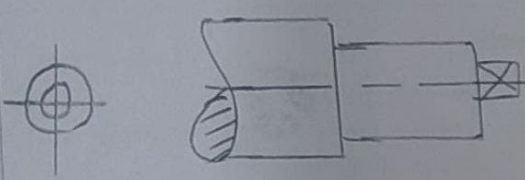
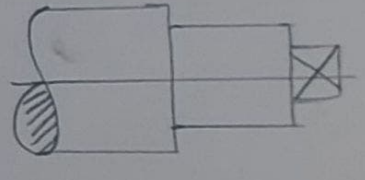
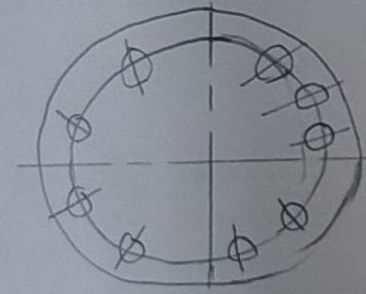
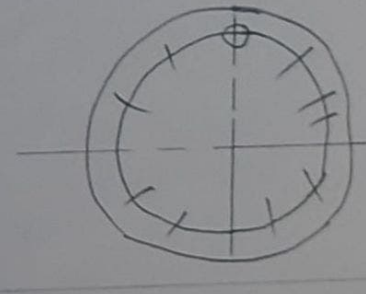
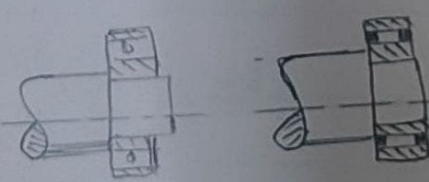
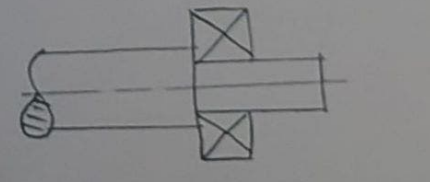
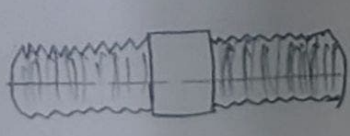
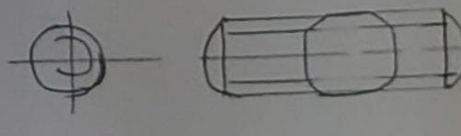
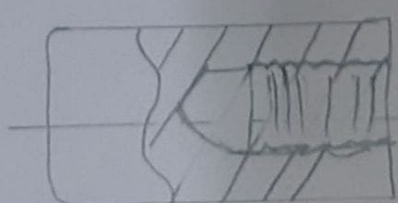
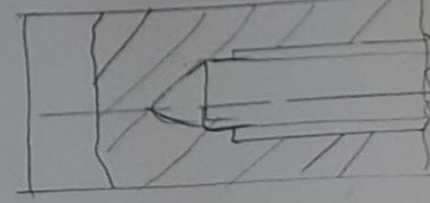
- • Represented by **thin diagonal or crossed lines** on the surface.
- • Actual depth and pattern are **not drawn in detail**.
- • Only a **symbolic indication** is shown.

Form of weld	Illustration	Symbol
Fillet		
Square Butt		
Single-V Butt		
Double-V Butt		
Single U Butt		
Double U Butt		
Single-J Butt		

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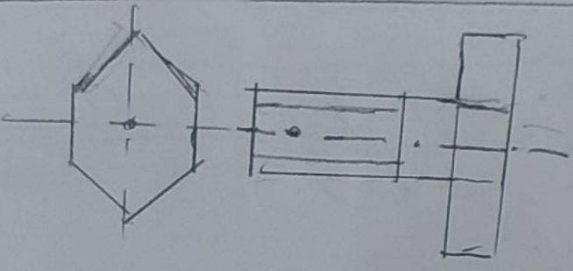
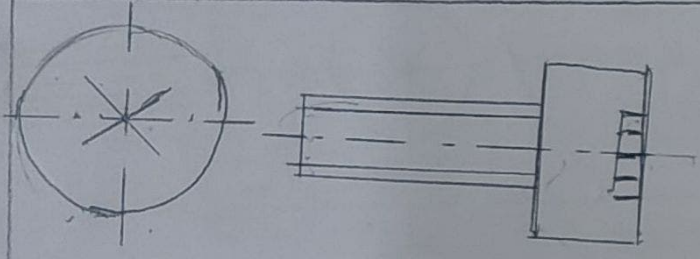
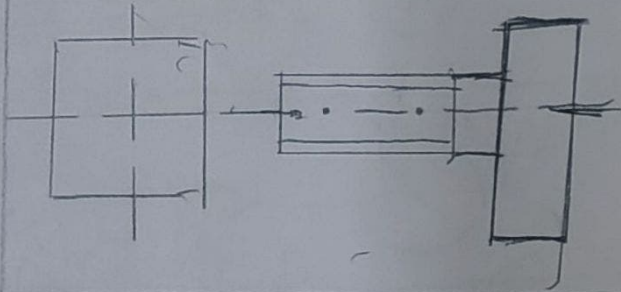
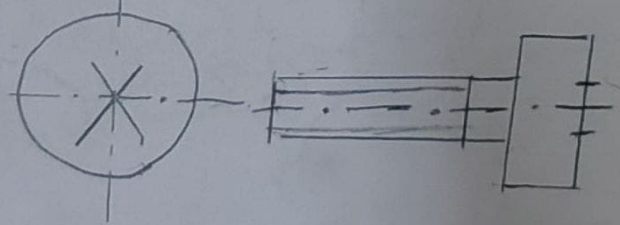
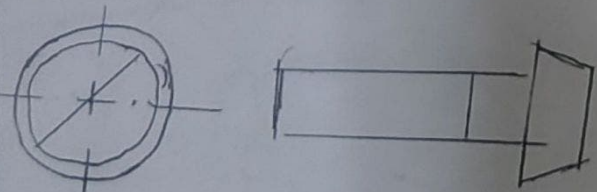
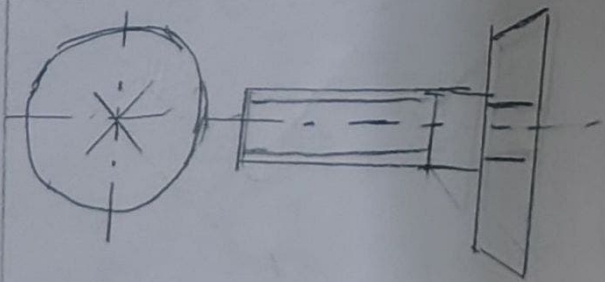
Form of weld	Illustration	Symbol
Single-bevel butt		
Single bevel butt weld with broad root face		
Double bevel butt		
Double-Bevel + weld with broad root face		
Edge		

17
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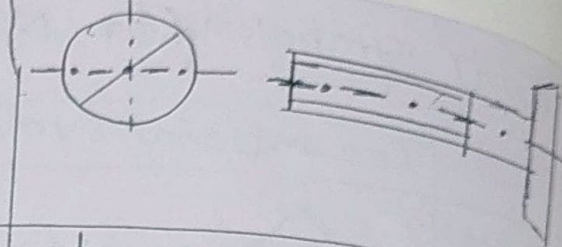
Title	subject	convention
straight knurling		
Diamond knurling		
Square on shaft		
Holes on circular pitch		
Bearings		
External screw thread (detail)		
screw thread (Assembly)		

18/20

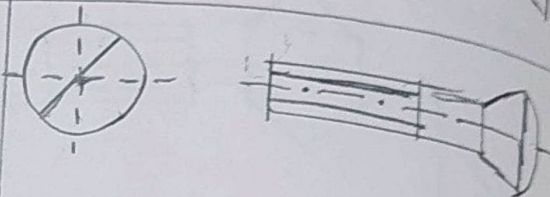
Conventional Symbols For Nuts and Bolts.

Type	Conventional symbol
Hexagonal headed bolt	
Hexagonal socket bolt	
Square-headed bolt	
Cylinder screw cross slot	
Cylinder screw pan head type slot	
Countersunk headed screw cross slot	

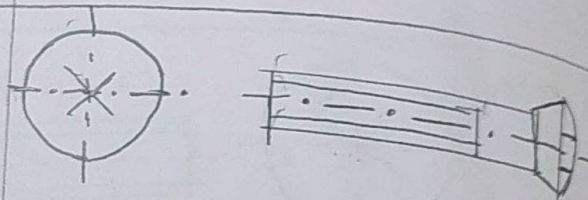
7) countersunk headed screw slot



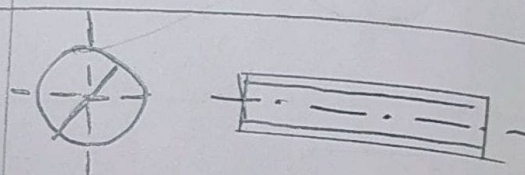
8) oval countersunk headed screw slot



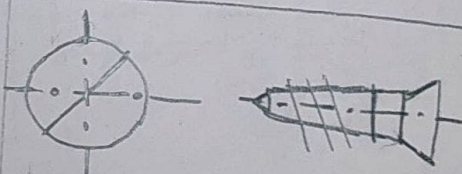
9) oval countersunk headed screw cross slot



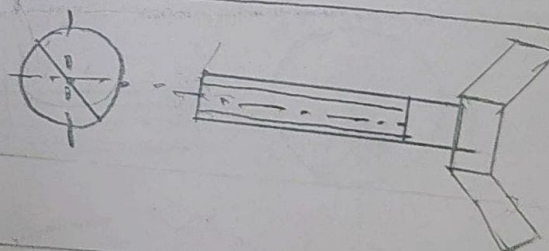
10) set screw slot



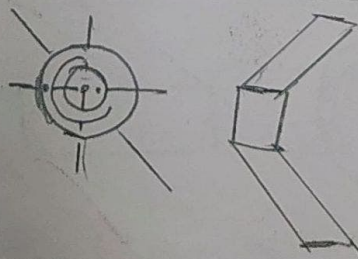
11) wood & self tapping screw slot



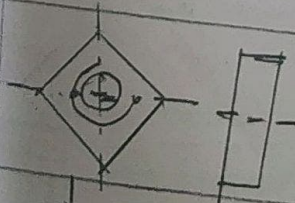
12) wing screw



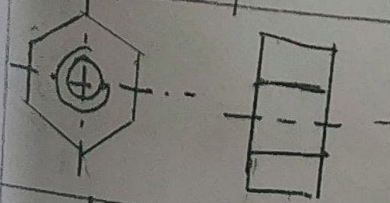
13) wing nut



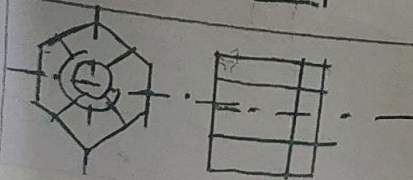
14) square nut



15) Hexagonal nut



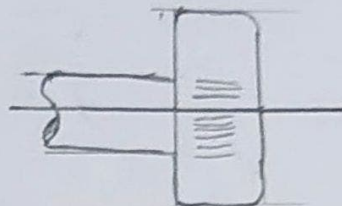
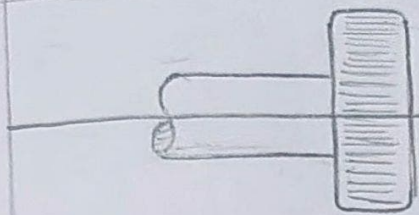
16) crown nut



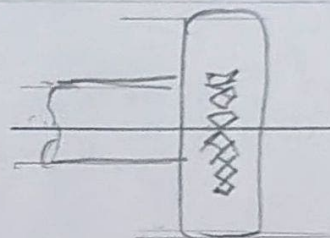
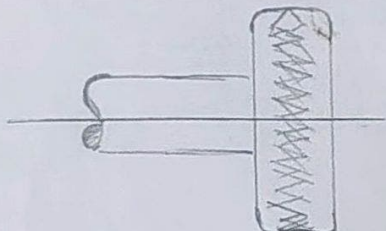
12/3

Conventional representation of knurling & bearings ★

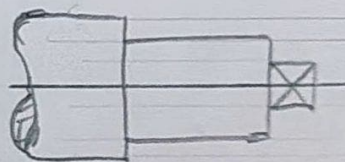
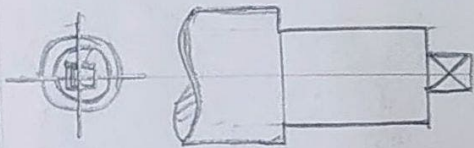
Straight knurling



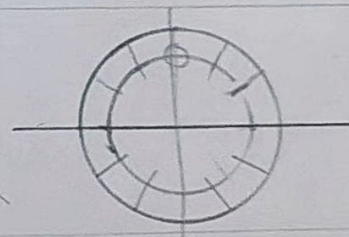
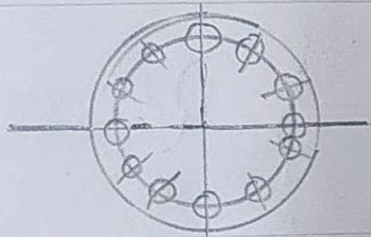
Diamond knurling



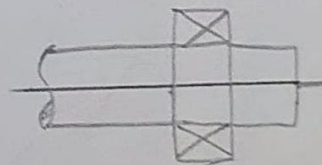
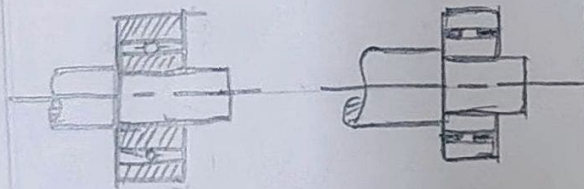
Square on shaft



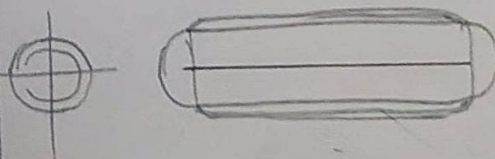
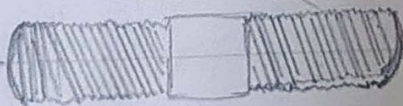
Holes on circular pitch



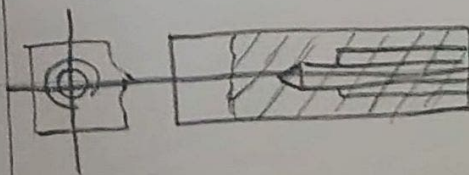
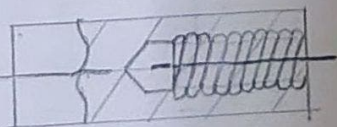
Bearings



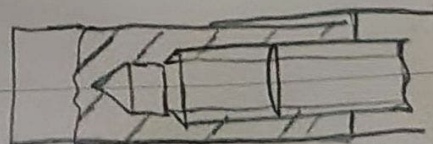
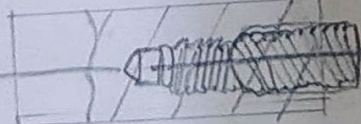
External screw threads (Detail)



Internal screw threads (Detail)



Screw threads (Assembly)



18
20

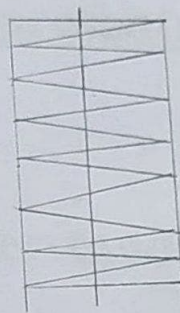
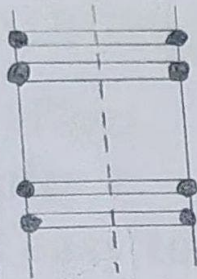
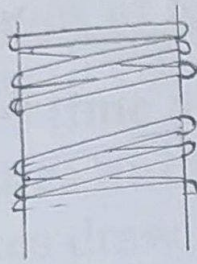
description-

view.

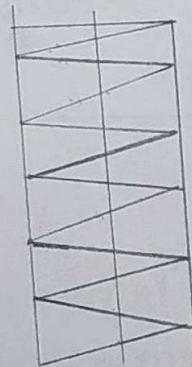
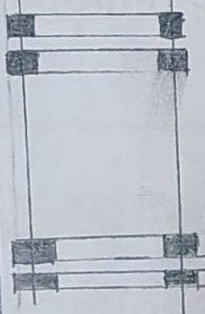
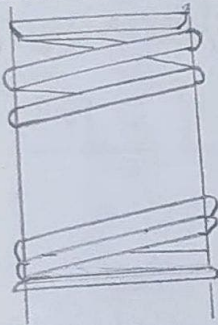
section.

convention

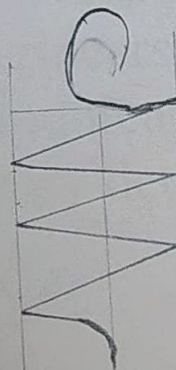
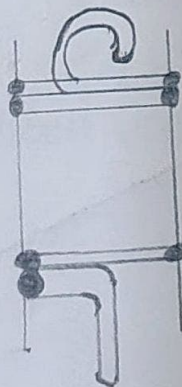
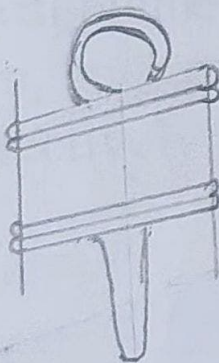
compression
spring with
circular section



compression
spring with
square section



extension
spring



18
20

Advantages of Conventional Representation

1. Saves **time and effort**
 2. Ensures **uniformity**
 3. Makes drawings **easy to understand**
 4. Reduces drawing complexity
 5. Internationally accepted standards
-

Conclusion

Conventional representation plays a vital role in engineering drawings by providing a **simple, clear, and standardized method** of representing mechanical elements. It enables engineers, draftsmen, and technicians to communicate design intent effectively without unnecessary detailing.



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Department of Engineering Science and Humanities

AY 2025-26

Rubrics for Survey

Surveys help students connect classroom learning with real-life situations by collecting data. Data related to technical and product-related aspects, infrastructure, environment, social, and community needs. In an educational field, surveys are often used to assess student perceptions and learning outcomes and evaluate the course's effectiveness.

Sr Nos	Criteria	Excellent (4)	Good (3)	Satisfactory (2)	Needs Improvement (1)
A	Understanding of Topic	Shows very clear understanding of the survey topic; explains ideas well.	Shows good understanding of the survey topic; with minor errors.	Basic understanding of the survey topic; some important points missing.	Poor understanding of the survey topic; many errors or confusion.
B	Data Collection	Data collected is complete and accurate	Data is mostly complete and minor accurate.	Data has some missing or incorrect parts.	Data is incomplete and not reliable.
C	Data Analysis	Data is well- clearly analyzed; conclusions are strong.	Data is analyzed well with less conclusion	Data analysis is basic and conclusions are weak.	No proper analysis; conclusions are missing
D	Presentation of Findings	Findings are presented clearly, neatly, and creatively.	Findings are clear and neat.	Findings are understandable but not well-presented.	Findings are unclear or poorly presented.
E	Teamwork and Contribution	Excellent participation and active contribution.	Good participation and less contribution	Uneven participation and very less contribution	No Participation and no Contribution



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Approved by AICTE, New Delhi and Recognised by Govt. of Maharashtra

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DEPARTMENT OF ENGINEERING SCIENCES AND HUMANITIES

First Year B. Tech. (2025 Pattern), AY 2025-26

Continuous Comprehensive Assessment (CCA)

Course: Engineering Graphics	Code: ESC-103	Course Teacher: Mr. Gade S T
Semester: I	Class: Mech-B	Division: Div-IX

- **CCA 1** : Consist of **Course Activity** which could be industry application-based, internet-based, workshop-based, and laboratory-based or field based.
- **CCA 2** : Consist of **Case Study /Survey** based on applications or content beyond Course Contents of the respective course.
- **CCA 3** : Consist of **Group Discussion/Seminar/Blog writing**.
- **Cognitive Level:** **R:** Remember, **U:** Understand, **AP:** Apply, **AN:** Analyse, **E:** Evaluate, **C:** Create
- **Knowledge Category:** **F:** Factual, **C:** Conceptual, **P:** Procedural, **MC:** Meta-cognitive, **FDP:** Fundamental Design Principles, **C&S:** Criteria & Specifications, **PC:** Practical Constraints, **DI:** Design Instrumentalities

S N	Roll Number	Activity Assigned to students (CCA1/CCA2/CCA3)	COs	PO's/PSO's	Cognitive Level	Knowledge Category
1	25ME066	CCA-1-3D model of solid object using an orthographic and/or isometric drawings by using card board or any other suitable material.	CO4	PO1, PO2, PO3, PO5, PO9	C	P, FDP, DI
2	25ME067					
3	25ME068					
4	25ME069					
5	25ME070					
6	25ME071	CCA-1- Model making for Development of Surfaces by using card board or any other suitable material.	CO-3	PO1, PO2, PO3, PO5, PO9	C	P, FDP, DI
7	25ME072					
8	25ME073					
9	25ME074					
10	25ME075					

S N	Roll Number	Activity Assigned to students (CCA1/CCA2/CCA3)	Cos Mapped	PO's/PSO's Mapped	Cognitive Level	Knowledge Category
11	25ME076	CCA-1- 3D Model using CAD Software	CO-4, CO-5	PO1, PO3, PO5, PO9, PO11	C	P, FDP, DI
12	25ME077					
13	25ME078					
14	25ME079					
15	25ME080					
16	25ME081	CCA-2- Reading & Interpretation of Industrial Part Drawing	CO-1	PO1, PO2, PO5	U	C, P, C&S
17	25ME082					
18	25ME083					
19	25ME084					
20	25ME085					
21	25ME086	CCA-1- 3D Model Object using Engineering Curves	CO-3	PO1, PO3, PO5	C	P, FDP, DI
22	25ME087					
23	25ME088				U	C, FDP
24	25ME089					
25	25ME090					
26	25ME091	CCA-2-Case Study – Industrial visit to create awareness of ISO drawing Standard	CO-1	PO6, PO7, PO8, PO11	U / AN	C, C&S, FDP
27	25ME092					
28	25ME093					
29	25ME094					
30	25ME095					
31	25ME096	CCA-1-Orthographic Projections of Mechanical Component	CO-4	PO1, PO2, PO3, PO5	AP	P, FDP
32	25ME097					
33	25ME098					
34	25ME099					
35	25ME100					

S N	Roll Number	Activity Assigned to students (CCA1/CCA2/CCA3)	Cos Mapped	PO's/PSO's Mapped	Cognitive Level	Knowledge Category
36	25ME101	CCA-1-Model Making on Projection of Line	CO-1	PO1, PO2, PO3	C	P, FDP, DI
37	25ME102					
38	25ME103					
39	25ME104					
40	25ME105					
41	25ME106	CCA-1-Model Making on Projection of Plane	CO-2	PO1, PO2, PO3	C	P, FDP, DI
42	25ME107					
43	25ME108					
44	25ME109					
45	25ME110					
46	25ME111	CCA-2-Survey – Analysis of Dimensioning Practices	CO-1	PO1, PO2, PO5, PO11	AN	C, C&S
47	25ME112					
48	25ME113					
49	25ME114					
50	25ME115					
51	25ME116	CCA-1-3D Model of Solid Object using Engineering Curves	CO-3	PO1, PO3, PO5	C	P, FDP, DI
52	25ME117					
53	25ME118					
54	25ME119					
55	25ME120					
56	25ME121	CCA-2-Survey of industrial component along with part drawing & its analysis (repeat – same as #4)	CO-1	PO2, PO4, PO5, PO11	AN	C, C&S, PC
57	25ME122					
58	25ME123					
59	25ME124					
60						

S N	Roll Number	Activity Assigned to students (CCA1/CCA2/CCA3)	Cos Mapped	PO's/PSO's Mapped	Cognitive Level	Knowledge Category
61	25ME126	CCA-1-3D Model by Using CAD Software	CO-4 CO-5	PO1, PO3, PO5, PO9, PO11	C	P, FDP, DI
62	25ME127					
63	25ME128					
64	25ME129					
65	25ME126					

Mr. S T Gade

Name and Sign of Course Teacher:

Remarks by Module Coordinator (If any):

Name and Sign of Module Coordinator:

Head of Department:



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Approved by AICTE, New Delhi and Recognised by Govt. of Maharashtra

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DEPARTMENT OF ENGINEERING SCIENCES AND HUMANITIES

First Year B. Tech. (2025 Pattern), AY 2025-26

Continuous Comprehensive Assessment (CCA)

Course: Engineering Graphics	Code: ESC-103	Course Teacher: Mr. Gade S T
Semester: I	Class: Mech-B	Division: Div-IX

- **CCA 1** : Consist of **Course Activity** which could be industry application-based, internet-based, workshop-based, and laboratory-based or field based.
- **CCA 2** : Consist of **Case Study /Survey** based on applications or content beyond Course Contents of the respective course.
- **CCA 3** : Consist of **Group Discussion/Seminar/Blog writing**.
- **Cognitive Level:** **R:** Remember, **U:** Understand, **AP:** Apply, **AN:** Analyse, **E:** Evaluate, **C:** Create
- **Knowledge Category:** **F:** Factual, **C:** Conceptual, **P:** Procedural, **MC:** Meta-cognitive, **FDP:** Fundamental Design Principles, **C&S:** Criteria & Specifications, **PC:** Practical Constraints, **DI:** Design Instrumentalities

S N	Roll Number	Activity Assigned to students (CCA1/CCA2/CCA3)	COs	PO's/PSO's	Cognitive Level	Knowledge Category
1	25ME066	CCA-2 -Study real-world examples where drawing inaccuracies led to significant issues in manufacturing or construction/failure of component	CO1	PO2, PO6, PO7, PO8	E	C, C&S, PC
2	25ME067					
3	25ME068					
4	25ME069					
5	25ME070					
6	25ME071	CCA-2 - Survey of industrial component along with part drawing & its analysis.	CO-1	PO2, PO4, PO5, PO11	AN	C, C&S, PC
7	25ME072					
8	25ME073					
9	25ME074					
10	25ME075					

S N	Roll Number	Activity Assigned to students (CCA1/CCA2/CCA3)	Cos Mapped	PO's/PSO's Mapped	Cognitive Level	Knowledge Category
11	25ME076	CCA-3 -Group Discussion – Manual Drawing vs. CAD: Pros and Cons	CO-3, CO-4, CO-5	PO9, PO10, PO12	U	MC, DI
12	25ME077					
13	25ME078					
14	25ME079					
15	25ME080					
16	25ME081	CCA-3 - Seminar on Impact of Engineering Drawings on Quality Control	CO-1	PO7, PO8, PO10, PO12	E	C, C&S, PC
17	25ME082					
18	25ME083					
19	25ME084					
20	25ME085					
21	25ME086	CCA-2 - Survey – Applications and significance of different engineering curves in engineering sectors.	CO-3	PO1, PO2, PO7	U	C, FDP
22	25ME087					
23	25ME088					
24	25ME089					
25	25ME090					
26	25ME091	CCA-3 -Blog – Best Practices for Accurate & Clear Engineering Drawings	CO-1	PO8, PO10, PO12	E / C	MC, C&S
27	25ME092					
28	25ME093					
29	25ME094					
30	25ME095					
31	25ME096	CCA-3 -Seminar – Role of Engineering Graphics in Mechanical Engg.	CO-1	PO10, PO12	U / E	C, FDP
32	25ME097					
33	25ME098					
34	25ME099					
35	25ME100					

S N	Roll Number	Activity Assigned to students (CCA1/CCA2/CCA3)	Cos Mapped	PO's/PSO's Mapped	Cognitive Level	Knowledge Category
36	25ME101	CCA-2 -Survey – Representation of Various Bearing Symbols	CO-1	PO1, PO5, PO11	U	F, C, C&S
37	25ME102					
38	25ME103					
39	25ME104					
40	25ME105					
41	25ME106	CCA-3 -Group Discussion – Importance of Standardization in Drawings	CO-1	PO6, PO8, PO9, PO10	E	MC, C&S
42	25ME107					
43	25ME108					
44	25ME109					
45	25ME110					
46	25ME111	CCA-3 -Blog – Role of AI in Engineering Drawing and Design	CO-1	PO5, PO10, PO12	C	MC, DI, PC
47	25ME112					
48	25ME113					
49	25ME114					
50	25ME115					
51	25ME116	CCA-2 -Case Study – Conventional Representation of Mechanical Elements	CO-1	PO1, PO6, PO7, PO8	AN	C, C&S
52	25ME117					
53	25ME118					
54	25ME119					
55	25ME120					
56	25ME121	CCA-3 -Study and reading of industrial drawings to understand standard industrial practice (dimensioning, GD&T, surface finish, welding symbols etc.)	CO-1	PO1, PO2, PO5, PO11	U / AN	C, C&S, FDP
57	25ME122					
58	25ME123					
59	25ME124					
60	25ME125					

S N	Roll Number	Activity Assigned to students (CCA1/CCA2/CCA3)	Cos Mapped	PO's/PSO's Mapped	Cognitive Level	Knowledge Category
61	25ME126	CCA-3-Blog – Recent Developments and Features in CAD Software	CO-1	PO5, PO10, PO12	U / C	MC, DI
62	25ME127					
63	25ME128					
64	25ME129					
65	25ME126					

Name and Sign of Course Teacher:

Remarks by Module Coordinator (If any):

Name and Sign of Module Coordinator:

Head of Department:



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(Id.No. PU / PN/ Engg. / 093 (1992)
(Accredited by NAAC with grade A+)



CCA 2 SURVEY OF INDUSTRIAL COMPONENT ALONG WITH PART DRAWING AND ITS ANALYSIS

Department : Mechanical Engineering

Subject : Engineering Graphics

Division : Mechanical B

Batch : A

CA Group : 2

Group Representatives :

Pranav More : 25ME071

Mosami Borawake : 25ME072

Aryan Mundhe : 25ME073

Vaibhav Mune : 25ME074

Neha Patil : 25ME075

18
20

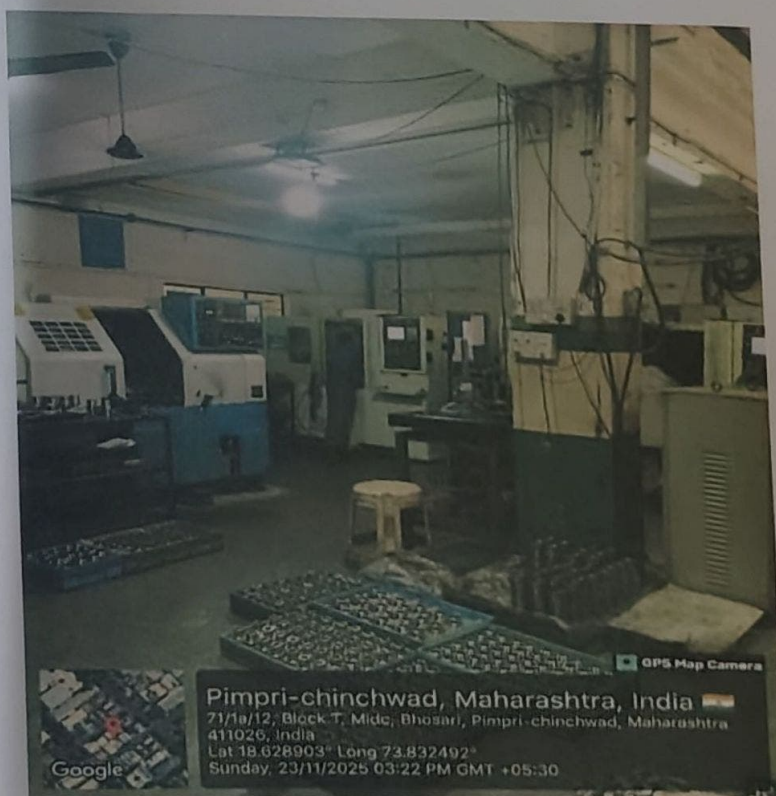
Handwritten signature

INTRODUCTION :

Here, our CCA group 2 has been given a topic for survey of industrial component along with part drawing and its analysis . We had visited a industry which manufactures such industrial components. There we got to know about the drawings which are used to design.

The **survey of an industrial component** is an important activity in Engineering Graphics that helps students understand how real world machine parts are designed, represented, and analyzed. In industries, every component whether small like a nut and bolt or complex like a gear assembly is created based on precise engineering drawings. These drawings provide complete information about its part drawing and manufacturing process steps.

This survey aims to bridge the gap between **theory** and **practical industrial applications** by studying an actual component from a manufacturing or mechanical setup. The selected component i.e neckpiece is observed, measured, and sketched to understand its geometry and features such as holes, fillets, ribs, threads, and surface finishes. Using this



information, a detailed **part drawing** is prepared following standard conventions (IS/ISO norms) like orthographic projections, sectional views, dimensioning rules, and tolerances.
Industry : GLOBAL TECHNO ENGINEERS



During our industrial visit, we toured a manufacturing company that specializes in producing neckpiece components which are used to join parts, shafts, hydrolic lines, or machine assemblies where accurate alignment and secure fastening are required .

This type of component widely used in :

1. Automobile industry
2. Hydraulic and pneumatic systems
3. Pipe fittings and connectors
4. Machinery and equipment assembly
5. Tool holders and jigs

6. Rotational and motion transfer system
7. Industrial automation components

Industrial component :

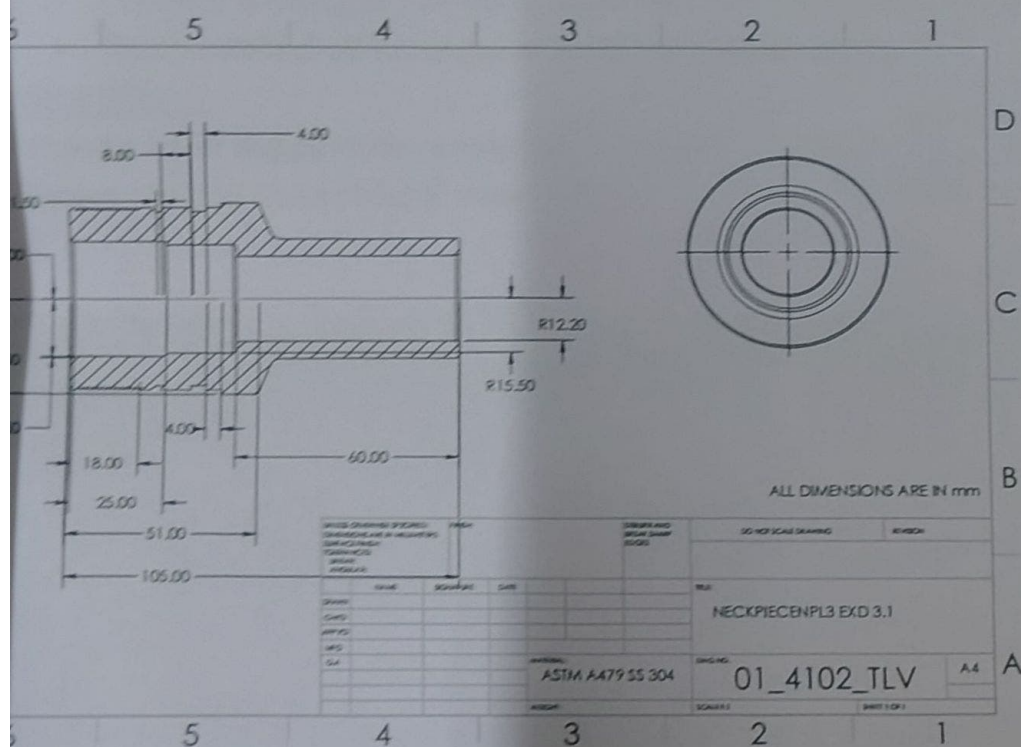


This component is typically used to join pipes, shafts, hydraulic lines or machine assemblies where accurate alignment and secure fastening are required.

PART DRAWING OF GIVEN COMPONENT :

If this part were drawn for Engineering Graphics, the drawing would include:

Front view (showing steps and threads), Top View (showing inner diameter), sectional view (to show internal bore details)
Thread symbols, Dimensions (OD, ID, thread pitch, length) Material specification, Surface finish, Tolerance



Geometric Features Identified in the Drawing

External Thread :

- Located on the upper section
- Requires thread profile representation
- Needs accurate pitch and class of fit

Stepped Outer Surfaces :

- Three distinct diameter levels (large → medium → small)

- Provide seating surfaces or restricted movement in assembly

Internal bore :

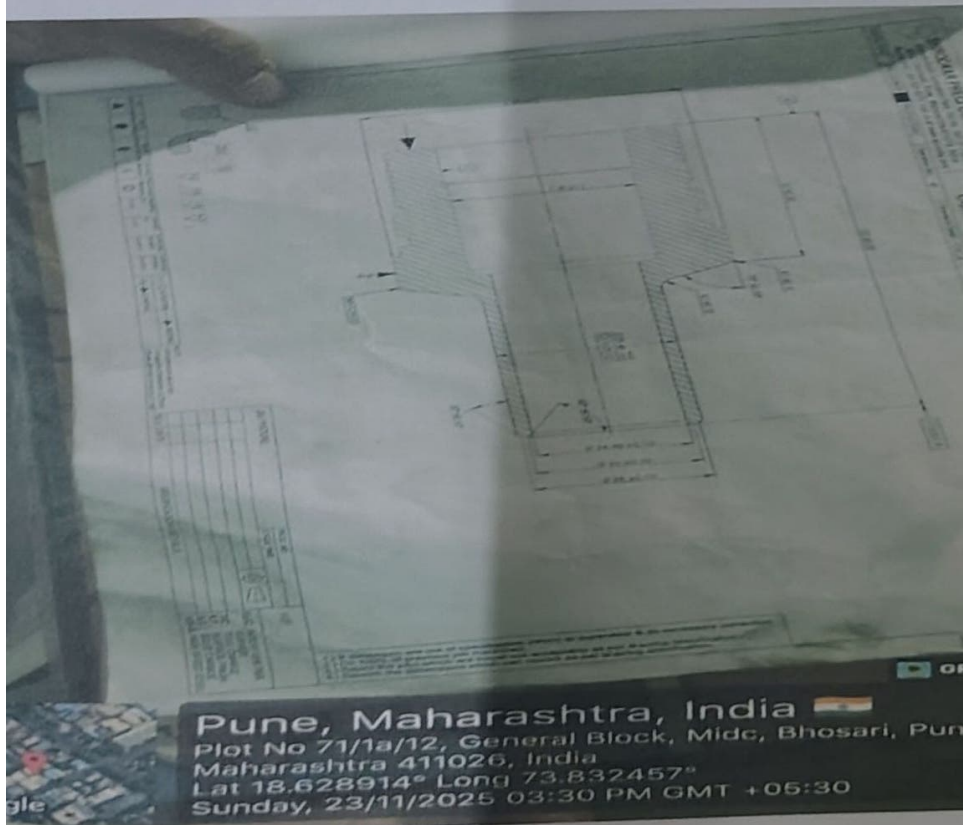
- Clean, smooth finish
- requires boring + reaming for precision

Chamfers :

- Present at edges for easy assembly and reduced stress
- Represented using angular dimension in drawing

Shoulders :

Provide axial support in assembly
shown clearly in sectional view .



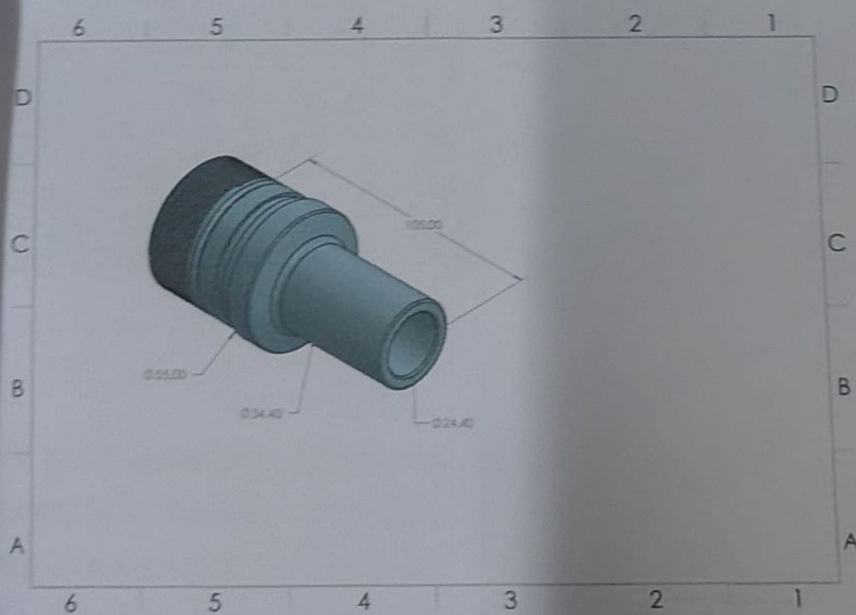
From the part drawing analysis, we understand: The threads allow the component to engage with a mating part like a housing, coupling, or pipe.

Stepped diameters ensure proper positioning, alignment, or sealing in assembly.

The internal bore suggests it may act as a fluid passage, bearing seat, or shaft guide.

Chamfers ensure smooth assembly and reduce damage during tightening.

High surface finish suggests rotation or pressure applications, common in hydraulic or mechanical systems.

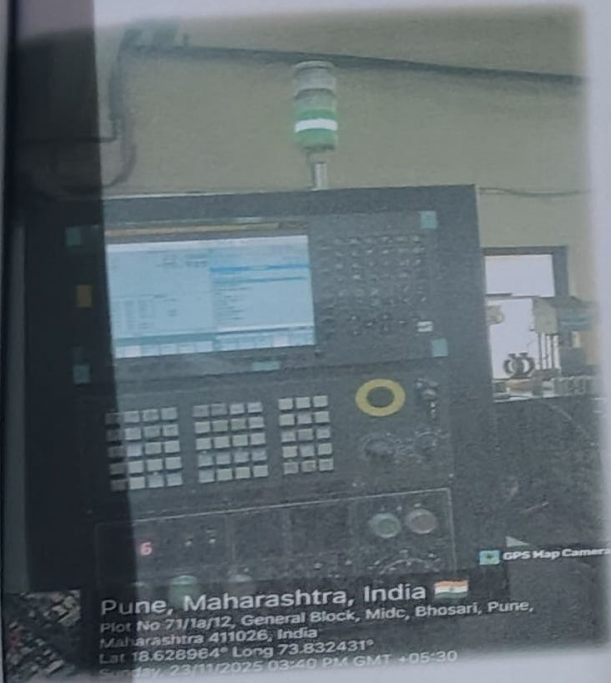


Images during survey in industry :

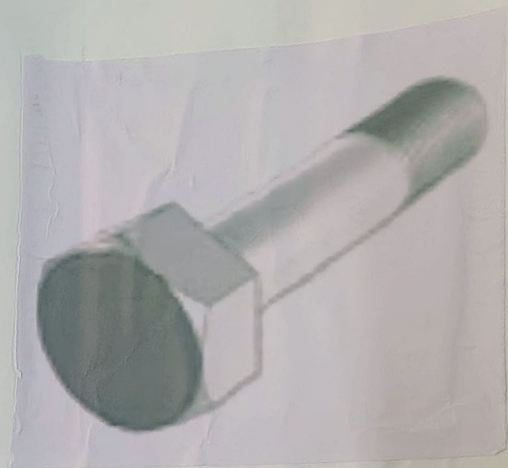
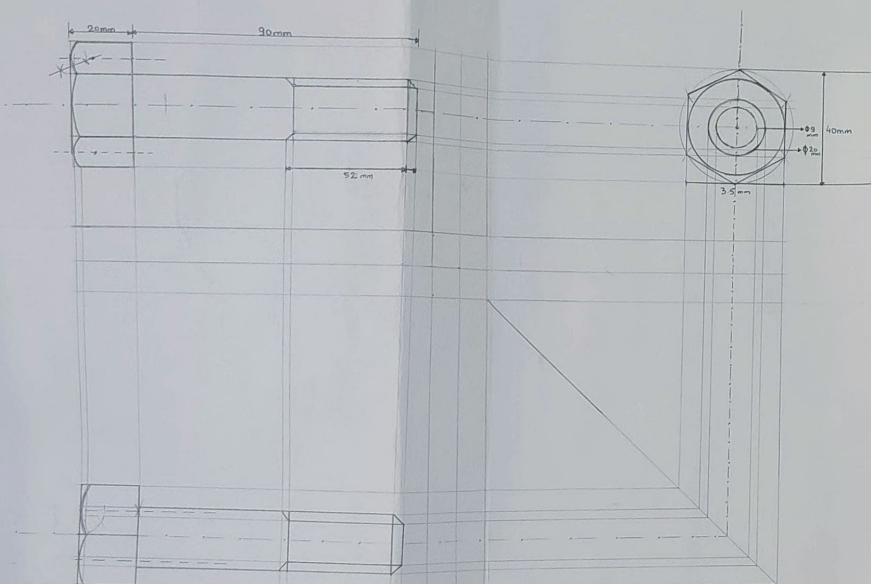


The part drawing analysis shows that this industrial component is a precision-turned, threaded connector sleeve requiring accurate step dimensions, internal bore finishing, and external threading. The drawing includes orthographic views, sectional views, thread details, tolerances, and symbols according to BIS/ISO standards. By studying the drawing, the manufacturing process sequence, functional use, and quality requirements of the component can be clearly understood.

Some other images of industry :



* ORTHOGRAPHIC PROJECTION OF HEXAGONAL BOLT..



ALL DIMENSIONS IN MM

AISSMS's			
NAME: CCA-02		ROLL NO.:	
PROGRAMME SEM. MASTER:		DIV.: B	
COURSE NAME:		COURSE CODE:	
TITLE: Orthographic Projection of hexagonal bolt			
SHEET NO.		SCALE:	
STARTING DATE		COMPLETION DATE	
CO-		PRO-	
MARKS OBTAINED			
PROCESS RELATED (15)	PRODUCT RELATED (15)	TOTAL (25)	DATED SIGN OF COURSE

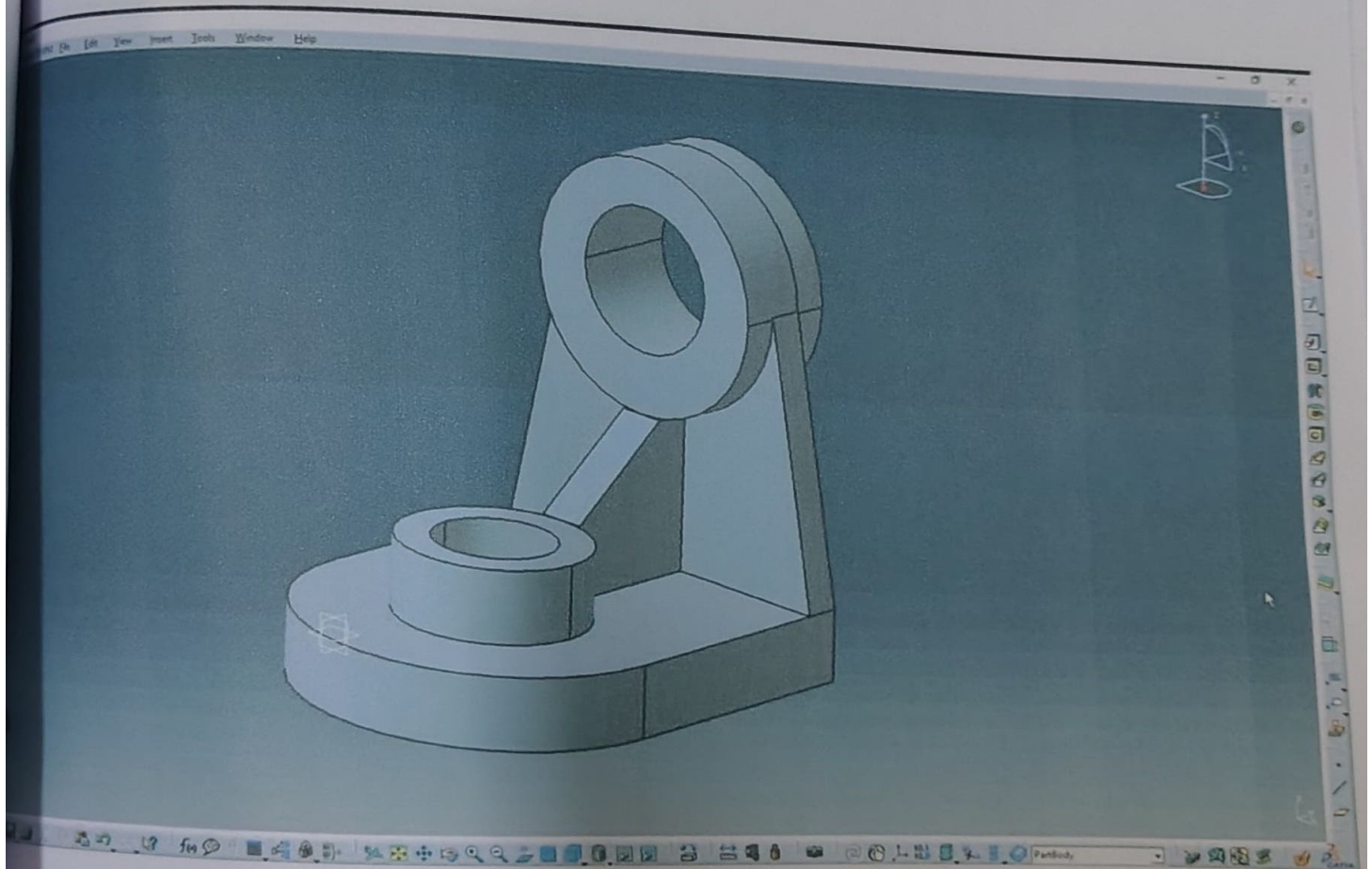
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- 1> Chinmay Rithe (25ME96)
- 2> Rohan Shejwal (25ME97)
- 3> Saham Salunke (25ME98)
- 4> Amruta Samarth (25ME99)
- 5> Amar Sarade (25ME100)



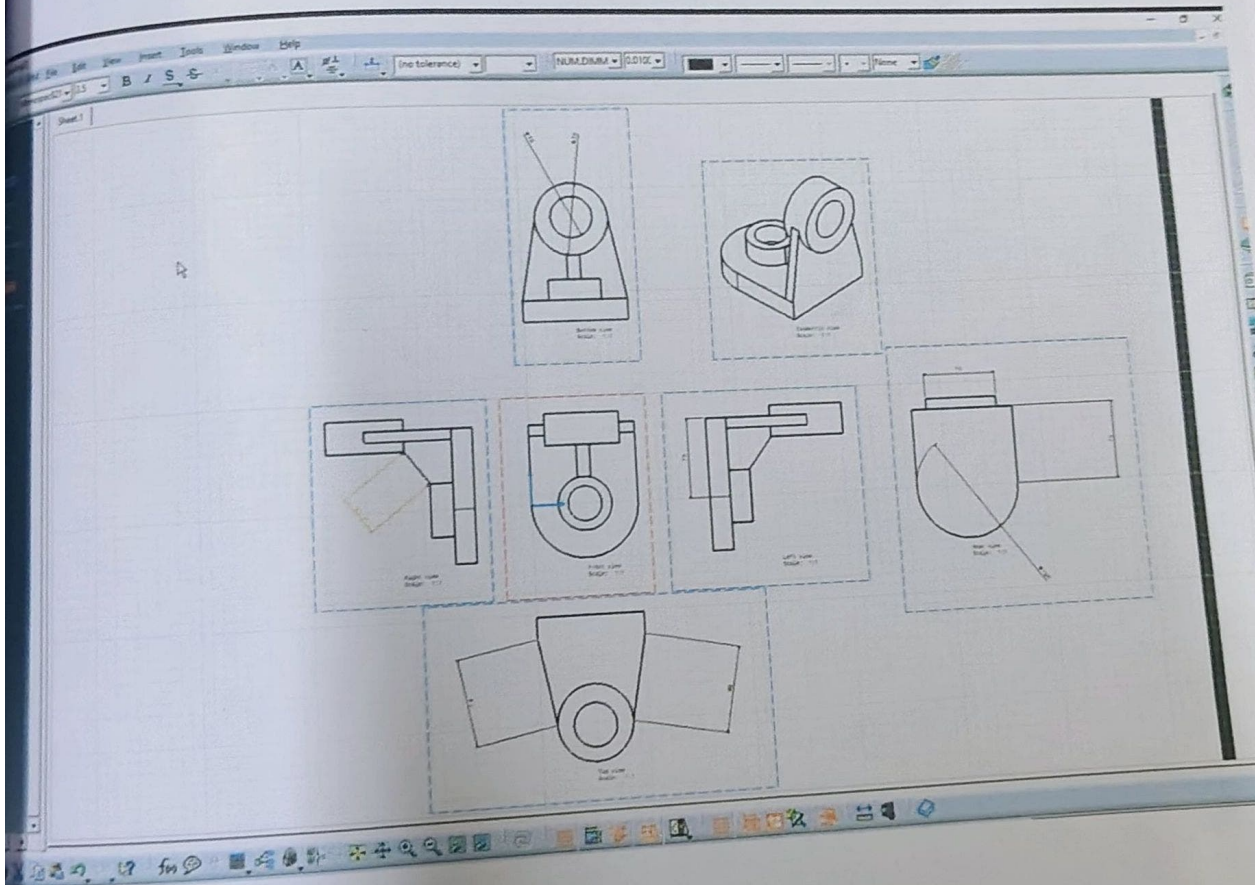


E - Voral Samuddhi Rasesaheb
NO - 257 E127



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E - VARAL SAMRUDDHI RAO SAHER
- 25ME127



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Department of Engineering Sciences and Humanities

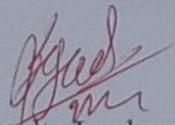
CERTIFICATE

This is to certify that the following Students of **F.Y. B. Tech** have successfully completed the **CCA-1 / CCA-2 / CCA-3** activity in the Course Engineering Graphics, as prescribed by **AISSMS College of Engineering, Pune**, an autonomous institute affiliated with Savitribai Phule Pune University (SPPU), during **Semester I / II** of the Academic Year 2025 - 2026.

Title of activity: (CCA₁ / CCA₂ / CCA₃): Conventional Representation of Mechanical Elements

Sr. No.	Roll No.	Name of Student	Signature
1	25ME116	Suyash Nikam	Suyash
2	25ME117	Suyash B. Supane	S. B. Supane
3	25ME118	Swaraj Dhengle	Swaraj
4	25ME119	Aditya D. Talajiya	Aditya
5	25ME120	Tanmay G. Tambat	Tanmay
6			

Date:


Faculty In-charge
(Signature & Name)

Head of Department
(Signature & Seal)

EG CCA **CONVENTIONAL** **REPRESENTATION OF** **MECHANICAL ELEMENTS**

Conventional representation of mechanical elements means the **standard symbols or simplified drawings** used in **engineering drawings and diagrams** to represent machine parts. These symbols make drawings easy to understand, universal, and less time-consuming to draw.

In engineering drawing, it is **not necessary to draw every machine part in full detail**. To save time and maintain uniformity, **conventional representations** are used. These are **standardized simplified symbols and drawings** accepted universally in mechanical engineering.

1} Screws, Bolts, and Nuts

- Threads are **not drawn in actual shape**.
- External threads:
 - Major diameter → **thick continuous line**
 - Minor diameter → **thin line**
- Internal threads:
 - Major diameter → **thin line**
 - Minor diameter → **thick line**
- Nut and bolt heads are usually shown as **hexagonal** in top view.
- Chamfers and thread details are omitted.

Purpose: Simplifies complex threading details.

2} Springs

- Represented using **conventional zig-zag or helical lines**.
- Types:
 - Compression spring
 - Tension spring
- Exact coil spacing is not shown.

3} Gears

- Teeth are **not drawn individually**.
- Represented by:
 - Pitch circle
 - Root circle
- For meshing gears, center distance is shown accurately.

4} FILLETS

- Fillets are shown by a **simple arc** joining two surfaces.
- The **radius of fillet (R)** is specified.
- In sectional views, fillets are **not hatched**.
- Small fillets may be omitted and assumed unless specified.

5} Bearings & Knurling

a) Ball Bearings

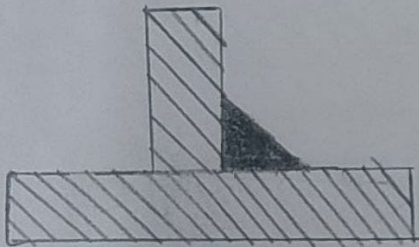
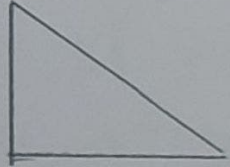
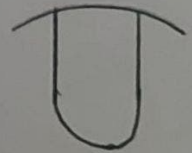
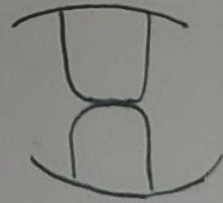
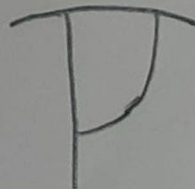
- Represented by:
 - Two concentric circles (inner and outer races)
 - Balls shown as **small circles**
- Balls not drawn to exact number.

b) Journal Bearings

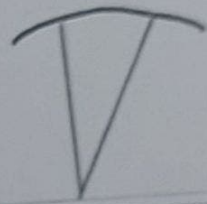
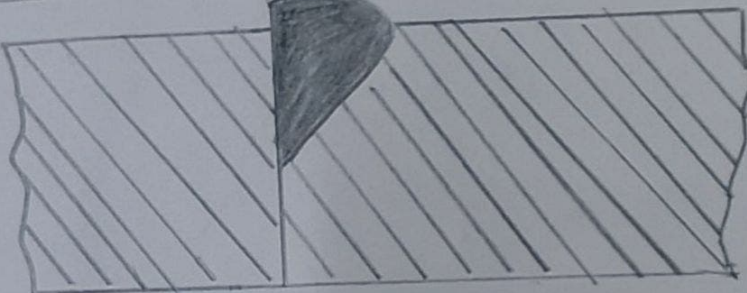
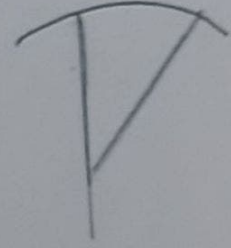
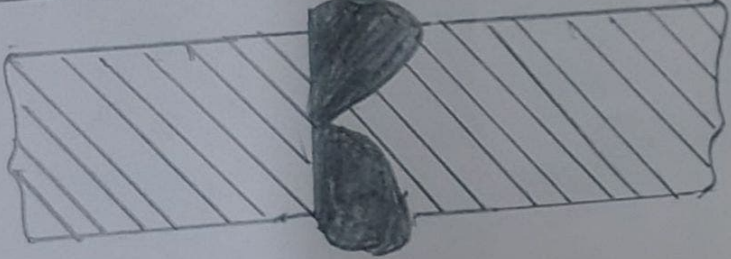
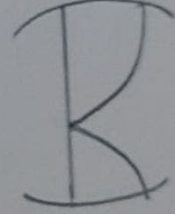
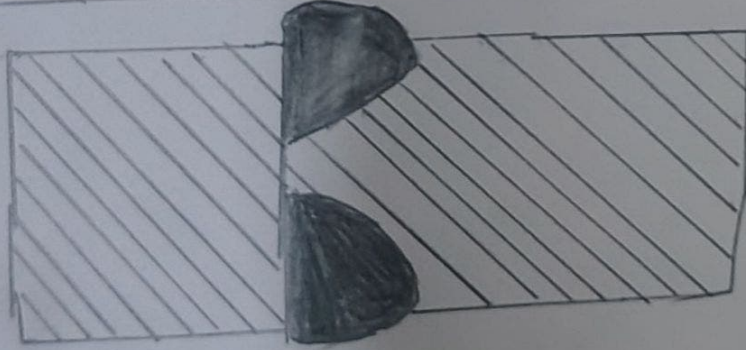
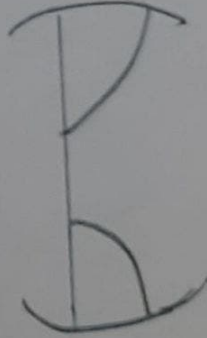
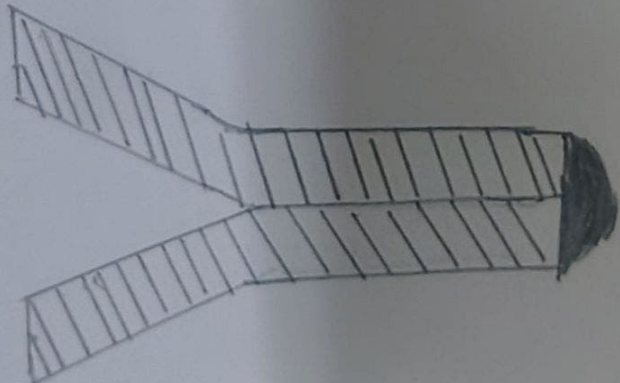
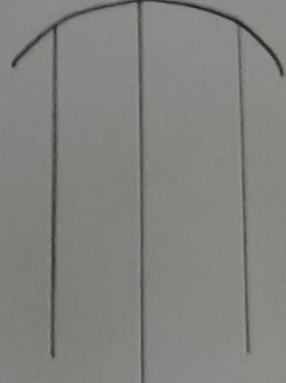
- Represented by a **rectangular housing** around the shaft.
- No oil grooves or fine details shown.

Knurling

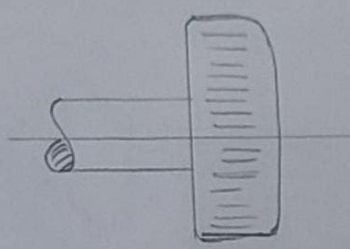
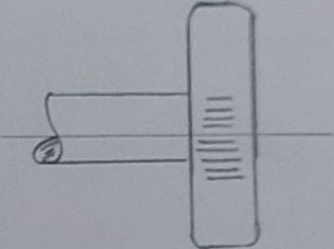
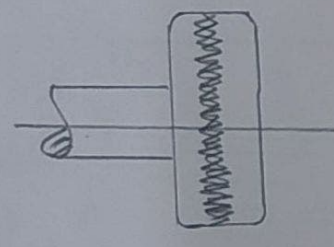
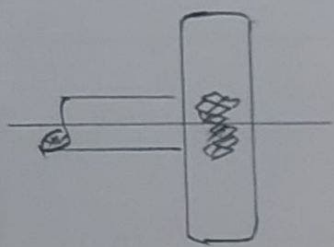
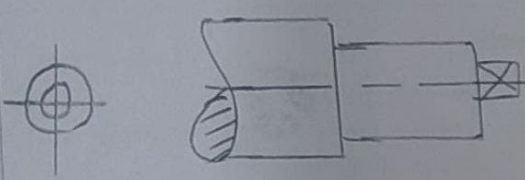
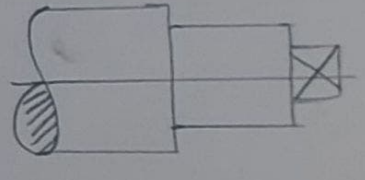
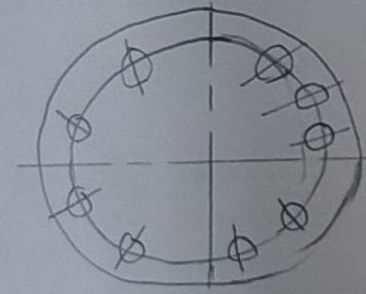
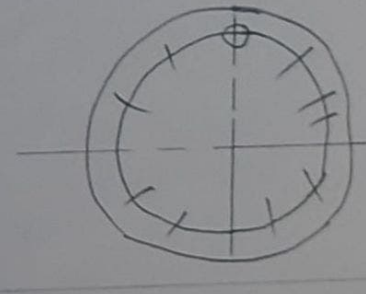
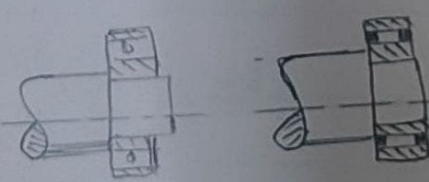
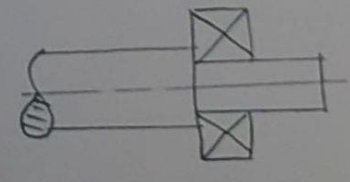
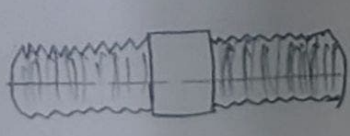
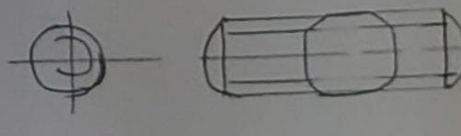
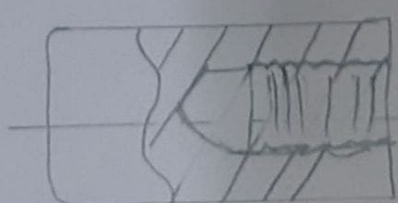
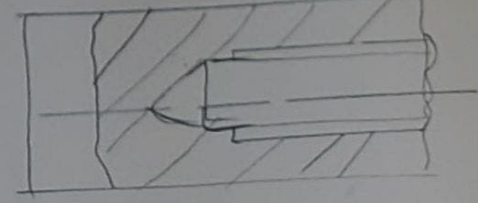
- • Represented by **thin diagonal or crossed lines** on the surface.
- • Actual depth and pattern are **not drawn in detail**.
- • Only a **symbolic indication** is shown.

Form of weld	Illustration	Symbol
Fillet		
Square Butt		
Single-V Butt		
Double-V Butt		
Single U Butt		
Double U Butt		
Single-J Butt		

17/20

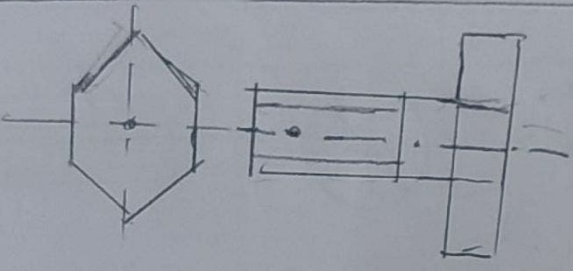
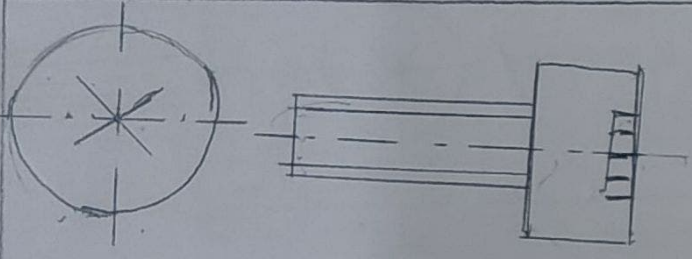
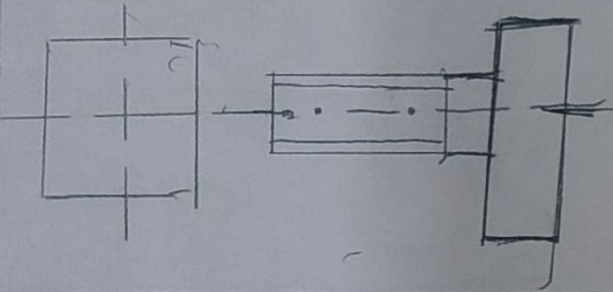
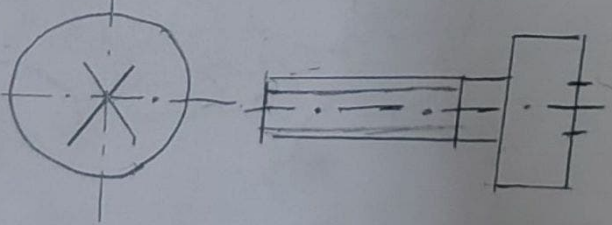
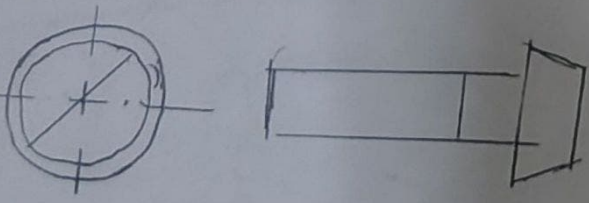
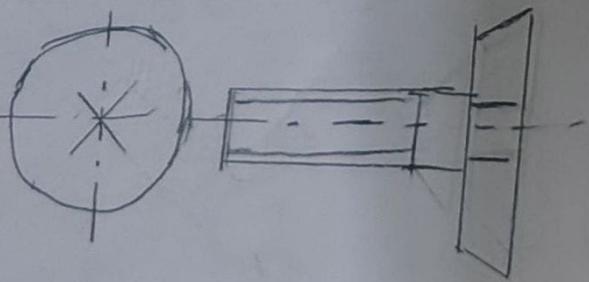
Form of weld	Illustration	Symbol
Single-bevel butt		
Single bevel butt weld with broad root face		
Double bevel butt		
Double-Bevel + weld with broad root face		
Edge		

17
20

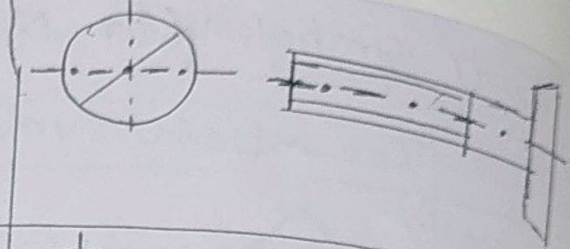
Title	subject	convention
straight knurling		
Diamond knurling		
Square on shaft		
Holes on circular pitch		
Bearings		
External screw thread (detail)		
screw thread (Assembly)		

18/20

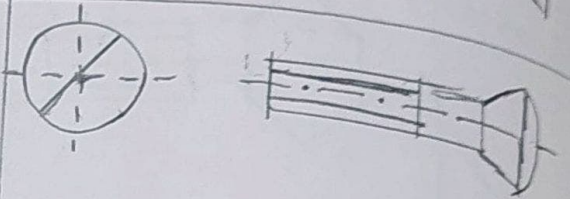
Conventional Symbols For Nuts and Bolts.

Type	Conventional symbol
Hexagonal headed bolt	
Hexagonal socket bolt	
Square-headed bolt	
Cylinder screw cross slot	
Cylinder screw pan head type slot	
Countersunk headed screw cross slot	

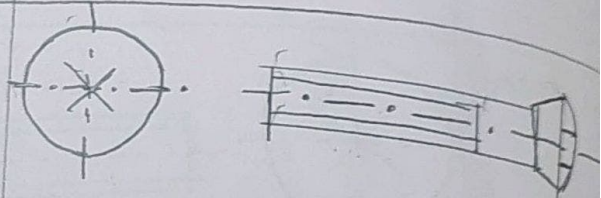
7) countersunk headed screw slot



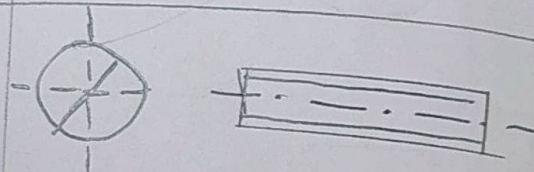
8) oval countersunk headed screw slot



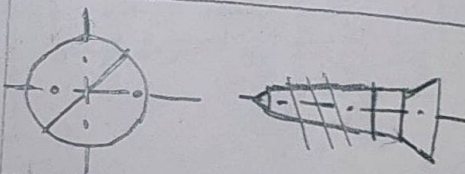
9) oval countersunk headed screw cross slot



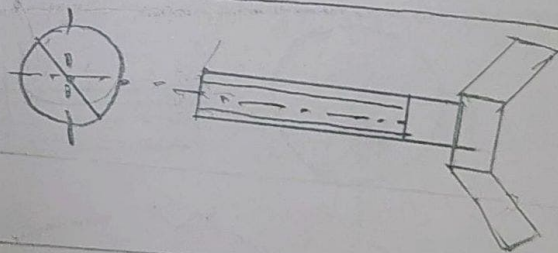
10) set screw slot



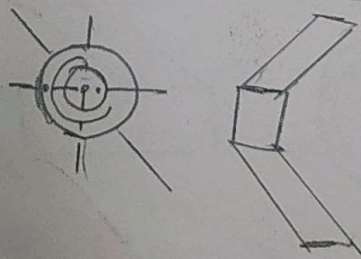
11) wood & self tapping screw slot



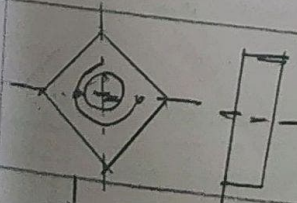
12) wing screw



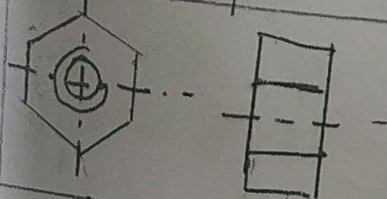
13) wing nut



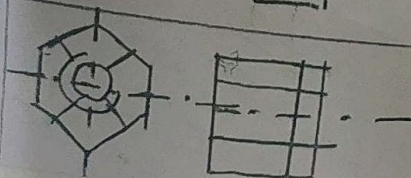
14) square nut



15) Hexagonal nut



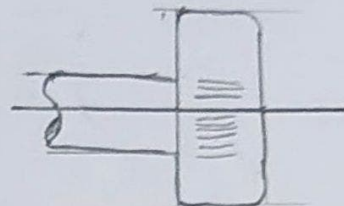
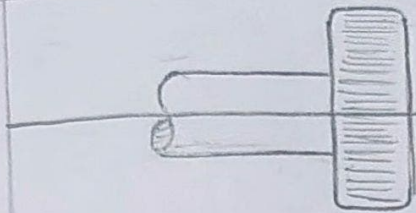
16) crown nut



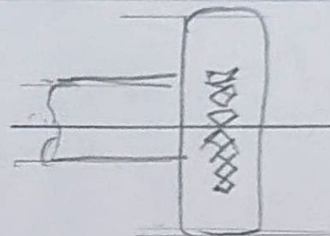
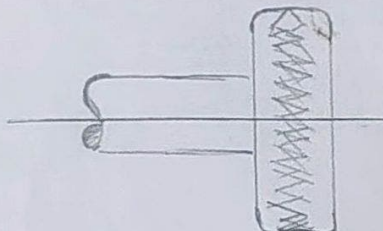
12/3

Conventional representation of knurling & bearings ★

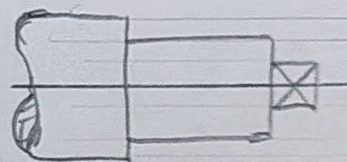
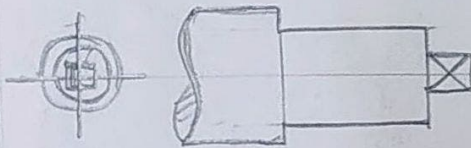
Straight knurling



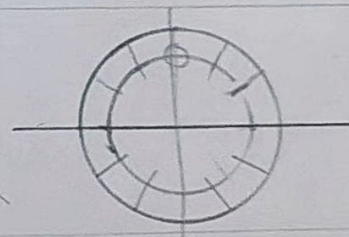
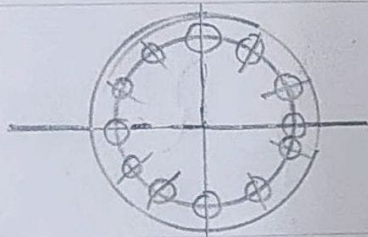
Diamond knurling



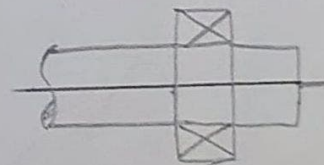
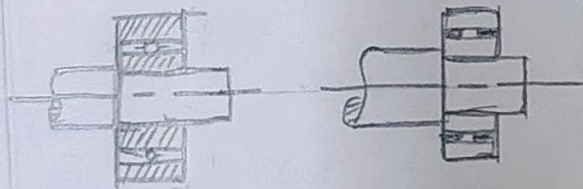
Square on shaft



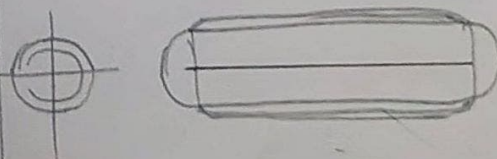
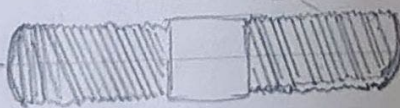
Holes on circular pitch



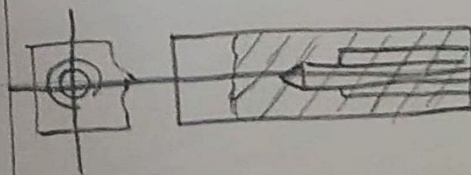
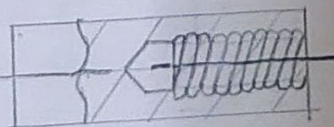
Bearings



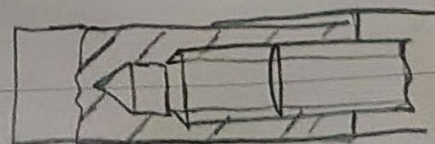
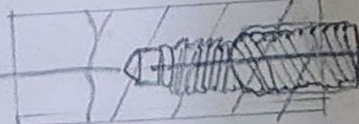
External screw threads (Detail)



Internal screw threads (Detail)



Screw threads (Assembly)



18
20

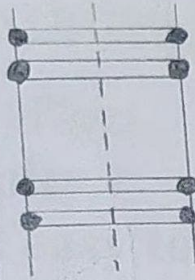
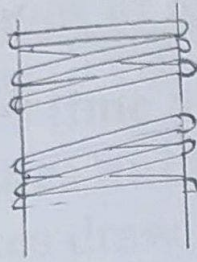
description-

view.

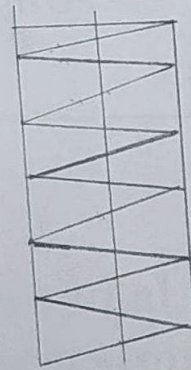
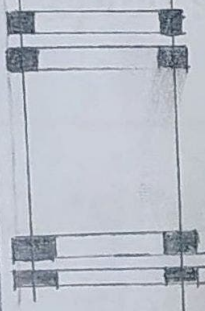
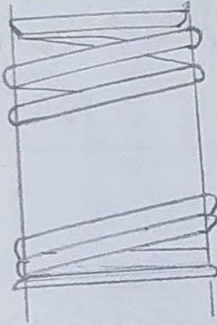
section.

convention

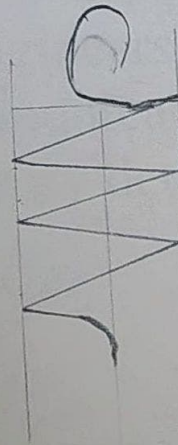
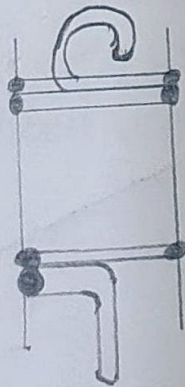
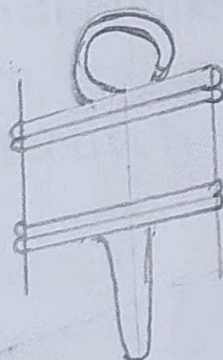
compression
spring with
circular section



compression
spring with
square section



extension
spring



18
20

Advantages of Conventional Representation

1. Saves **time and effort**
 2. Ensures **uniformity**
 3. Makes drawings **easy to understand**
 4. Reduces drawing complexity
 5. Internationally accepted standards
-

Conclusion

Conventional representation plays a vital role in engineering drawings by providing a **simple, clear, and standardized method** of representing mechanical elements. It enables engineers, draftsmen, and technicians to communicate design intent effectively without unnecessary detailing.



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DEPARTMENT OF ENGINEERING SCIENCES AND HUMANITIES

First Year B. Tech. (2025 Pattern), AY 2025-26

Continuous Comprehensive Assessment (CCA)

Course: BEE	Code:	Course Teacher: Almas Ambreen
Semester: I/II	Class: Mechanical - A Sandwich	Division: Yeta X

- > CCA 1 : Consist of Course Activity which could be industry application-based, internet-based, workshop-based, and laboratory-based or field based.
- > CCA 2 : Consist of Case Study / Survey based on applications or content beyond Course Contents of the respective course.
- > CCA 3 : Consist of Group Discussion/Seminar/Blog writing.
- > Cognitive Level: R: Remember, U: Understand, AP: Apply, AN: Analyse, E: Evaluate, C: Create
- > Knowledge Category: F: Factual, C: Conceptual, P: Procedural, MC: Meta-cognitive, FDP: Fundamental Design Principles, C&S: Criteria & Specifications, PC: Practical Constraints, DI: Design Instrumentalities

SN	Roll Number	Activity Assigned to students (CCA1/CCA2/CCA3)	COs	PO's/PSO's	Cognitive Level	Knowledge Category
1	25MS001	CCA-II $\Rightarrow$ Case Study on Electricity Bill CCA-I $\Rightarrow$ Course Activity: Working model of water turbine.	CO4	PO11	R	Knowledge C, P, FDP
2	25MS002				R	
3	25MS004		CO5		U	
4	25MS005					
5	25MS006					
6	25MS007	CCA-II $\Rightarrow$ Case study on Electricity Bill CCA-I $\Rightarrow$ water level Indicator's,		PO11	R	Knowledge C, P, FDP
7	25MS008		CO4		R	
8	25MS009				U	
9	25MS010		CO3			
10	25MS011					

SN	Roll Number	Activity Assigned to students (CCA1/CCA2/CCA3)	Cos Mapped	PO's/PSO's Mapped	Cognitive Level	Knowledge Category
11	25MS011	CCA I :- Mosquito Repellent (Ultrasonic)	C03	PO11	R & U	Knowledge C, P C-DP
12	25MS012					
13	25MS013					
14	25MS014	CCA II - Case Study of Electricity bill	C04		R & U	Knowledge C, P C-DP
15	25MS015					
16	25MS017	CCA I - Case study of electricity bill	C04	PO11	R & U	Knowledge C, P C-DP
17	25MS018					
18	25MS019					
19	25MS020	CCA II - Burglar alarm(LDR)	C03		R & U	Knowledge C, P C-DP
20	25MS021					
21	25MS022					
22	25MS022	CCA I - Laser Security Alarm	C04	PO11	R & U	Knowledge C, P C-DP
23	25MS023					
24	25MS024					
25	25MS025	CCA II - Case Study on Electricity Bill.	C03		R & U	Knowledge C, P C-DP
26	25MS026					
27	25MS027					
28	25MS028	CCA I - Case Study on Electricity Bill	C04	PO11	R & U	Knowledge C, P C-DP
29	25MS029					
30	25MS030					
31	25MS031	CCA II - Remote Control Car	C03		R & U	Knowledge C, P C-DP
32	25MS032					
33	25MS033					
34	25MS035	CCA I - DISTANCE MEASUREMENT DEVICE	C04	PO11	R & U	Knowledge C, P C-DP
35	25MS035					
		CCA II - CASE STUDY ON LT ELECTRICITY BILL	C03			

Activity Assigned to students (CCA1/CCA2/CCA3)		Cos Mapped	PO's/PSO's Mapped	Cognitive Level	Knowledge Category
SN	Roll Number				
36	25MS036				
37	25MS037				
38	25MS038				
39	25MS039				
40	25MS040				
41	25MS041				
42	25MS042				
43	25MS043				
44	25MS044				
45	25MS045				
46	25MS046				
47	25MS047				
48	25MS048				
49	25MS049				
50	25MS050				
51	25MS051				
52	25MS052				
53	25MS053				
54	25MS054				
55	25MS055				
56	25MS056				
57	25MS057				
58	25MS058				
59	25MS059				
60	25MS060				
CCA-I: Fire detector sensor using IR sensor.					
CCA-II: Electricity Bill Calculation of own House.					
CCA-I:- Electricity Bill Calculation of own House.					
CCA-II: Metal detector					
CCA-I:- Electricity Bill Calculation					
CCA-II:- Radio Receiver					
CCA-1 Electricity Bill Calculation of Own House					
CCA-2 Solar Power					

S N	Roll Number	Activity Assigned to students (CCA1/CCA2/CCA3)	Cos Mapped	PO's/PSO's Mapped	Cognitive Level	Knowledge Category
61	25MS061	CCA I - Electricity Bill calculation CCA II - Power Distribution System Demonstration	CO4 CO1	PO11	R 2 U	C, P 2 FDP
62	25MS062					
63	25MS063					
64	25MS064					
65	25MS065					
66	25MS066					
67						
68						
69						
70						

AB
Name and Sign of Course Teacher:

AB
Remarks by Module Coordinator (If any):

B. S. Suryawanshi (Roboddy)
Name and Sign of Module Coordinator:

Edm
Head of Department:



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Department of Engineering Sciences and Humanities (DESH)

Continuous Comprehensive Assessment (CCA)

SEMESTER-I/II Academic Year: 2025-26

CLASS: DIV: BATCH: SUBJECT: NAME OF FACULTY:

Sr. No	Roll No.	Name of the Student	CCAI					CCA2					CCA3					CCA Marks Out of 20			
			Mark the Criteria on the scale of 4 to 1					Total Marks (20)	Mark the Criteria on the scale of 4 to 1					Total Marks (20)	Mark the Criteria on the scale of 4 to 1					Total Marks (20)	
			A	B	C	D	E		A	B	C	D	E		A	B	C		D		E
1	25MS001	Alok Vishwakarma	2	3	3	3	4	16	3	3	3	3	4	16							
2	25MS002	Arnav Shinde	3	3	3	4	3	16	3	3	3	3	4	16							
3	25MS004	Aryan Rajals	2	2	3	3	4	14	3	3	3	3	4	16							
4	25MS005	Ashtikar Yadav	3	4	3	3	3	16	3	3	3	3	4	16							
5	25MS006	Bhole Dhruv	3	3	4	4	4	18	3	3	3	3	4	16							
6	25MS007	Bhasale Samiksha	4	4	4	4	4	20	3	3	4	4	4	18							
7	25MS008	Bilhile Suvaraj	3	3	4	4	4	18	4	4	4	3	3	18							
8	25MS009	Chaitan Ayush	4	4	4	3	3	18	3	3	4	3	4	16							
9	25MS010	Chavan Pruthviraj	2	2	2	2	4	10	2	2	3	3	3	14							
10	25MS011	Chavan Premising	3	3	4	4	4	18	3	3	3	3	4	16							
11	25MS012	Chinchkar Nishad	4	4	4	3	3	18	3	3	4	4	3	18							
12	25MS013	Chobhe Suyash	4	4	4	4	4	20	4	4	3	4	3	18							
13	25MS014	Desai Shriyash	3	3	4	4	4	18	3	3	4	4	4	18							
14	25MS015	Deshmukh shreyas	4	4	4	4	4	20	3	3	3	3	4	16							
15	25MS016	Dhane Apurva	3	3	3	3	4	16	3	4	3	3	4	18							
16	25MS017	Dhawal Yash	2	2	2	2	2	10	3	3	3	3	4	16							
17	25MS018	Dhadke Dnyaneshwar	4	4	4	4	4	20	3	4	3	4	3	18							
18	25MS019	Dhube Sudamini	3	3	3	3	4	16	4	3	4	4	3	18							
19	25MS020	Goraksh Dixit	3	3	3	3	4	16	4	3	4	3	3	16							
20	25MS021	Harshal Gaikwad	2	2	3	3	3	14	3	4	3	3	3	16							
21	25MS022	Harshwardhan Patil	2	2	2	2	2	10	2	2	2	2	2	10							
22	25MS023	Aman Arund	3	3	3	3	4	16	3	3	4	4	4	18							

Note: 1) Total Marks are 20 for CCA. 2) Student shall perform any two components out of CCA1/CCA2/CCA3. 3) Rubrics are to be followed while assessing CCA.

4) Excellent - 4 marks, Good - 3 marks, Satisfactory - 2 marks, Needs Improvement - 1 marks



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Department of Engineering Sciences and Humanities (DESH)

Continuous Comprehensive Assessment (CCA)

SEMESTER-III Academic Year: 2025-26

CLASS: DIV: BATCH: SUBJECT: NAME OF FACULTY:

Sr. No	Roll No.	Name of the Student	CCA1					CCA2					CCA3					CCA Marks Out of 20			
			Mark the Criteria on the scale of 4 to 1					Total Marks (20)	Mark the Criteria on the scale of 4 to 1					Total Marks (20)	Mark the Criteria on the scale of 4 to 1					Total Marks (20)	
			A	B	C	D	E		A	B	C	D	E		A	B	C		D		E
1	25N5023	Manasi- Jadhav	4	4	4	4	4	20	3	3	3	3	4	16							
2	25N5024	Vaibhav sachin Tadhav	3	3	4	4	4	18	4	4	4	4	4	20							
3	25N5025	Tuchigaditwar. Jadhav	3	3	3	3	4	16	3	3	3	3	4	16							
4	25N5026	Shrawan Nal kashyap	3	3	4	4	4	18	3	3	3	3	4	16							
5	25N5027	Khadse. Aditya	3	3	3	3	4	16	3	3	3	3	4	16							
6	25N5028	Kolte Atinkeya	2	2	2	2	2	10	3	3	3	3	4	16							
7	25N5029	Pradip Deepak Kulkarni	3	3	3	3	2	10	2	3	3	3	3	14							
8	25N5030	Op. Indule. Lele	3	3	3	3	4	16	3	3	3	3	4	18							
9	25N5031	Mohit Babji Lokurkar	3	3	3	3	4	18	3	3	3	3	4	18							
10	25N5032	Madhura S. Khond	3	3	3	3	4	18	4	4	4	4	3	18							
11	25N5033	Sanket Sagar Magdum	3	3	4	4	4	18	4	4	4	4	3	18							
12	25N5034	Mahamuni Aditya	3	3	3	3	4	16	3	3	3	3	4	16							
13	25N5035	Mani Saurabh	4	4	4	3	3	18	4	4	4	3	3	18							
14	25N5036	Yashraj B. More	4	4	4	3	3	18	3	3	3	3	4	18							
15	25N5037	Naik Nimpalwar. Tivaji	2	2	2	2	2	10	2	2	3	3	4	14							
16	25N5038	Nhaar Chavan	4	4	4	4	4	20	4	4	4	4	4	20							
17	25N5039	Nitin Sharma	2	2	2	2	2	10	3	3	3	3	4	16							
18	25N5040	Rajesh Vaze	3	3	4	4	4	18	2	2	3	3	4	14							
19	25N5041	Tanish Pathare	4	4	4	3	3	18	4	4	4	4	4	20							
20	25N5042		3	3	3	3	4	16	2	2	3	3	4	14							
21	25N5043	Rohit Patil	4	4	4	2	2	14	3	3	3	3	4	16							
22	25N5044	Vardhan Patil	4	4	3	3	4	18	3	3	3	3	4	16							

Note: 1) Total Marks are 20 for CCA. 2) Student shall perform any two components out of CCA1/CCA2/CCA3. 3) Rubrics are to be followed while assessing CCA.

4) Excellent - 4 marks, Good - 3 marks, Satisfactory - 2 marks, Needs Improvement - 1 marks



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Department of Engineering Sciences and Humanities (DESH)

Continuous Comprehensive Assessment (CCA)

SEMESTER-I/II Academic Year: 2025-26

CLASS: DIV: BATCH:

SUBJECT:

NAME OF FACULTY:

Sr. No	Roll No.	Name of the Student	CCA1					CCA2					CCA3					CCA Marks Out of 20						
			Mark the Criteria on the scale of 4 to 1					Total Marks (20)	Mark the Criteria on the scale of 4 to 1					Total Marks (20)	Mark the Criteria on the scale of 4 to 1					Total Marks (20)				
			A	B	C	D	E		A	B	C	D	E		A	B	C		D		E			
1	25MS045	Munad Keshor Rao	4	4	4	4	4	16	4	4	4	4	4	20										
2	25MS046	Samiksha Shivaji Raut	2	2	2	4	4	14	3	3	4	4	4	18										
3	25MS047	Salunkhe Aditi	2	2	4	4	4	16	3	3	4	4	4	18										
4	25MS048	Samriddhi Rajesh Pingole	3	3	3	3	4	16	4	4	3	3	3	18										
5	25MS049	Sanjay Jyotirao Suro	2	2	3	3	4	14	3	3	3	3	4	16										
6	25MS050	Samuel Dhanesh Patil	3	3	3	3	4	16	3	3	3	3	4	16										
7	25MS051	Samiraj Dhanesh Patil	3	3	3	3	4	16	3	3	3	3	4	16										
8	25MS052	Shindar Deepak	3	3	3	3	4	16	3	3	3	3	4	16										
9	25MS053	Shruti Tanwade	2	2	3	3	4	14	4	4	4	4	4	20										
10	25MS054	Sanjaya Jale	2	2	3	3	4	14	4	4	4	4	4	20										
11	25MS055	Subedar Samiksha	2	2	3	3	4	16	3	3	3	3	4	16										
12	25MS056	Gurmit Divekar	3	3	3	3	4	16	3	3	3	3	4	16										
13	25MS057	Om Surpure	3	3	4	4	4	18	3	3	4	4	4	18										
14	25MS058	Nidya Tankale	4	4	4	4	4	20	3	3	4	4	4	18										
15	25MS059	Tejas Ghoshade	2	2	3	3	4	14	3	3	4	4	4	18										
16	25MS060	Tisha Nakul Sharma	4	4	4	4	4	20	4	4	4	4	4	20										
17	25MS061	Neelam Salpud																						
18	25MS062	Anur Akhoy Velpathur	2	2	3	3	4	14	3	3	4	4	4	18										
19	25MS063	Vihan Tanale	2	2	3	3	4	14	4	4	4	4	4	20										
20	25MS064	Waghmare Amaraj	3	3	4	4	4	18	4	4	4	4	4	20										
21	25MS065	Deepa Ravindra Jagtap	4	4	4	4	4	20	4	4	4	4	4	20										
22	25MS066	Tanhai Ziranget	2	2	3	3	4	14	3	3	4	4	4	18										

Note: 1) Total Marks are 20 for CCA. 2) Student shall perform any two components out of CCA1/CCA2/CCA3. 3) Rubrics are to be followed while assessing CCA.

4) Excellent - 4 marks, Good - 3 marks, Satisfactory - 2 marks, Needs Improvement - 1 mark.

Note: 1) Total Marks are 20 for CCA-1, 2) Student shall perform any two components out of CCA1/C2/CCA3, 3) Rubrics are to be followed while assessing CCA.

4) Excellent - 4 marks, Good - 3 marks, Satisfactory - 2 marks, Needs Improvement - 1 marks



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DEPARTMENT OF ENGINEERING SCIENCES AND HUMANITIES

First Year B. Tech. (2025 Pattern), AY 2025-26

Continuous Comprehensive Assessment (CCA)

Course: BEE	Code:	Course Teacher: Almas Ambrekar
Semester: I/II	Class: Mechanical - A	Division: VII

- > CCA 1 : Consist of Course Activity which could be industry application-based, internet-based, workshop-based, and laboratory-based or field based.
- > CCA 2 : Consist of Case Study / Survey based on applications or content beyond Course Contents of the respective course.
- > CCA 3 : Consist of Group Discussion/Seminar/Blog writing.
- > Cognitive Level: R: Remember, U: Understand, AP: Apply, AN: Analyse, E: Evaluate, C: Create
- > Knowledge Category: F: Factual, C: Conceptual, P: Procedural, MC: Meta-cognitive, FDP: Fundamental Design Principles, C&S: Criteria & Specifications,

PC: Practical Constraints, DI: Design Instrumentalities

SN	Roll Number	Activity Assigned to students (CCA1/CCA2/CCA3)	COs	PO's/PSO's	Cognitive Level	Knowledge Category
1	25ME001	CCA1 → Electricity Bill calculation in House	CO4	PO11	Remember & Understanding	Knowledge E, P & FDP
2	25ME002	CCA2 → Working Electromagnetic crane model.	CO2			
3	25ME003					
4	25ME004					
5	25ME005					
6	25ME006	CCA1 → Electricity Bill calculation in House.	CO4	PO11	Remember & Understanding	Knowledge E, P & FDP
7	25ME007					
8	25ME008					
9	25ME009	CCA2 → Clapping Switch Mini Project	CO1			
10	25ME010		CO3			

SN	Roll Number	Activity Assigned to students (CCA1/CCA2/CCA3)	Cos Mapped	PO's/PSO's Mapped	Cognitive Level	Knowledge Category
11	25ME011	CCA (Activity 1) :- Electricity ^{bill} Calculation of house	C04	PO11	R & U	C, P & FDP
12	25ME012					
13	25ME013					
14	25ME014	CCA (Activity 2) :- Automatic street light using Solar Power.	C03			
15	25ME015					
16	25ME016					
17	25ME017	CCA I : Electricity Bill calculation of your Own House.	C04	PO11	R & U	C, P & FDP
18	25ME018					
19	25ME019					
20	25ME020	CCA II : Fire Alarm system using Thermistor	C03		U	
21	25ME021					
22	25ME022					
23	25ME023	CCA I : Electricity Bill calculation of your own house	C04	PO11	R & U	C, P & FDP
24	25ME024					
25	25ME025					
26	25ME026	CCA II : Smoke detector	C04	PO11	R & U	C, P & FDP
27	25ME027					
28	25ME028					
29	25ME029	CCA I :- Electricity Bill Calculation of your house	C03		U	C, P & FDP
30	25ME030					
31	25ME031					
32	25ME032	CCA I :- Automatic street light	C04	PO11	R & U	C, P & FDP
33	25ME033					
34	25ME034					
35	25ME035	CCA-I → Electricity Bill Calculation of your house.				

S/N	Roll Number	Activity Assigned to students (CCA1/CCA2/CCA3)	Cos Mapped	PO's/PSO's Mapped	Cognitive Level	Knowledge Category
36	25MS036	CCA-2 → Touchless door bell	C04	PO11	R & U	C ₃ P FBDP
37	25MS037					
38	25MS038					
39	25ME039					
40	25ME040	CCA-1: Electricity Bill calculation of your own house.	C03			
41	25ME041					
42	25ME042					
43	25ME043	CCA-2: Automatic Door Opening system.	C04	PO11	R & U	C ₃ P & FDP
44	25ME044					
45	25ME045					
46	25ME046	CCA-1: Electricity Bill calculation of your own house.	C04	PO11	R & U	C ₃ P FBDP
47	25ME047					
48	25ME048					
49	25ME049	CCA-2: Automatic light bulb	C03		U	
50	25ME050					
51	25ME051					
52	25ME052	CCA-1: Electricity Bill calculation of your own house.	C04	PO11	R & U	C ₃ P & FDP
53	25ME053					
54	25ME054					
55	25ME055	CCA-2: Laser security alarm.	C03		U	
56	25ME056					
57	25ME057					
58	25ME058	CCA-2: Laser security alarm	C03	PO11	R & U	C ₃ P & FDP
59	25ME059					
60	25ME060					

SN	Roll Number	Activity Assigned to students (CCA1/CCA2/CCA3)	Cos Mapped	PO's/PSO's Mapped	Cognitive Level	Knowledge Category
61	25ME061	CCA1: Electricity Bill calculation of your own house. CAA2: Energy generation with the help of a wind mill.	C of COS	PO ₁₁	R & U	C, P FDP
62	25ME062					
63	25ME063					
64	25ME064					
65	25ME065					
66		CAA2 : Energy				
67						
68						
69						
70						

Name and Sign of Course Teacher:

Remarks by Module Coordinator (If any):

Name and Sign of Module Coordinator:

Head of Department:



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Department of Engineering Sciences and Humanities (DESH)
Continuous Comprehensive Assessment (CCA)

SEMESTER-VII Academic Year: 2025-26

CLASS: DIV: BATCH:

SUBJECT:

NAME OF FACULTY:

Sr. No		Roll No.	Name of the Student	CCA1					CCA2					CCA3					CCA Marks Out of 20			
				Mark the Criteria on the scale of 4 to 1					Total Marks (20)	Mark the Criteria on the scale of 4 to 1					Total Marks (20)	Mark the Criteria on the scale of 4 to 1					Total Marks (20)	
				A	B	C	D	E		A	B	C	D	E		A	B	C		D		E
1	25ME001	AAYUSH KHAHWAL	3	3	4	4	4	18	3	3	3	3	4	16								
2	25ME002	AAYUSH TAMGE	3	3	4	4	4	18	3	3	3	3	4	16								
3	25ME003	AAYUSH WANJALE	4	4	4	4	4	20	3	3	3	3	4	16								
4	25ME004	AAYUSH BORUDE	3	3	4	4	4	18	4	4	4	4	4	20								
5	25ME005	ADITYA PAWAR	4	4	4	3	3	18	4	3	3	3	3	16								
6	25ME006	SARTHAK ANDHALE	4	4	4	3	3	18	4	4	4	3	3	18								
7	25ME007	ANUSHKA PAKHARE	3	3	3	3	4	16	3	3	3	3	4	16								
8	25ME008	ARJUN MANE	3	3	3	3	4	16	3	3	3	3	4	16								
9	25ME009	ARJUN KAMBLE	4	4	4	3	3	18	4	4	4	4	4	20								
10	25ME010	ARYAN PODALGAT	4	4	4	3	3	18	3	3	3	3	4	16								
11	25ME011	ARYAN CHITLWAR	3	3	4	4	4	18	4	4	4	3	3	18								
12	25ME012	ATHARE HEMANTHIMANSHU	3	3	4	4	4	18	4	4	3	3	3	18								
13	25ME013	ATARVA MALGUNDKAR	3	3	3	3	4	16	3	3	3	3	4	16								
14	25ME014	ATHARVA SALUNKE	4	4	4	4	4	20	3	3	4	4	4	18								
15	25ME015	RAGDE SHRUSHTI	3	3	4	4	4	18	3	3	3	3	4	16								
16	25ME016	RANGDE ADITYA	2	2	3	3	4	14	3	3	3	3	4	16								
17	25ME017	BARAD VATHANAV	3	3	3	3	4	16	2	2	3	3	4	14								
18	25ME018	BARSOLE ADITYA	3	3	4	4	4	18	3	3	3	3	4	16								
19	25ME019	BATHE UTKARSH	4	4	4	4	4	20	3	3	4	4	4	18								
20	25ME020	BHADRE SMITA	3	3	4	4	4	18	3	3	3	3	4	16								
21	25ME021	BHATAWDEKAR ARYAN	3	3	3	3	4	16	4	4	4	4	4	20								
22	25ME022	BHOSALE PRATWAL	4	4	4	4	4	20	4	4	4	3	3	18								

Total Marks are 20 for CCA 2) Student shall perform any two

Note: 1) Total Marks are 20 for CCA. 2) Student shall perform any two components out of CCA1/CCA2/CCA3. 3) Rubrics are to be followed while assessing CCA.

4) Excellent - 4 marks, Good - 3 marks, Satisfactory - 2 marks, Needs Improvement - 1 marks



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Department of Engineering Sciences and Humanities (DESH)
Continuous Comprehensive Assessment (CCA)

CLASS: DIV: BATCH: SEMESTER-I/II Academic Year: 2025-26

SUBJECT:

NAME OF FACULTY:

Sr. No	Roll No.	Name of the Student	NAME OF FACULTY:										CCA Marks Out of 20							
			CCA1					CCA2						CCA3						
			Mark the Criteria on the scale of 4 to 1					Mark the Criteria on the scale of 4 to 1						Mark the Criteria on the scale of 4 to 1						
			A	B	C	D	E	Total Marks(20)	A	B	C	D		E	Total Marks (20)	A	B	C	D	E
1	25ME023	BHUTBI RUTIKA	3	3	3	3	4	16	3	3	4	4	4	18						
2	25ME024	BARASE GAURI	3	3	4	4	4	18	4	4	4	4	4	20						
3	25ME025	CHAVAN KRISHNA	4	3	3	3	3	16	3	3	4	4	4	18						
4	25ME026	CHIRAG VEKHARIA	3	3	3	3	4	14	3	3	4	4	4	18						
5	25ME027	DAWKARE KARAN	3	3	3	3	4	16	3	3	4	4	4	18						
6	25ME028	DESAL YUVRAJ	3	3	4	4	4	18	4	4	4	4	4	20						
7	25ME029	DESAI TANVI	3	3	4	4	4	18	3	3	3	3	4	16						
8	25ME030	DESHMUKH ATARVA	3	3	3	3	4	16	3	3	3	3	4	16						
9	25ME031	DESHMUKH VIRAT	3	3	3	3	4	16	4	4	4	4	4	20						
10	25ME032	DESHPANDE KEMAL	3	3	3	3	4	16	3	3	4	4	4	18						
11	25ME033	DHONDGE HARSHWARDHAN	3	3	3	3	4	16	3	3	4	4	4	18						
12	25ME034	DUNDE SHIVTEJ	3	3	3	3	4	16	4	4	4	4	4	20						
13	25ME035	DUPADE VAISHNAVI	4	4	4	4	3	18	3	3	4	4	4	18						
14	25ME036	DURVA KADU	3	3	3	3	4	16	3	3	3	3	4	16						
15	25ME037	DWIVEDI KRISHA	3	3	4	4	4	18	3	3	3	3	4	16						
16	25ME038	GAIKWAD SARANG	3	3	4	4	4	18	3	3	4	4	4	18						
17	25ME039	GANESHKAR SHRUTI	3	3	3	3	4	16	3	3	4	4	4	18						
18	25ME040	GATKUL PRANAV	3	3	3	3	4	16	4	4	4	4	4	20						
19	25ME041	GONDKAR TEJAS	3	3	4	4	4	18	3	3	4	4	4	18						
20	25ME042	GOVARDHAN SHOURYA	3	3	3	3	4	16	3	3	3	3	4	16						
21	25ME043	GOWALKAR YASHNA	3	3	3	3	4	16	3	3	4	4	4	18						
22	25ME044	GUDELA TANUJ	3	3	4	4	4	18	3	3	4	4	4	18						

Note: 1) Total Marks are 20 for CCA. 2) Student shall perform any two components out of CCA1/CCA2/CCA3. 3) Rubrics are to be followed while assessing CCA.

Excellent - 4 marks - Good - 3 marks - Satisfactory - 2 marks - Needs Improvement - 1 mark

Note: 1) Total Marks are 20 for CCA. 2) Student shall perform any two components out of CCA1/CCA2/CCA3. 3) Rubrics are to be followed while assessing CCA.
4) Excellent - 4 marks, Good - 3 marks, Satisfactory - 2 marks, Needs Improvement - 1 marks



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Department of Engineering Sciences and Humanities (DESH)

Continuous Comprehensive Assessment (CCA)

SEMESTER-I/II Academic Year: 2025-26

CLASS: DIV: BATCH:

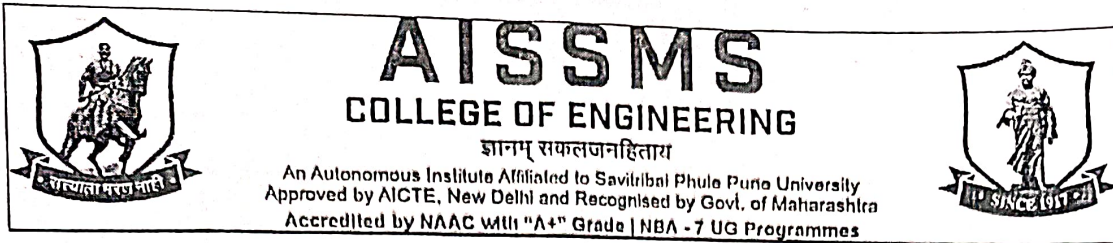
SUBJECT:

NAME OF FACULTY:

Sr. No	Roll No.	Name of the Student	CCA1					CCA2					CCA3					CCA Marks Out of 20			
			Mark the Criteria on the scale of 4 to 1					Total Marks (20)	Mark the Criteria on the scale of 4 to 1					Total Marks (20)	Mark the Criteria on the scale of 4 to 1					Total Marks (20)	
			A	B	C	D	E		A	B	C	D	E		A	B	C		D		E
1	25ME045	Sujata Haldankar	3	3	3	3	4	16	3	3	4	4	4	18							
2	25ME046	Harpreth Sancheti	3	3	4	4	4	18	3	3	3	3	4	16							
3	25ME047	Harshvashwanth Ghatge	3	3	3	3	4	16	3	3	3	3	4	16							
4	25ME048	Hrishikesh Dandawade							3	3	4	4	4	18							
5	25ME049	Pravesh Bharat Jagtap	3	3	3	3	4	16	3	3	3	3	4	18							
6	25ME050	Tiya Maday	4	4	4	4	4	20	3	3	4	4	4	18							
7	25ME051	Kadlam Siddhant	3	3	3	3	4	16	3	3	3	3	4	16							
8	25ME052	Karnate Gourav	3	3	3	3	4	16	3	3	3	3	4	16							
9	25ME053	Karnate Rashmi	2	2	3	3	4	14	3	3	3	3	4	16							
10	25ME054	Karnate Shweta	3	3	3	3	4	16	3	3	4	4	4	18							
11	25ME055	Manish Khokhar	3	3	3	3	4	16	3	3	4	4	4	18							
12	25ME056	Khemnar-Rohit	3	3	4	4	4	18	3	3	3	3	4	16							
13	25ME057	Uday Khilkar	3	3	4	4	4	18	3	3	3	3	4	16							
14	25ME058	Rohat Sathnaki	3	3	4	4	4	18	3	3	3	3	4	16							
15	25ME059	Khanu Athithi	3	3	4	4	4	18	3	3	3	3	4	16							
16	25ME060	Kinikar Kunad	2	2	3	3	4	14	3	3	3	3	4	16							
17	25ME061	Kondre Atharva	2	2	3	3	4	14	3	3	3	3	4	16							
18	25ME062	Korhalcar Bhumi	4	4	4	4	4	20	4	4	4	4	4	20							
19	25ME063	Krish Gupta	3	3	3	3	4	16	3	3	3	3	4	16							
20	25ME064	Kulcarani Ahuwa	3	3	3	3	4	16	3	3	3	3	4	16							
21	25ME065	Kutade Pravin	2	2	3	3	4	14	3	3	3	3	4	16							
22																					

Note: 1) Total Marks are 20 for CCA. 2) Student shall perform activities as per the syllabus of CCA.

Note: 1) Total Marks are 20 for CCA. 2) Student shall perform any two components out of CCA1/CCA2/CCA3. 3) Rubrics are to be followed while assessing CCA. 4) Excellent - 4 marks, Good - 3 marks, Satisfactory - 2 marks, Needs Improvement - 1 marks



Department of Engineering Sciences and Humanities
Basic Electrical Engineering
AY 2025-26 SEM I
CCA Activity

Date: 8/10/25

Subject: Case Study on "Single Phase LT Electricity Bill"

All Students are hereby informed to undertake a Case Study on the topic: "Analysis of Single Phase LT Electricity Bill of Your Own House".

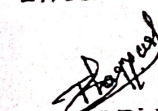
Objective: To help students understand domestic power consumption, load management, and energy billing calculations in a real-life context.

Max Marks – 20 Marks

Instructions for the case Study

1. **Meter Details:** Record the Meter Number, Consumer Number; and Sanctioned Load from your household electricity meter.
2. **Meter Photograph:** Attach a Geo-tagged Photograph of your electricity meter showing the meter reading clearly.
3. **Load Listing:** Prepare a table of all electrical appliances used at home with:
 - o Appliance Name
 - o Rated Power (in Watts)
 - o Average Daily Usage (in Hours)
 - o Calculated Energy Consumption (Wh or kWh)
4. **Bill Calculation:** Using your latest Electricity Bill, perform a detailed calculation showing how the total amount was derived (including fixed charge, energy charge, and taxes if applicable).
5. **Relation Between kWh and Units:** Clearly mention and explain the relation between "kWh" (kilowatt-hour) and "Units" of electricity.
6. **Presentation Format:** Prepare the case study report in A4 size pages with proper headings, neat presentation, and relevant calculations. Include introduction, observations, calculations, photographs, conclusion, and references.

Submission Deadline: Submit the completed case study to your respective teaching Faculty by 27/10/25.


Mr. B. S. Bobdey
Module Co-ordinator


Dr. A. B. Patil
Academic Co-ordinator


Dr. B. D. Bachchav
HOD, DESH



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**Department of Engineering Science and Humanities****AY 2025-26 SEM I****Rubrics for Case Study**

A case study is like a real-life example used to understand a concept better.. Instead of just reading theory, students can look at how that theory works in actual situations in case studies. This Case Study help students understand domestic power consumption, load management, and energy billing calculations in a real-life context. It helps bridge the gap between classroom learning and real-world engineering. Many case studies are discussed in groups, helping students learn to share ideas and work together. Also case study helps students exploring the higher level PO's.

Sr Nos	Criteria	Excellent (4)	Good (3)	Satisfactory (2)	Needs Improvement (1)
A	Understanding of the Meter and Bill	Thorough understanding	Good understanding	Adequate understanding	Limited understanding
B	Listing of the loads	Complete list of household appliances with accurate power ratings and energy consumption (kWh) calculations.	Complete list of household appliances with accurate power ratings and energy consumption (kWh) calculations.	Complete list of household appliances with accurate power ratings and energy consumption (kWh) calculations.	Complete list of household appliances with accurate power ratings and energy consumption (kWh) calculations.
C	Analysis and its Interpretation (Bill Calculation)	Thorough analysis with clear interpretation.	Good analysis, some interpretation may lack clarity.	Basic analysis, limited interpretation.	No analysis; interpretation is missing.
D	Presentation	Well-organized, clear, and well-presented.	Organized with minor formatting issues.	Acceptable structure but may lack clarity or flow.	Disorganized, unclear, or hard to follow.
E	Conclusion & Reflection	Insightful conclusion demonstrating deep understanding of household power usage and billing.	Logical conclusion with moderate reflection	Basic conclusion; limited learning reflection.	No conclusion or reflection provided

$\frac{16}{20}$

$\frac{8}{15}$

$\frac{16}{15}$
31/1/25

A.I.S.S.M.S

COLLEGE OF ENGINEERING

NO - 1, Kennedy Road, Near R.T.O Pune - 411001

Name : Swara Sunil Haldankar

Branch : Mechanical - A

Batch : C

Roll - no : 25ME045

Subject : BEE

Activity : CCA - I

Subject $\Rightarrow$ Case study on "single phase LT electricity bill".

Objective $\Rightarrow$ To help students understand domestic power consumption, load management & energy billing calculations in a real-life context.

Meter number $\Rightarrow$ 06504834763

Sanctioned load = ?

Consumer Number = ?

0

A.I.S.S.M.S

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Load Listing $\Rightarrow$

	Appliance Name	Quantity	Rated power	Avg. daily usage (hrs)	Energy consumption
1)	Ceiling Fan	2	140 W	10 hrs	$\frac{140 \times 10}{1000} = 1.4 \text{ kWh}$
2)	LED bulb	4	30 W	5 hrs	$\frac{30 \times 5}{1000} = 0.15 \text{ kWh}$
3)	Geyser	1	2000 W	1 hr	$\frac{2000 \times 1}{1000} = 2 \text{ kWh}$
4)	Television	1	100 W	6 hrs	$\frac{100 \times 6}{1000} = 0.6 \text{ kWh}$
5)	Fridge	1	150 W	24 hrs	$\frac{150 \times 24}{1000} = 3.6 \text{ kWh}$
6)	Wi-fi Router	1	10 W	20 hrs	$\frac{10 \times 20}{1000} = 0.2 \text{ kWh}$
7)	laptop	2	120 W	5 hrs	$\frac{120 \times 5}{1000} = 0.6 \text{ kWh}$
8)	Mobile charger	4	20 W	4 hrs	$\frac{20 \times 4}{1000} = 0.08 \text{ kWh}$
9)	Washing machine	1	500 W	2 hrs	$\frac{500 \times 2}{1000} = 1 \text{ kWh}$
					Total = 9.66 kWh

Daily = 9.66 kWh

Monthly = $9.66 \times 30 = 289.8 \text{ kWh} \approx 290 \text{ kWh}$

Value of	Original values	Calculated values
Fixed charges	140.00	140.00
Energy consumption charges	2283.44	2,303.9
Whilling charges	395.43	395.43
FAC	-21.75	-21.75
Electricity duty	447.54	450.81
Other charges	0.00	0.00
Total	3240.00	3268.39

A.I.S.S.M.S

COLLEGE OF ENGINEERING

NO - 1, Kennedy Road, Near R.T.O Pune - 411001

Electricity Bill

Fixed charges $\Rightarrow$ 140.00

Energy consumption charges $\Rightarrow$ 2,303.9

Whilling charges $\Rightarrow 1.47 \times 269 \Rightarrow 395.43$

FAC $\Rightarrow$ - 21.75

Electricity duty $\Rightarrow$ 450.81

Other charges $\Rightarrow$ 0.00

Total $\Rightarrow$ 3268.39

Relation between kwh and units

1 unit = 1kwh

Conclusion $\Rightarrow$ In this experiment, we have calculated the electricity bill and the actual bill and calculated bill is nearly the same.

Calculation

$$\begin{aligned}\text{Energy consumption charges} &\Rightarrow (100 \times 4.28) + (169 \times 4.28) \\ &\Rightarrow 428 + 1875.9 \\ &\Rightarrow 2303.9\end{aligned}$$

$$\begin{aligned}\text{Whilling charges} &\Rightarrow 1.47 \times 269 \\ &\Rightarrow 395.43\end{aligned}$$

$$\begin{aligned}\text{Electricity duty} &\Rightarrow (140 + 2303.9 + 395.43 - 21.75) \times 0.1 \\ &\Rightarrow 450.81\end{aligned}$$

$$\begin{aligned}\text{Total} &\Rightarrow 140 + 2303.9 + 395.43 - 21.75 + 450.81 \\ &\Rightarrow 3268.39\end{aligned}$$

महावितरण

वीज पुरवठा दैगक

File No: 4-2024-200-11
CR & 1/19

महाराष्ट्र शासन, वित्त विभाग, मुंबई - 400 001

GSTIN 27AAECM2933K12B

वित्त क्रमांक : 170016141260 मोबाईल नंबर : 9420000049

SHRI HALDANKAR VISHRAM KASHINATH
DARUWALA, 1/1, RASTAPETH, FL NO 6 PUNE 411011

श्री हलदंकर विश्रम काशीनाथ

दैगक दिनांक : 13-08-2025
दैगक रकम रु : 3240.00

दैग दिनांक : 02-09-2025
या तारखे नंतर : 3280.00
भरल्यास

Scan QR Code with BHMS App for UPI Payment
QR Code is valid upto date: 18-09-2025



QR कोडद्वारे भरणा केल्यास, भरणा दिवसानुसार लागू असलेली तत्पर दैगक भरणा सूट किंवा दिवस अन्तर्गत पुढील दिवसात समायोजित करण्यात येईल

वित्त विभाग : 4609-KASBA SUB-DIV RASTAPETH DIVISION
दर सौरा : 03/1/1 Res 1-Phase
दोल क्रमांक :
पी.सी./वॉल्टाज मापन-क्रेडिट/डि.सी.सी. : 3/07/3104/0067/4609052
मिटर क्रमांक : 06504534763
रिडिंग युनिट : H3

पुरवठा दिनांक : 19-10-1994
भोजन भार : 3.00 KW
गुरास ठेव जमा (रु) : 2018.84
घालु रिडिंग दिनांक : 10-08-2025
मागील रिडिंग दिनांक : 10-07-2025

घालु रिडिंग	मागील रिडिंग	गुरास अवयव	युनिट	समा. युनिट	एकूण वापर
29967	29698	1.00	269	0	269

Net Status: In arrears
Period: 1.03

0 100 200 300

जुलै 2025	275	
ऑगस्ट 2025	265	
सप्टेंबर 2025	305	
ऑक्टोबर 2025	330	
नोव्हेंबर 2025	300	
डिसेंबर 2025	340	
जानेवारी 2026	280	
फेब्रुवारी 2026	320	
मार्च 2026	295	
एप्रिल 2026	325	
मे 2026	290	

महाराष्ट्र शासन, वित्त विभाग, मुंबई - 400 001
महाराष्ट्र शासन, वित्त विभाग, मुंबई - 400 001
महाराष्ट्र शासन, वित्त विभाग, मुंबई - 400 001

महाराष्ट्र शासन, वित्त विभाग, मुंबई - 400 001

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ग्राहकाच्या तक्रारीचे निवारण करण्यासाठीचे निवेदन
व कार्यवाही महावितरणच्या संकेत स्थळा
www.mahadsc.com > ConsumerPortal
> CGRF वरून करता येईल

वीज वापर
ऑगस्ट - 2024 228
ऑगस्ट - 2025 269

आम्ही येथेही उपलब्ध आहोत



पत्र संदेश

महावितरणच्या कोणत्याही प्रकारच्या रकमेचा भरणा करताना संगणकीकृत क्रमांक असलेली संगणकीय माहितीची नोंद घ्यावी. हस्ताक्षरित पावती नोंद घ्यावी. हस्ताक्षरित पावती नोंद घ्यावी.

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दरमजबूत सेवा

शून्य गुंतवणूक

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वित्त विभाग : 4609	ग्राहक क्रमांक : 170016141260	पी.सी. : H3	दर : 90	या तारखे पर्यंत भरल्यास	22-08-2025	Rs. 3210.00
ऑगस्ट 2025	Rs. 3240.00	या तारखे नंतर भरल्यास	02-09-2025	Rs. 3280.00		

वित्त विभाग : 4609	ग्राहक क्रमांक : 170016141260	पी.सी. : H3	दर : 90	अंतिम तारीख	02-09-2025	Rs. 3240.00
ऑगस्ट 2025	Rs. 3240.00	या तारखे पर्यंत भरल्यास	22-08-2025	Rs. 3210.00		
ऑगस्ट 2025	Rs. 3240.00	या तारखे नंतर भरल्यास	02-09-2025	Rs. 3280.00		



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- ### પેલ તિહિન્યાચાલી સુષના :

- [illegible]

दिनांक 01-07-2025
 मध्य प्रदेशीय ओपन मार्केटिंग मंडल
 मध्य प्रदेशीय ओपन मार्केटिंग मंडल का वेबसाइट <https://www.opm.gov.in/>

युनिट	0-100	101-300	301-500	501-1000	>1000
प्रति एकड़ (रु.) प्रति युनिट	4.28	11.10	15.39	17.56	17.59
प्रति एकड़ प्रति युनिट	-0.050	-0.100	-0.100	-0.100	-0.100

मा.पौल नियामक आयोगाच्या दिनांक 25-06-2025 च्या (प्र.क्र. 75/2025) अदेशानुसार, सकाळी 9 ते सांयकाळी 5 वा वेळेतील दैन्य करार
परगुटी प्रत्येकीने 80 पैसे प्रति घण्टे संपत्ति करार, हि संपत्ति निष्काशासाठी स्पष्ट नोंद बसविणे आवश्यक आहे.
मा. पौल नियामक आयोग महाराष्ट्र प्रदेश दिनांक 24/02/2021 नुसार दि. 03/11/2021 पासून आस्पावे दरम्यान दोन वित्त संघीत शिक्षारण्याची
करार मरणा रु. 500/- इतकी राहिल, #
सुरक्षा देव मरणाचा (रु.) - 4172.00 =
दि. 01/07/2025 पासून लागू असलेल्या नवीन योजे दर नुसार महानगरपालिका, क्षेत्रीय ग्रहाणा रु. 10 प्रति नवीन अंतर्गत विवर अन्तर लागू,
क्षेत्रीय माध्यमाने दि. 02-09-2025 पर्यंत भरणा केल्यात, डिजिटल भरणा सूट 6.99 रु. पुढील देयकत
समाप्ति करण्यात येईल. #

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FAVOR

1977-1978

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7/26/2006

12-12-2012

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07-4-2013

31-33-253



वीज ग्राहकांना नम्र
आवाहन 'गो ग्रीन'
स्वीकारून सुंदर करू
पर्यावरण...

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170016141260-3

FR-121GG



Department of Engineering Sciences and Humanities
Basic Electrical Engineering
AY 2025-26 SEM I
CCA II Activity

Date: 1 / 12 /25

Subject: Model making activity (Mechanical & Electrical Application Based)

First Year Engineering Students are hereby informed that the **(Mini Model)** has to be prepared as per the guidelines and rubrics provided under BEE CCA Activity.

Objective:- To enable students to apply fundamental engineering concepts from Mechanical and Electrical domains to real-life problems through a practical mini project model.

Max Marks – 20 Marks

Instructions for

- Model must be based on **Mechanical or Electrical applications**.
- Models should be functional or demonstrative in nature.
- A two page A4 size written **report** must be submitted.
- Students must strictly follow the rubrics attached with the instructions.
- Final presentation and demonstration will be conducted in the lab.

All students are advised to give the title to your respective class representative. All students must work in the team as discussed with in-charge faculty. For any clarification, contact the respective course instructor.

Submission Deadline: Submit the complete working model to your respective teaching Faculty by 10/12/25.

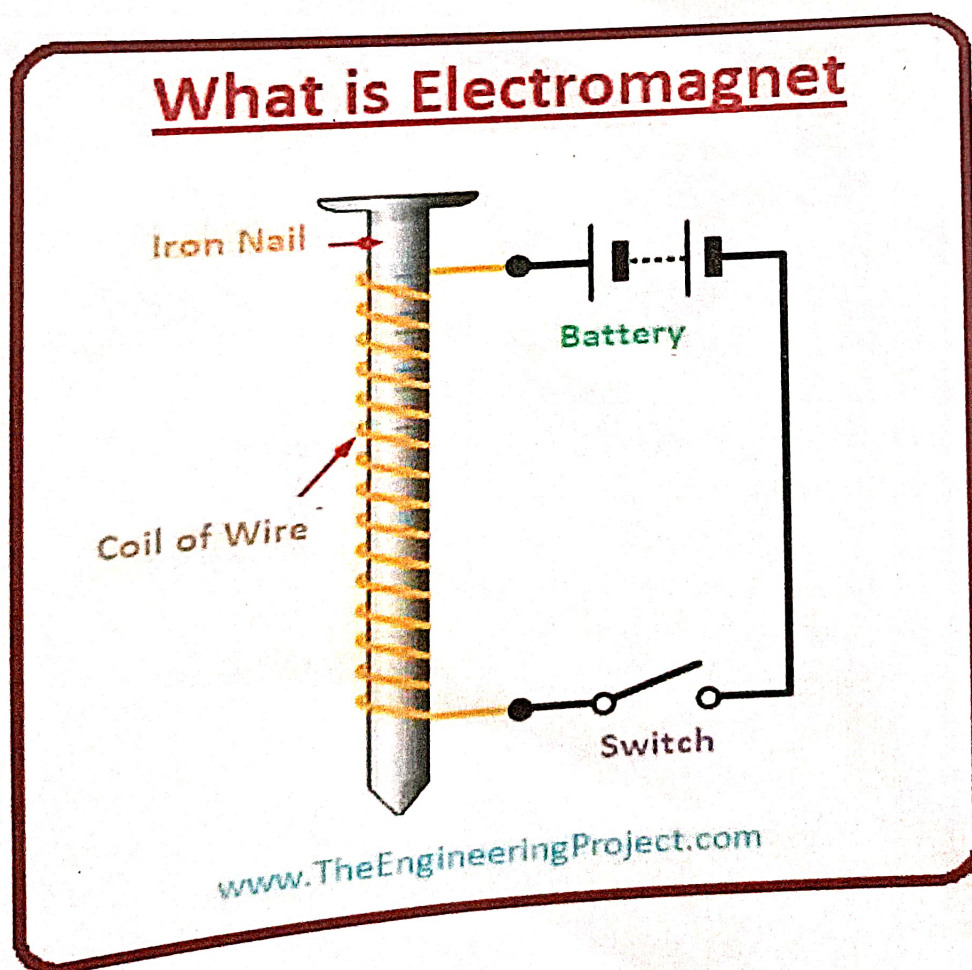
Electromagnetic Crane Model

An electromagnetic crane is a specialized lifting device that uses an electromagnet to attract and transport ferromagnetic materials like steel and iron scrap, commonly in steel mills and recycling operations. The electromagnet generates a magnetic field when energized, allowing precise control over lifting and release.

An electromagnetic crane consists of following components: -

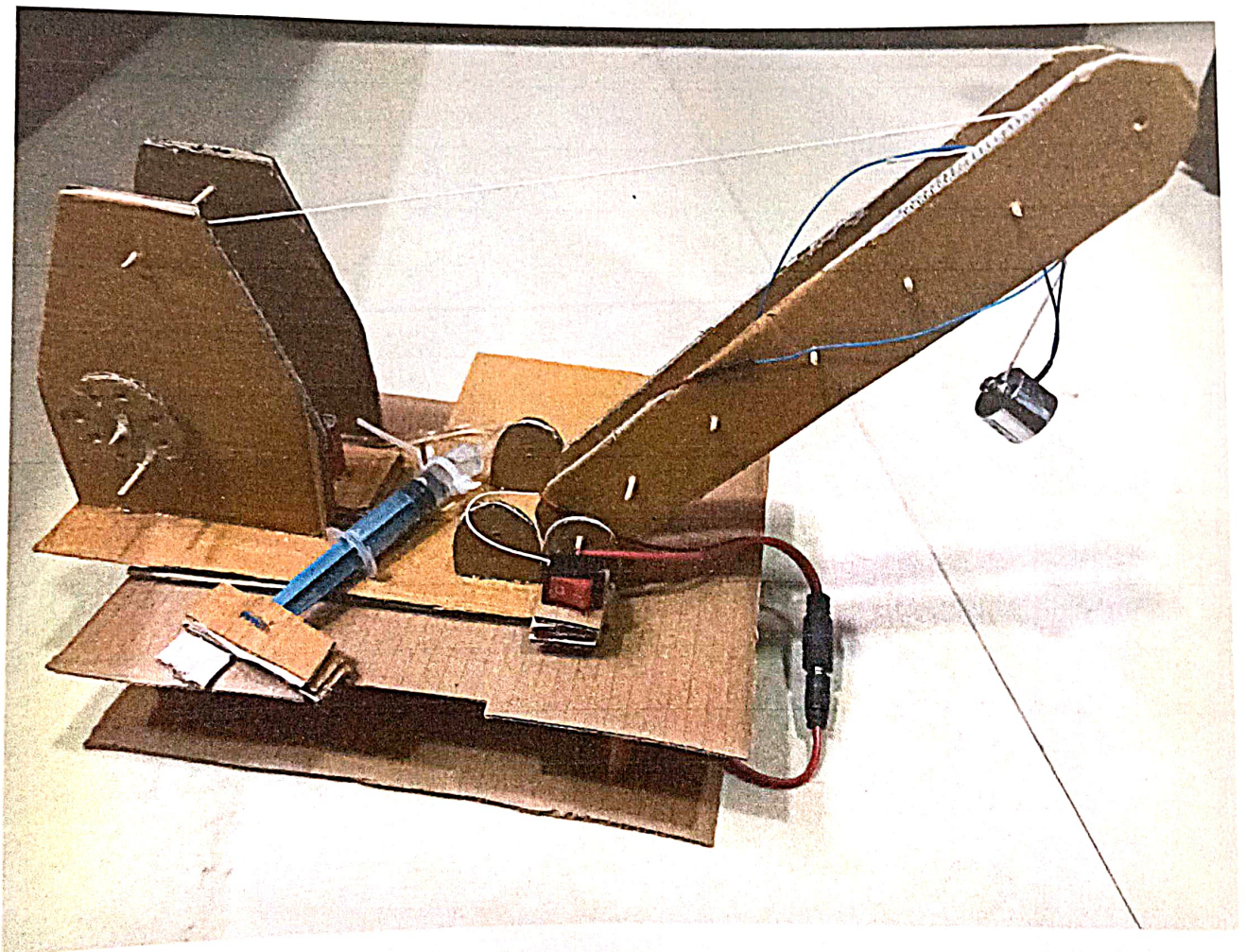
- Crane structure (such as overhead bridge or gantry).
- An electromagnet with a coil-wound iron core.
- A power supply.
- And a control system.

Working of electromagnetic crane: -



Electromagnetic cranes operate on the principle of electromagnetism, where electric current passing through a coil wound around a soft iron core generates a controllable magnetic field to lift ferromagnetic materials.

Miniature working model of electromagnetic crane:

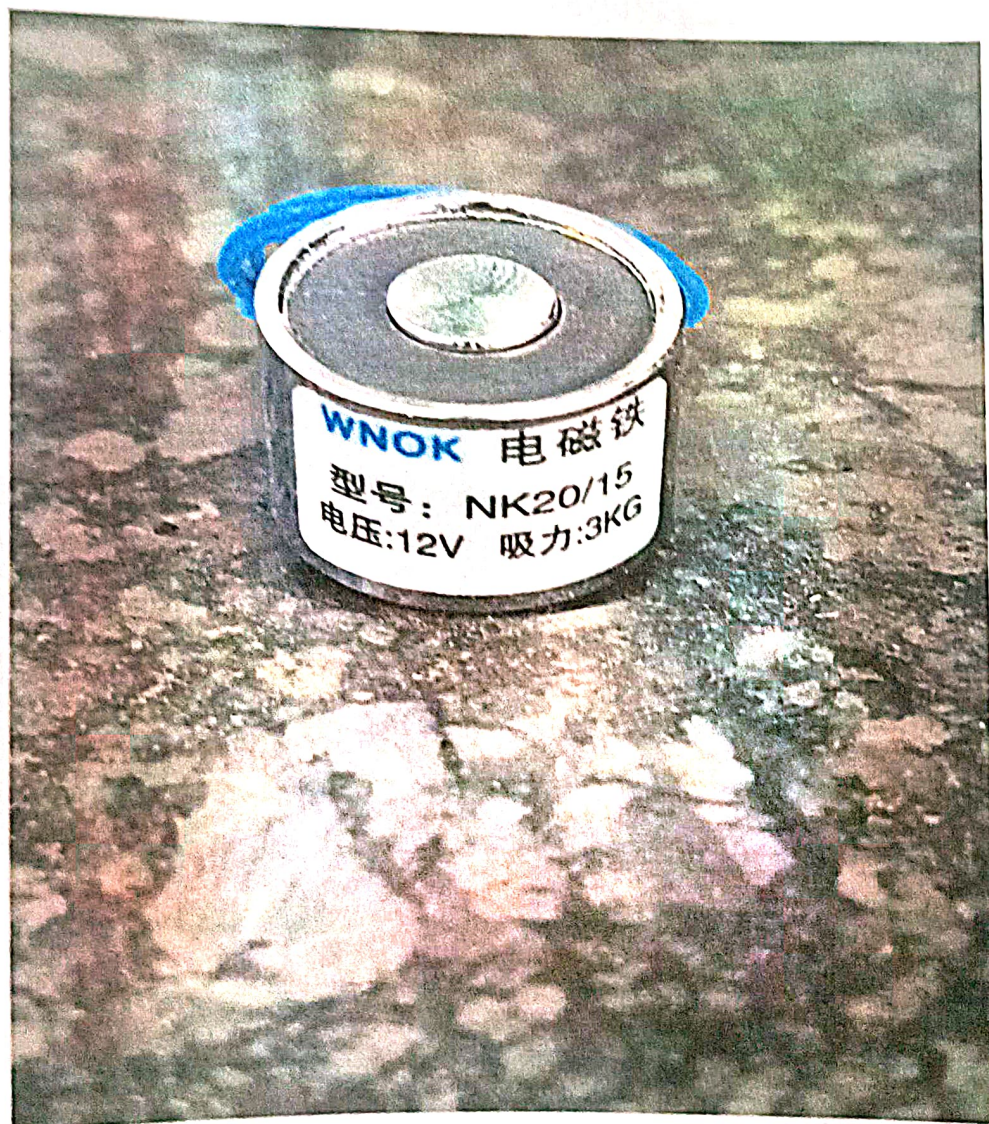


Material Used: -

- Electromagnet (12V, NK20/15).
- Injection tubes.
- 3 cell 12V lithium iron battery.
- Wires and a female chord connector.
- MDF board.
- Dummy Shaft.
- Switch.

• Electromagnet

We used a 12V electromagnet of WNOK. It provided a maximum lifting capacity of 3kg, which was good compared to other electromagnets in market in the same price segment.



- Lithium Battery

A rechargeable 3 cell lithium iron battery was adopted for this model which gave a continuous output of 12V DC supply.



- Construction of model :-

- ➔ Connect the positive terminal of electromagnet to the positive terminal of the battery using the female chord red wire.
- ➔ Connect the black wire of female chord to a switch.
- ➔ Connect the other end of wire to the negative terminal of electromagnet with a wire.
- ➔ Now construct a crane like structure using MDF board cut-outs.
- ➔ Use the injection and tubes for a hydraulic system with which the crane will be able to move in up-down, left-right & forward-backward direction.
- ➔ Mount all this structure and the electrical circuit on a 5mm MDF board and use adhesive to fix them.
- ➔ In the end hang the electromagnet from the edge of the crane with the help of thread/string.

Advantages	Disadvantages
Precise Control: Instant magnetization and demagnetization allow secure gripping and clean release without mechanical claws, reducing damage to irregular loads.	Power Dependency: Fail during outages unless backed by batteries; continuous high current draws significant energy.
High Capacity: Handle bulk scrap up to hundreds of tons via adjustable current, outperforming permanent magnets in versatility.	Material Limitations: Only lifts ferromagnetic items, ineffective for non-magnetic or hot materials above Curie temperature ($\sim 770^{\circ}\text{C}$ for iron).
Safety Features: No risk of mechanical failure in grippers; remote low-voltage controls minimize operator hazards.	Maintenance Needs: Coils prone to overheating and wear, requiring cooling systems and regular insulation checks.
Efficiency: Fast cycle times boost productivity in scrap yards and steel mills.	Cost Factors: Higher initial and operational costs due to robust power supplies and rectifiers.

• Applications :-

Electromagnetic cranes are primarily used for handling ferromagnetic materials like steel scrap, billets, and plates in heavy industrial settings.

Primary Applications

- **Steel Mills and Recycling:** Lift and transport scrap metal, ingots, steel plates, billets, coils, pipes, and rebar in workshops, yards, and smelting plants.
- **Scrap Yards:** Efficiently move bulk ferrous waste, vehicles, and machinery for sorting and processing.

Secondary Applications

- **Manufacturing and Construction:** Handle structural steel, beams, and heavy metal components in factories, shipbuilding, automotive assembly, and building sites.
- **Other Industries:** Used in metallurgy, ports, railways, foundries, and warehouses for stacking, loading/unloading steel products.

Course Activity Report

CCA Type :-

CCA 1 (Course Activity)

Title of Activity :- Touch Door Bell

Objective of the Activity :- (State briefly what was the purpose or learning goal of the activity)

To build a simple electronic circuit that uses a transistor to amplify the small current flowing through a finger touch, effectively turning a buzzer on and off.

Description (Summary) of the Activity:-

The Touch Door Bell is a simple electronic system that replaces a standard push-button with a touch sensor. By leveraging the amplification properties of a Bipolar Junction Transistor (BJT), the circuit converts the high-resistance touch of a human finger into a strong electrical signal capable of powering an alarm buzzer, demonstrating the principles of bio-conductivity and transistor switching.

Tools/Methods of the Activity:-

Transistor: CTBC547B (NPN)

Resistor: $1k\Omega$

Load: DC Buzzer

Power: 9V Battery

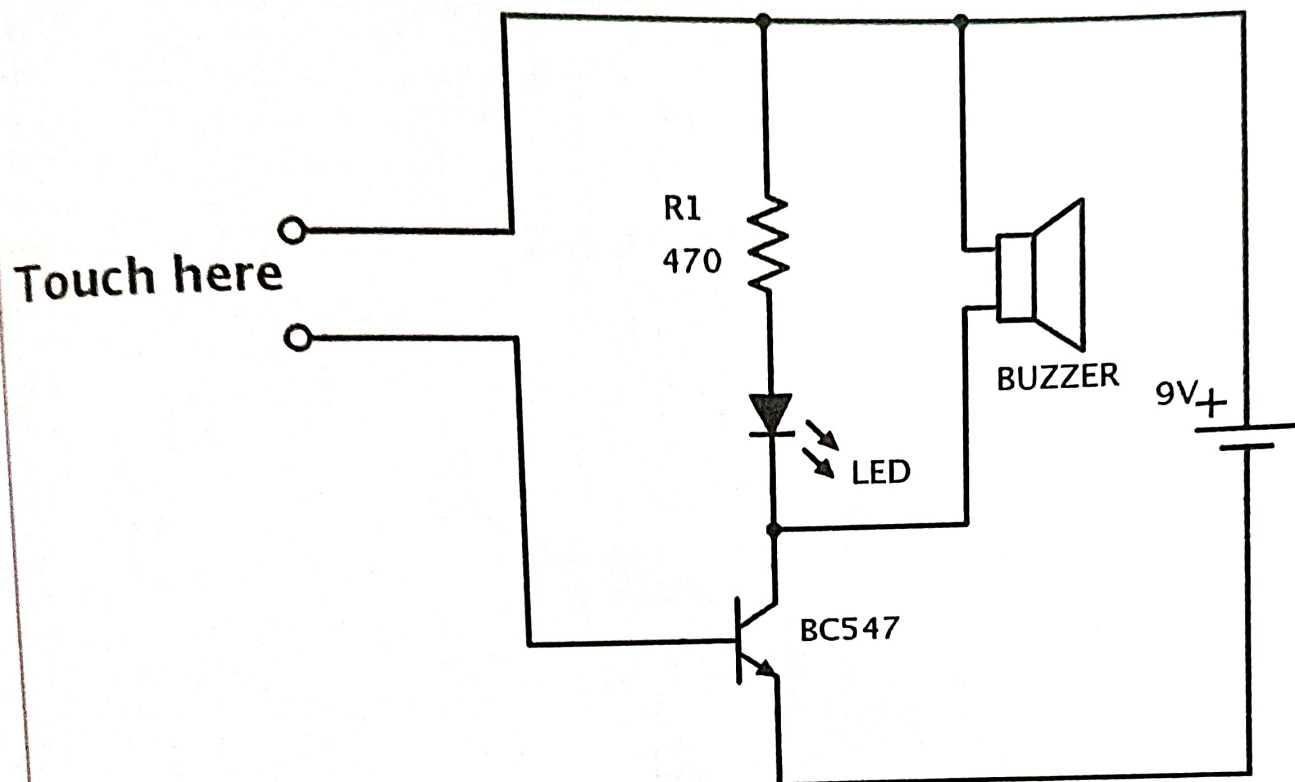
Touch Plate: Two metal contacts (e.g., wires, coins, or copper tape) placed close together but not touching.

Challenges :-

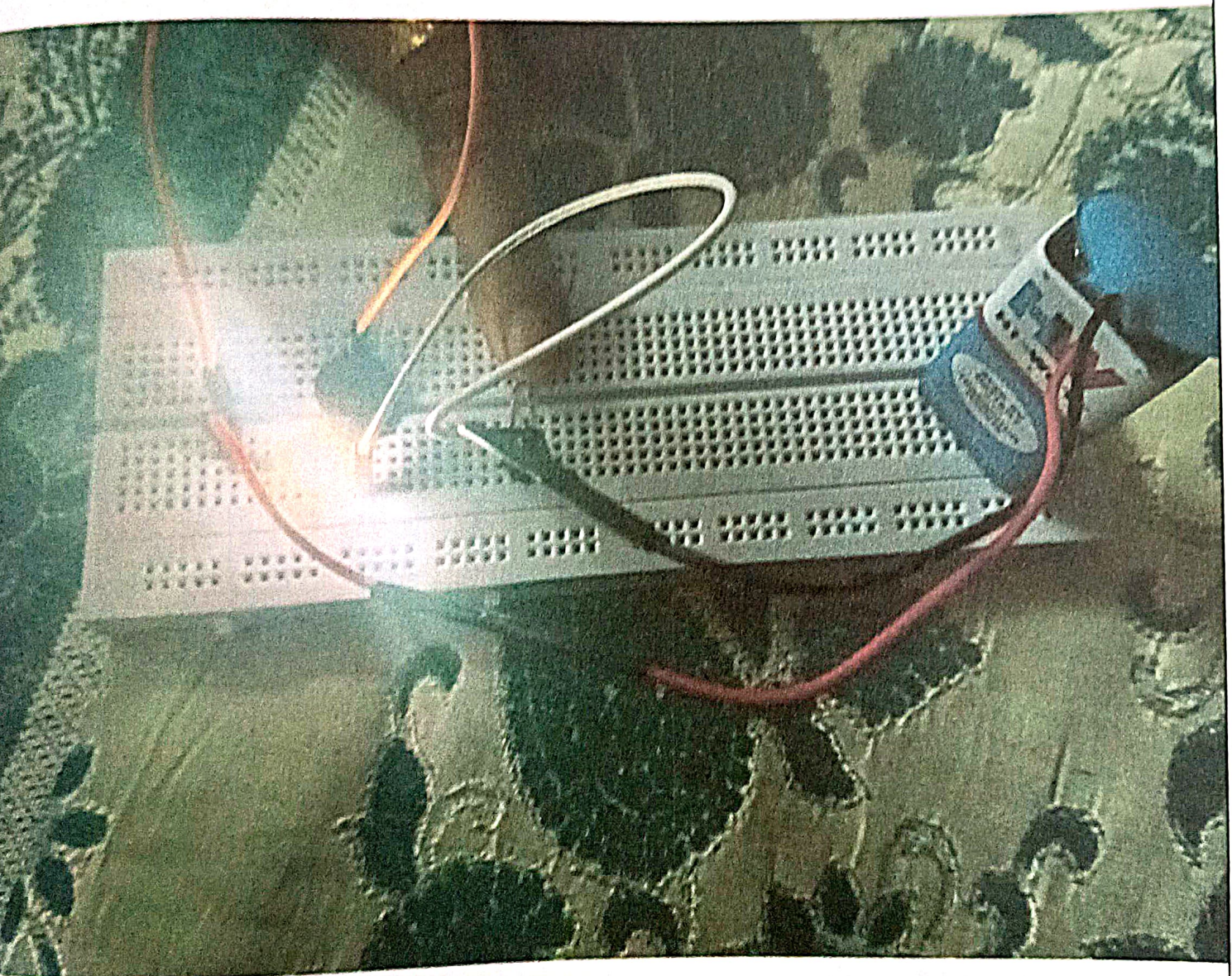
The Challenge: The buzzer sometimes sounded very weak or didn't ring at all when touched with dry fingers.

The Reason: Human skin resistance varies significantly. Dry skin has high resistance (impeding current flow), while moist skin has low resistance. Since this circuit uses a single transistor, the amplification (gain) might not always be enough to drive the buzzer fully if the input current from dry skin is too low.

Theoretical Background / Flowchart :-



Activity Photo:-



(Learning Outcomes) Conclusion and Discussion:-

In conclusion, the Touch Door Bell project successfully demonstrates the practical application of a Bipolar Junction Transistor (NPN) as a touch-sensitive electronic switch.

By utilizing the natural electrical conductivity of human skin to complete the base circuit, we eliminated the need for traditional mechanical push-buttons. The experiment confirmed that:

Transistor Switching: The transistor effectively switches from a "cutoff" to a "saturation" state when a small current is applied to the base.

Amplification: The device successfully amplified the weak current flowing through the finger to drive a high-current load (the buzzer).

Simplicity&Efficiency: It is possible to build effective sensor-based security or signaling systems using minimal, low-cost components.

Overall, this project provides a clear understanding of how transistors function in real-world control circuits and highlights the potential for using touch sensors in modern home automation.

References:-

Youtube , Google