



MARATHA VIDYA PRASARAK SAMAJ'S

Karmaveer Adv. Baburao Ganpatrao Thakare
College of Engineering (An Autonomous Institute)



Permanently Affiliated to Savitribai Phule Pune University Vide Letter No. : CA/1542 & Approved by AICTE New Delhi - Vide Letter No. : 740-89-32 (E) ET/98 AISHE Code - C-41622

Department of Applied sciences & Humanities

Engineering Physics Innovative Teaching Method - Report

Academic Year –2024-2025	Class – FY B.Tech E & TC and Instrumentation Engineering
Semester–I	
CO: CO5	PO: PO9, PO10 & PO12

Title of Innovation method/activity: Mind map

1. Name of Faculty: Mr. Desale N. B.

2. Subject : Engineering Physics

3. Objective of Method

- It helps students to clear the concept.
- It helps to improve communication skills, self-learning & confidence.
- To improve the team work.

4. Topic Covered through Activity

Ultrasonic & Crystal Structure

5. Description of method with Benefit

Description of method

In this method the instructor provides a specific topic. Students prepare a neat and well- structured mind map on paper. The completed mind map is submitted as a hard copy for review and assessment.

• Benefits of method

- It helps students to improve subject knowledge.
- It helps students to improve communication skills, self-learning and confidence.
- It helps students to understand the concepts and revised the topic.

6. Roles and Responsibilities

- **Teacher**

- Encourage students to prepare mind map on given topic and upload it on Google Classroom.
- Provide the study material on Topic.
- Remain available during the completion of task.
- Prepare assessment methodology.
- **Student**
 - Go through the concept of the topic.
 - Once topic assigned, understand and discuss individually within the group.
 - Actively participate in group and contribute by means of discussion.
- **Group**
 - Form the group of members as per the guidelines by teachers.
 - Understand and discuss to finalize the best solution for the assigned task.
 - Assign the work within the group to achieve the task within stipulated time period.

7. Assessment Tools: Maximum Marks 08

R1- Connections and relationships	3	2	1
	Excellent	Good	poor
	All elements included with sufficient details	All elements included with some covered superficially	Few elements are included with less correlation.
R2- Creativity	3	2	1
	Excellent	Good	poor
	Content presented with clear manner connection creatively demonstrated, all participated.	Generally satisfactory with a few minor lapses	Difficult to follow flow and structure. Poor design.
R3- Depth of information and accuracy	3	2	1
	Excellent	Satisfactory	poor
	Deep level and correct expression. good flow of content seen at ease	Generally satisfactory with a few minor lapses.	Unable to express. Superficial information

Assessment for E & TC Engineering-

Roll Number	Student Name	Attendance	R1	R2	R3	Total Marks
1	Aher Yash Manoj	present	2	2	1	5
2	Ahire Harshal Kailas	present	2	1	1	4
4	Andhalkar Sneha Nitin	present	2	2	1	5
5	Anjarkar Ashlesha Arun	present	2	1	1	4
6	Apsunde Sumit Subhash	present	3	2	2	7
7	Bachhav Ritesh Pravin	present	2	2	2	6
8	Bari Kartik Ganesh	present	2	2	2	6
9	Bhope Deepesh Umesh	present	3	2	2	7
10	Bochare Vaishnavi Vijay	present	2	2	2	6
11	Borade Kanchan Samadhan	present	2	2	2	6
12	Boraste Anushka Pradeep	present	2	2	2	6
13	Chaudhari Mayur Dnyaneshwar	present	2	2	1	5
14	Chinchore Ishaan Sudeep	present	3	2	2	7
15	Datir Asmita Sampat	present	2	2	2	6
16	Deore Manish Lalit	present	2	2	2	6
17	Deore Aditya Sanjay	present	2	2	2	6
18	Dhabale Priti Bhausaheb	present	2	2	2	6
19	Dhatrak Rutuja Popat	present	2	2	2	6
20	Dhole Tushar Bharat	present	2	2	2	6
21	Dhumal Ishwari Santosh	present	3	2	2	7
22	Dosani Adnan Mohamad Arif	present	2	2	2	6
23	Fulmali Dhiraj Gorakhnath	present	2	2	2	6
24	Gaikawad Nikita Rajendra	present	3	2	2	7
25	Gangode Shivanjali Sunil	present	2	2	2	6
26	Gavate Shravani Vasant	present	2	2	1	5
27	Gholap Avinash Suresh	present	3	2	2	7
28	Girase Rohit Jitendra	present	3	2	2	7
29	Gujar Vaibhav Jalindar	present	3	3	2	8
30	Jadhav Nilesh Dattatray	present	3	2	2	7
31	Kabade Shivani Shrikrishna	present	2	2	1	5
32	Khalkar Gauri Changadev	present	2	2	1	5
33	Khode Samruddhi Chandrakant	present	2	2	2	6
34	Mahakale Suraj Sunil	present	2	2	2	6
35	Mandalik Soham Sandip	present	2	2	2	6
36	More Harshal Nandu	present	2	1	1	4
37	More Vaishnavi Vijay	present	2	2	2	6
38	Nigal Shirpad Rajendra	present	2	1	1	4
39	Nikam Shantanu Santosh	present	3	2	2	7
40	Padol Shraddha Ravindra	present	2	2	2	6
41	Pagare Sushil Dattu	present	2	1	1	4
43	Patil Aditya Rajendra	present	2	2	2	6
44	Pawar Roshan Narayan	present	2	2	2	6

45	Pawar Shreyasi Walmik	present	2	2	2	6
46	Pawar Krishna Ishwar	present	2	2	1	5
47	Pawar Bhoomi Sunil	present	3	2	2	7
48	Pingale Vedant Mukund	present	2	2	2	6
49	Potdar Eshika Dattatray	present	3	2	2	7
50	Rathod Harshad Anil	present	2	2	1	5
51	Sahane Vaishnavi Dnyaneshwar	present	3	2	2	7
52	Satpute Yuvraj Santosh	present	2	2	2	6
53	Sawant Kalyani Ganesh	present	2	2	2	6
54	Shetty Aditi Devadas	present	2	2	2	6
55	Shinde Prachi Pundlik	present	2	2	2	6
56	Sinkar Shreya Pravin	present	3	2	2	7
57	Surwade Abhijit Narayan	present	2	2	1	5
58	Tidake Aarti Sandip	present	3	2	2	7
59	Tiwari Aditi Dhiraj	present	3	2	2	7
60	Ugale Vaidanti Dnyaneshwar	present	3	2	2	7
61	Ughade Sahil Gopal	present	2	2	2	6
62	Wadettiwar Nirmal Dilip	present	3	3	2	8
63	Wadghule Radhika Suresh	present	3	2	2	7
64	Wagh Aniket Dattatray	present	3	3	2	8
65	Wagh Priyadarshini Tukaram	present	3	2	2	7
66	Wagh Rajashree Vikas	present	3	2	2	7
67	Wani Manasvi Dhiraj	present	2	2	1	5
68	Yeole Aayush Anant	present	2	2	1	5
69	Kokate Aakansha	present	2	2	2	6

9. Impact Analysis

Questions	3-Excellent	2-Moderate	1-Slight
Q.1 Did you understand and cover the objective of the activity?	75.55	24.44	--
Q2.Does this help you increase your knowledge of the topic?	82.22	17.70	---
Q.3 Does the content covered is relevant and helpful for lifelong learning?	68.88	31.11	--
Q.4 Do you want us to conduct such activity again?	64.44	35.55	--

Assessment for Instrumentation Engineering-

Roll Number	Student Name	Attendance	R1	R2	R3	Total Marks
1	Jadhav Krushna Sunil	present	2	2	2	6
2	Raul Harshwardhan Padamsingh	present	2	2	2	6
3	Aher Shruti Dnyaneshwar	present	3	2	2	7
4	Dighe Sahil Narayan	present	2	2	2	6
6	Ushir Tanushka Sharad	present	2	2	1	5
7	Gawale Samruddhi Vikas	present	3	2	2	7
8	Kanawade Divya Atmaram	present	3	2	2	7
9	Jaybhawe Apurva Hiranman	present	2	2	1	5
10	Mhaisdhune Mangesh Suresh	present	2	2	1	5
11	Gade Prathamesh Vaibhav	present	2	2	1	5
12	Chaudhari Satyam Yogesh	present	2	2	2	6
13	Barve Kripa Jitendra	present	3	2	2	7
14	Momle Rushikesh Kailas	present	2	2	2	6
15	Chavanke Aditi Nitin	present	2	2	2	6
16	Deshmukh Anushka Sampat	present	2	2	2	6
17	Thakare Anuja Sunil	present	2	2	2	6
18	Rokade Manasvi Shantaram	present	2	2	2	6
19	Shewale Anish Amol	present	2	2	2	6
20	Patrange Parth Rajesh	present	2	2	2	6
21	Dukale Chaitali Balu	present	2	2	1	5
22	Pawar Swami Nitin	present	3	2	2	7
23	Wagh Saloni Arun	present	3	2	2	7
24	Pathade Rudraksha Chandrashekhar	present	2	2	1	5
25	Lahamage Pragati Dattu	present	2	2	1	5
26	Guldagad Rushikesh Vijay	present	2	2	1	5
27	Bhalerao Shravani Suresh	present	2	2	1	5
28	Puri Jay Raju	present	3	2	2	7
29	Bajare Sangram Sharad	present	2	2	1	5
30	Ahire Unnatee Sunil	present	3	2	2	7
31	Patil Siddharth Amol	present	3	2	2	7
32	Patil Vaishnavi Suresh	present	3	3	2	8
33	Gangurde Vaishnavi Pankaj	present	2	2	2	6
34	Pawar Purab Tukaram	present	3	2	2	7
35	Jagtap Anvi Hemant	present	2	1	1	4
36	Dabhade Tanishka Sanjay	present	2	1	1	4
37	Bhandare Viraj Vijay	present	2	1	1	4
38	Korde Adinath Pandharinath	present	2	1	1	4
39	Bhamare Harshali Atul	present	2	2	1	5
40	Thete Dhanashri Ajit	present	2	1	1	4
41	Gangurde Rutuja Manik	present	3	3	2	8
42	Bhavar Kartik Somnath	present	2	2	2	6
43	Mohite Snehal Pravin	present	2	2	2	6
44	Ahire Khushali Sahebrao	present	2	2	2	6
45	Ahire Anjali Samadhan	present	3	2	2	7

46	Gaikawad Harshada Gulab	present	2	2	2	6
47	Jagtap Bhavesh Mohan	present	2	2	2	6
48	Pol Akshad Vishal	present	2	2	2	6
49	Aher Jidnyasa Bhila	present	2	2	2	6
50	Jadhav Tejas Shantaram	present	2	2	2	6
51	Sonawane Sarthak Nitin	present	3	2	2	7
52	Ghumare Sahil Rahul	present	3	2	2	7
53	Ahire Tejas Vijay	present	3	2	2	7
54	Lagad Krutika Dhanaji	present	3	2	2	7
55	Sarkar Shreya Ranjan	present	3	2	2	7
56	Deore Shyam Ashok	present	3	2	2	7
57	Bhalerao Gayatri Annasaheb	present	3	2	2	7
58	Shinde Vrushali Nitin	present	3	2	2	7
59	Talekar Samruddhi Baban	present	3	2	2	7
60	Talekar Rutuja Vitthal	present	3	2	2	7
61	Jadhav Sarvesh Kautik	present	2	2	2	6
62	Shinde Siddhi Dnyaneshwar	present	2	2	2	6
63	Sonawane Yutika Mahendra	present	2	2	2	6
64	Bandrao Jay Dattatray	present	2	2	2	6
65	Bhamare Gitkumar	present	2	2	2	6

9. Impact Analysis

Questions	3-Excellent	2-Moderate	1-Slight
Q.1 Did you understand and cover the objective of the activity?	83.33	16.66	--
Q2.Does this help you increase your knowledge of the topic?	81.66	18.33	---
Q.3 Does the content covered is relevant and helpful for lifelong learning?	88.33	11.66	--
Q.4 Do you want us to conduct such activity again?	83.33	16.66	--

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graph TD
    A[Inverse Piezoelectric Effect] --> B[Definition]
    A --> C[Advantages]
    A --> D[Applications]
    A --> E[Disadvantages]
    
    B --> B1["The converse piezoelectric effect can be defined as when electric field and acoustic surface is reversed. This can be achieved by applying electrical energy coupled in a piezoelectric material. This effect is the inverse electrical property in the function and manner."]
    B --> B2["What is the inverse piezoelectric effect?"]
    
    C --> C1["• High electromechanical coupling efficiency"]
    C --> C2["• High piezoelectric coefficient"]
    C --> C3["• Large driving force"]
    
    D --> D1["1) Medical ultrasonic waves and sensors"]
    D --> D2["2) Devices that produce acoustic waves"]
    D --> D3["3) Motors and actuators"]
    D --> D4["4) Crystal oscillators"]
    
    E --> E1["• Piezoelectric effect is reversible"]
    E --> E2["• Piezoelectric effect is sensitive to temperature"]
  
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Definition

The converse piezoelectric effect can be defined as when electric field and acoustic surface is reversed. This can be achieved by applying electrical energy coupled in a piezoelectric material. This effect is the inverse electrical property in the function and manner.

What is the inverse piezoelectric effect?

Advantages

- High electromechanical coupling efficiency
- High piezoelectric coefficient
- Large driving force

Applications

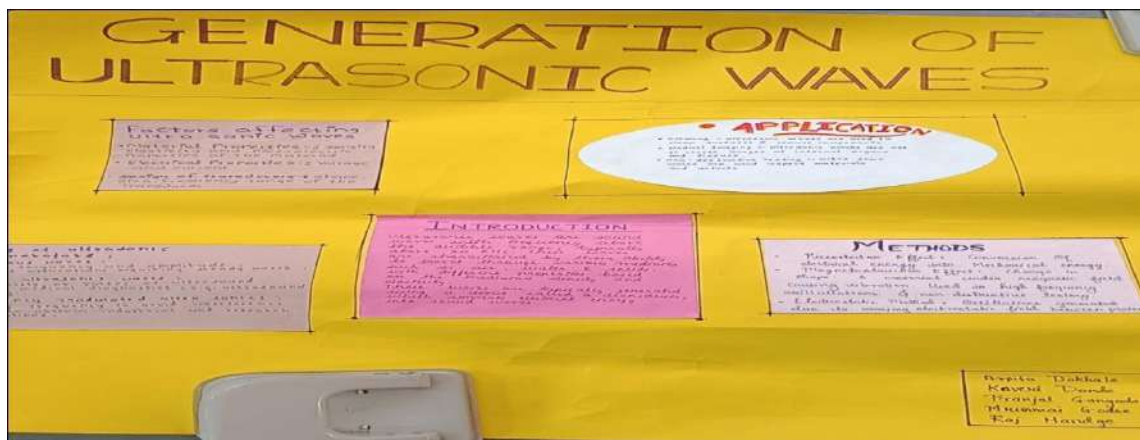
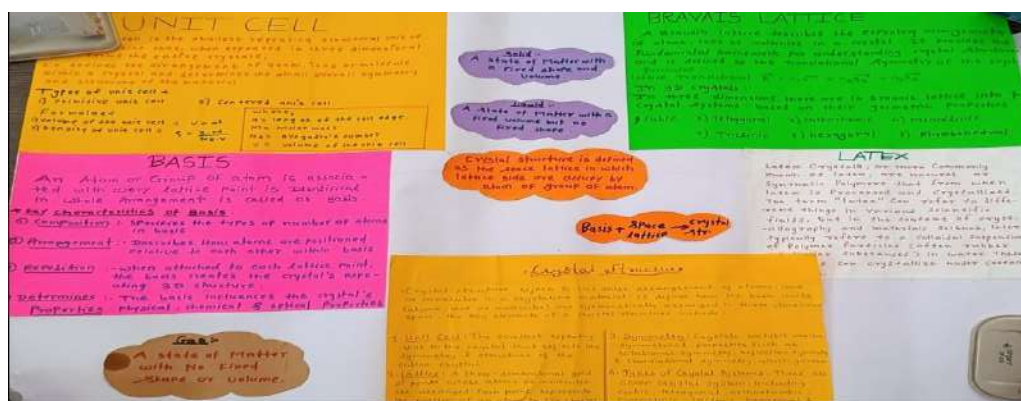
- 1) Medical ultrasonic waves and sensors
- 2) Devices that produce acoustic waves
- 3) Motors and actuators
- 4) Crystal oscillators

Disadvantages

- Piezoelectric effect is reversible
- Piezoelectric effect is sensitive to temperature

Circuit Diagrams:

- Piezoelectric Actuator:** A circuit diagram showing a piezoelectric actuator connected to a voltage source.
- Piezoelectric Sensor:** A circuit diagram showing a piezoelectric sensor connected to a voltage source.



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Course Incharge

Module Coordinator

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HOD