



## Mechanical Engineering Department

**Academic Year:** 2024-25

**Class:** Second Year (A)

**Semester:** I

**Course Outcome:** CO1, CO2, CO3, CO4, CO5, CO6

**Programme Outcome:** PO1, PO2, PO5, PO12

### Innovative Teaching Method

**Title of Innovative teaching method:** Quiz on Thermodynamics

- 1. Name of faculty:** Dr. A. A. Kapse
- 2. Subject:** **Engineering Thermodynamics**
- 3. Objective of method:**
  - To create awareness among students about thermodynamic properties.
  - To understand the basic properties used in thermodynamics.
  - To correlate the real-life example with thermodynamic properties.
- 4. Topic covered through activity:** Understand the thermodynamics properties using real-life examples.
- 5. Description of method with benefits**

Teacher assigned quiz to group of students. It is the first step. Then, in second step, students can discuss among themselves to find the appropriate answer. In third step, they mark the appropriate answer to the questions. In this way, they mark the answer to all question in the manner discussed above. Then, they submit the quiz and get grades through Google Classroom. Teacher will analyse their performance on the criteria mentions in rubrics. A creep session is conducted by the teacher immediately to know correct answer.

#### **Benefits:**

- It will make students to think and study in depth among the group to come up with common answer.
- It will provide platform to improve their soft skills, discuss among group of students and students will learn about properties of thermodynamics.

#### **6. Roles and responsibilities:**

Teacher

- Assign particular quiz to the students and guide them about the questions.
- Observe individual student and check points discuss are going in right direction.
- Observe process of thinking of individual student and assess and evaluate the performance of individual student as per criteria mentioned below (Rubrics).

## Student

- Detail study of properties of thermodynamics which are assigned by teacher.
- Discuss and prepare note for the same and convince the teammate for appropriate answer.

### 7. Assessment tools with rubrics:

Assessment will be done by subject teacher on the basis of following rubrics

<b>A</b>	<b>B</b>	<b>C</b>
Understanding	Discussion	Questions & Answers
02	05	03

### 8. Evaluation sheet of Attendees

<b>Sr. No</b>	<b>Name of Student</b>	<b>A</b>	<b>B</b>	<b>C</b>	<b>Marks (Out of 10)</b>
1	Arpita Aandhale	2	4	3	9
2	Abhishekh Sonawane	2	4	3	9
3	Om Adhav	2	5	3	10
4	Aditya Khairnar	2	5	3	10
5	Chandrakant Aher	2	3	3	8
6	Krish Ahire	2	3	2	7
7	Rohit Ahire	2	4	2	8
8	Pushkar Ahirrao	2	3	2	7
9	Mahesh Apsunde	2	3	2	7
10	Vaibhav Apsunde	2	5	2	9
11	Ayush Landge	2	3	2	7
12	Shivam Bagul	2	4	3	9
13	Karunya Bhadane	2	3	2	7
14	Omkar Bhambere	2	5	3	10
15	Shreya Bokade	2	3	2	7
16	Gaurav Borse	2	5	2	9
17	Kirtesh Chaudhari	2	5	3	10
18	Niraj Chaudhari	2	5	3	10
19	Om Chaudhari	2	5	3	10
20	Saiprasad Chaudhari	2	4	3	9
21	Rahul Chitalkar	2	5	3	10
22	Ketan Darade	2	5	2	9
23	Shrutika Dawange	2	3	2	7
24	Deep Kulkarni	2	5	3	10
25	Siddhesh Deokar	2	4	2	8
26	Pranav Deore	2	4	2	8

27	Bhumika Desai	2	5	2	<b>9</b>
28	Abhishek Desale	2	5	3	<b>10</b>
29	Vaishnavi Dhanwate	2	5	2	<b>9</b>
30	Aayush Dhumal	2	5	2	<b>9</b>
31	Yogeshwari Dusane	2	5	2	<b>9</b>
32	Prasad Fadtale	2	5	3	<b>10</b>
33	Mahima Gadhave	2	5	3	<b>10</b>
34	Om Ghotekar	2	5	3	<b>10</b>
35	Nikhil Ghule	2	5	3	<b>10</b>
36	Sahil Handge	2	5	3	<b>10</b>
37	Shreyas Handore	2	5	2	<b>9</b>
38	Sadnya Hiray	2	5	3	<b>10</b>
39	Indrani Kulkarni	2	5	2	<b>9</b>
40	Saloni Ingale	2	5	3	<b>10</b>
41	Jay Jadhav	2	5	3	<b>10</b>
42	Kunal Jadhav	2	3	2	<b>7</b>
43	Sakshi Jadhav	2	5	2	<b>9</b>
44	Sarthak Jadhav	2	5	3	<b>10</b>
45	Swara Jadhav	2	2	2	<b>6</b>
46	Yash Jadhav	2	5	3	<b>10</b>
47	Yash Jadhav	2	5	3	<b>10</b>
48	Saurabh Joshi	2	5	2	<b>9</b>
49	Sahil Kakad	2	5	3	<b>10</b>
50	Bhavesk Kaklij	2	4	3	<b>9</b>
51	Shivam Kanade	2	5	3	<b>10</b>
52	Himanshu Kapadne	2	5	3	<b>10</b>
53	Ashish Katala	2	5	3	<b>10</b>
54	Mayur Kedare	2	5	2	<b>9</b>
55	Swati Khamkar	2	5	3	<b>10</b>
56	Nikhil Kharkar	2	5	3	<b>10</b>
57	Bhushan Khillare	2	5	3	<b>10</b>
58	Mukta Kolhe	2	5	2	<b>9</b>
59	Anushka Kudal	2	5	3	<b>10</b>
60	Om Kumbhar	2	4	3	<b>9</b>
61	Harshal Londhe	2	5	3	<b>10</b>

# Activity Images

Identify whether property is Intensive (Independent of extent of system) or Extensive (Dependent of extent of system) Property \*

	Intensive property	Extensive property
Mass, m (kg)	<input type="radio"/>	<input type="radio"/>
Length, L (m)	<input type="radio"/>	<input type="radio"/>
Time, t (s)	<input type="radio"/>	<input type="radio"/>
Pressure, p (Pa)	<input type="radio"/>	<input type="radio"/>
Temperature T (K)	<input type="radio"/>	<input type="radio"/>
Volume, V (m <sup>3</sup> )	<input type="radio"/>	<input type="radio"/>
Density, rho (kg/m <sup>3</sup> )	<input type="radio"/>	<input type="radio"/>
Area, A (m <sup>2</sup> )	<input type="radio"/>	<input type="radio"/>
Electric current, I (A)	<input type="radio"/>	<input type="radio"/>
Viscosity, mu (Pa.s)	<input type="radio"/>	<input type="radio"/>

Identify whether property is Intrinsic (Basic) or Extrinsic (Derived) Property \*

	Intrinsic property	Extrinsic property
Mass, m (kg)	<input type="radio"/>	<input type="radio"/>
Length, L (m)	<input type="radio"/>	<input type="radio"/>
Time, t (s)	<input type="radio"/>	<input type="radio"/>
Pressure, p (Pa)	<input type="radio"/>	<input type="radio"/>
Temperature, T (K)	<input type="radio"/>	<input type="radio"/>
Volume, V (m <sup>3</sup> )	<input type="radio"/>	<input type="radio"/>
Density, rho (kg/m <sup>3</sup> )	<input type="radio"/>	<input type="radio"/>
Area, A (m <sup>2</sup> )	<input type="radio"/>	<input type="radio"/>
Electric current, I (A)	<input type="radio"/>	<input type="radio"/>
Viscosity, mu (Pa.s)	<input type="radio"/>	<input type="radio"/>

**Classification of Thermodynamic Properties** 41 of 50 points

Identify whether property is Intensive (Independent of extent of system) or Extensive (Dependent of extent of system) Property \*

Intensive property	Extensive property	Score
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Viscosity, mu (Pa.s)	<input checked="" type="radio"/>	<input type="radio"/>	1 / 1	✓
Volumetric flow, Volf (m <sup>3</sup> /s)	<input type="radio"/>	<input checked="" type="radio"/>	1 / 1	✓
Velocity, v (m/s)	<input checked="" type="radio"/>	<input type="radio"/>	1 / 1	✓
Acceleration, a (m/s <sup>2</sup> )	<input checked="" type="radio"/>	<input type="radio"/>	1 / 1	✓
Potential energy, P.E. (kJ)	<input type="radio"/>	<input checked="" type="radio"/>	1 / 1	✓
Kinetic energy, K.E. (kJ)	<input type="radio"/>	<input checked="" type="radio"/>	1 / 1	✓
Enthalpy, H (kJ)	<input type="radio"/>	<input checked="" type="radio"/>	1 / 1	✓
Entropy, S (kJ/K)	<input type="radio"/>	<input checked="" type="radio"/>	1 / 1	✓
Specific volume, v (m <sup>3</sup> /kg)	<input checked="" type="radio"/>	<input type="radio"/>	1 / 1	✓
Specific energy, E (kJ/kg)	<input checked="" type="radio"/>	<input type="radio"/>	1 / 1	✓
Specific enthalpy, h (kJ/kg)	<input checked="" type="radio"/>	<input type="radio"/>	1 / 1	✓

Identify whether property is Intrinsic (Basic) or Extrinsic (Derived) Property \*

	Intrinsic property	Extrinsic property	Score
Mass, m (kg)	<input checked="" type="radio"/>	<input type="radio"/>	1 / 1 ✓
Length, L (m)	<input checked="" type="radio"/>	<input type="radio"/>	1 / 1 ✓
Time, t (s)	<input checked="" type="radio"/>	<input type="radio"/>	1 / 1 ✓
Pressure, p (Pa)	<input type="radio"/>	<input checked="" type="radio"/>	0 / 1 ✗
Temperature, T (K)	<input checked="" type="radio"/>	<input type="radio"/>	1 / 1 ✓
Volume, V (m <sup>3</sup> )	<input type="radio"/>	<input checked="" type="radio"/>	0 / 1 ✗
Density, rho (kg/m <sup>3</sup> )	<input type="radio"/>	<input checked="" type="radio"/>	0 / 1 ✗
Area, A (m <sup>2</sup> )	<input type="radio"/>	<input checked="" type="radio"/>	0 / 1 ✗
Electric current, I (A)	<input checked="" type="radio"/>	<input type="radio"/>	1 / 1 ✓

Volumetric flow, volf (m <sup>3</sup> /s)	<input type="radio"/>	<input checked="" type="radio"/>	1 / 1 ✓
Velocity, v (m/s)	<input type="radio"/>	<input checked="" type="radio"/>	1 / 1 ✓
Acceleration, a (m/s <sup>2</sup> )	<input type="radio"/>	<input checked="" type="radio"/>	1 / 1 ✓
Potential energy, P.E. (kJ)	<input type="radio"/>	<input checked="" type="radio"/>	1 / 1 ✓
Kinetic energy, K.E. (kJ)	<input type="radio"/>	<input checked="" type="radio"/>	1 / 1 ✓
Enthalpy, H (kJ)	<input type="radio"/>	<input checked="" type="radio"/>	1 / 1 ✓
Entropy, S (kJ/K)	<input type="radio"/>	<input checked="" type="radio"/>	1 / 1 ✓
Specific volume, v (m <sup>3</sup> /kg)	<input type="radio"/>	<input checked="" type="radio"/>	1 / 1 ✓
Specific energy, E (kJ/kg)	<input type="radio"/>	<input checked="" type="radio"/>	1 / 1 ✓
Specific enthalpy, h (kJ/kg)	<input type="radio"/>	<input checked="" type="radio"/>	1 / 1 ✓
Specific entropy, s (kJ/kg.K)	<input type="radio"/>	<input checked="" type="radio"/>	1 / 1 ✓

## 9. Impact Analysis

Sr. No	3 – High / Excellent	2 – Moderate / Average	1- Slight / Poor
1. Do you understand the objective of activity?	90.2	9.8	-
2. Do you find this activity helpful in understanding the key concept of topic?	85.6	14.4	-
3. Does this method help to improve demonstration skills and communication skills?	87.6	12.4	-
4. Does contents covered are useful in lifelong learning?	80.2	19.8	-
5. Do you want to participate such activity again?	88.6	11.4	-

**10. For review and critics contact: e-mail address of faculty and HOD**  
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