Mechanical Engineering Department

Academic Year: 2024-25 **Class:** Second Year (B) **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. D. B. Uphade
2. **Subject**: Engineering Thermodynamics
3. **Objective of method:**
   i. To create awareness among students about thermodynamic properties.
   ii. To understand the basic properties used in thermodynamics.
   iii. 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:
   i. It will make students to think and study in depth among the group to come up with common answer.
   ii. 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
   i. Assign particular quiz to the students and guide them about the questions.
   ii. Observe individual student and check points discuss are going in right direction.
   iii. Observe process of thinking of individual student and assess and evaluate the performance of individual student as per criteria mentioned below (Rubrics).

Student

i. Detail study of properties of thermodynamics which are assigned by teacher.
ii. 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

A	B	C
Understanding	Discussion	Questions & Answers
02	05	03

8. Evaluation sheet of Attendees

Sr. No	Name of Student	A	B	C	Marks (Out of 10)
62	Prasad Londhe	2	5	3	**10**
63	Yogesh Madage	2	5	2	**9**
64	Abhijit Mahajan	2	5	2	**9**
65	Maithili Chavan	2	5	2	**9**
66	Yash Malode	2	5	3	**10**
67	Shubham Matsagar	2	5	3	**10**
68	Pratik Mhaisdhune	2	5	3	**10**
69	Shivam Mitke	2	5	3	**10**
70	Aakash Mohane	2	5	3	**10**
71	Gaurav More	2	5	2	**9**
72	Yash More	2	5	3	**10**
73	Sachin Nagare	2	5	2	**9**
74	Sanchit Nagare	2	5	3	**10**
75	Prasad Nalawade	2	5	3	**10**
76	Shantanu Nimbalkar	2	3	2	**7**
77	Pratik Pachore	2	5	2	**9**
78	Sakshi Pachorkar	2	5	3	**10**
79	Shlok Pardeshi	2	2	2	**6**
80	Parth Bhangre	2	5	3	**10**
81	Shubham Pathade	2	5	3	**10**
82	Aaditya Patil	2	5	2	**9**
83	Piyush Patil	2	5	3	**10**
84	Rushikesh Patil	2	4	3	**9**
85	Siddhi Patil	2	5	3	**10**
86	Tejas Patil	2	4	3	**9**
87	Viraj Patil	2	4	3	**9**

88	Shivam Patole	2	5	3	**10**
89	Ajinkya Pawar	2	5	3	**10**
90	Krushna Pawar	2	3	3	**8**
91	Sarthak Pawar	2	3	2	**7**
92	Sumit Pawar	2	4	2	**8**
93	Dipak Pund	2	3	2	**7**
94	Krushna Raut	2	3	2	**7**
95	Yash Sainkar	2	5	2	**9**
96	Harshada Sangale	2	3	2	**7**
97	Darshan Sarode	2	4	3	**9**
98	Chetan Shelke	2	3	2	**7**
99	Tejaswini Shelke	2	5	3	**10**
100	Om Shewale	2	3	2	**7**
101	Aaditya Shirsath	2	5	2	**9**
102	Ishwar Sonar	2	5	3	**10**
103	Anshul Sonawane	2	5	3	**10**
104	Shubham Sonawane	2	5	3	**10**
105	Sujal Sonawane	2	4	3	**9**
106	Tushar Sonawane	2	5	3	**10**
107	Vedant Sonawane	2	5	2	**9**
108	Aniruddha Surwade	2	3	2	**7**
109	Aniket Tambade	2	5	3	**10**
110	Aary Tambat	2	3	2	**7**
111	Atharv Tarle	2	5	2	**9**
112	Sanika Thete	2	4	2	**8**
113	Jyoti Thok	2	5	2	**9**
114	Viraj Thube	2	4	2	**8**
115	Jayesh Ugale	2	5	3	**10**
116	Pranjal Varade	2	5	3	**10**
117	Vedanti Nikam	2	4	2	**8**
118	Gaurav Vidhate	2	5	3	**10**
119	Sumit Vyavahare	2	5	3	**10**
120	Sakshi Vyavhare	2	5	2	**9**
121	Sahil Wagh	2	4	2	**8**
122	Shrawani Wagh	2	4	2	**8**
123	Sakshi Waje	2	5	2	**9**

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)	○	○
Length, L (m)	○	○
Time, t (s)	○	○
Pressure, p (Pa)	○	○
Temperature T (K)	○	○
Volume, V (m3)	○	○
Density, rho (kg/m3)	○	○
Area, A (m2)	○	○
Electric current, I (A)	○	○
Viscosity, mu (Pa.s)	○	○

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

	Intrinsic property	Extrinsic property
Mass, m (kg)	○	○
Length, L (m)	○	○
Time, t (s)	○	○
Pressure, p (Pa)	○	○
Temperature, T (K)	○	○
Volume, V (m3)	○	○
Density, rho (kg/m3)	○	○
Area, A (m2)	○	○
Electric current, I (A)	○	○
Viscosity, mu (Pa.s)	○	○

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	
Viscosity, mu (Pa.s)	◉	○	1 / 1	✓
Volumetric flow, Volf (m3/s)	○	◉	1 / 1	✓
Velocity, v (m/s)	◉	○	1 / 1	✓
Acceleration, a (m/s2)	◉	○	1 / 1	✓
Potential energy, P.E. (kJ)	○	◉	1 / 1	✓
Kinetic energy, K.E. (kJ)	○	◉	1 / 1	✓
Enthalpy, H (kJ)	○	◉	1 / 1	✓
Entropy, S (kJ/K)	○	◉	1 / 1	✓
Specific volume, v (m3/kg)	◉	○	1 / 1	✓
Specific energy, E (kJ/kg)	◉	○	1 / 1	✓
Specific enthalpy, h (kJ/kg)	◉	○	1 / 1	✓

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

	Intrinsic property	Extrinsic property	Score	
Mass, m (kg)	◉	○	1 / 1	✓
Length, L (m)	◉	○	1 / 1	✓
Time, t (s)	◉	○	1 / 1	✓
Pressure, p (Pa)	○	◉	0 / 1	✗
Temperature, T (K)	◉	○	1 / 1	✓
Volume, V (m3)	○	◉	0 / 1	✗
Density, rho (kg/m3)	○	◉	0 / 1	✗
Area, A (m2)	○	◉	0 / 1	✗
Electric current, I (A)	◉	○	1 / 1	✓
Volumetric flow, volf (m3/s)	○	◉	1 / 1	✓
Velocity, v (m/s)	○	◉	1 / 1	✓
Acceleration, a (m/s2)	○	◉	1 / 1	✓
Potential energy, P.E. (kJ)	○	◉	1 / 1	✓
Kinetic energy, K.E. (kJ)	○	◉	1 / 1	✓
Enthalpy, H (kJ)	○	◉	1 / 1	✓
Entropy, S (kJ/K)	○	◉	1 / 1	✓
Specific volume, v (m3/kg)	○	◉	1 / 1	✓
Specific energy, E (kJ/kg)	○	◉	1 / 1	✓
Specific enthalpy, h (kJ/kg)	○	◉	1 / 1	✓
Specific entropy, s (kJ/kg.K)	○	◉	1 / 1	✓

9. Impact Analysis

Sr. No	3 – High / Excellent	2 – Moderate / Average	1- Slight / Poor
1. Do you understand the objective of activity?	92.6	7.4	-
2. Do you find this activity helpful in understanding the key concept of topic?	82.1	17.9	-
3. Does this method help to improve demonstration skills and communication skills?	80.1	19.9	-
4. Does contents covered are useful in lifelong learning?	78.2	21.8	-
5. Do you want to participate such activity again?	83.7	16.3	-

10. For review and critics contact: e-mail address of faculty and HOD uphade.dinesh@kbtcoe.org, hod.mech@kbtcoe.org

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