



TRADE MARK

LIONTM

Teacher's Lesson Note

THERMAL ENGG-1

3rd Sem (Winter) - 2023-24

MECH - I & II

NAME - Dinesh Kumar Sethy

TEACHERS

Date	Period	Class	Subject	Topic (Concept)	Sub-Topic (Sub-Concept)	Learning Activities to be taken up	TLM to be used
03/08/23	1st	1st	T.E-1	Thermodynamic Concept & Thermodynamic System	Thermodynamic System	closed System (definition, Example) with figures	
05/08/23	2nd	2nd		"	"	open System (definition, Example) with figures	
12/08/23	3rd	3rd		"	"	Isolated System (definition, Example) with figures	
16/08/23	4th	4th		"	Thermodynamic properties of a system	1- Pressure 2- Volume 3- Temperature	

LESSON NOTE

Evaluative Questions	Expected learning outcome	Project work to be assigned	Signature of the Teacher	Signature of the Headmaster	Remarks
9	10	11	12	13	14
- Diagram of system boundary & Surrounding - Diagram of closed system & open system - Isolated System (Diagram) $\delta Q = 0$ $\delta W = 0$ $\delta U = 0$	Definition of thermodynamics & macroscopic approach / classical thermodynamic Discussion Discussion about thermodynamic system & Classification of thermodynamic system Discussion about control volume & thermodynamic properties		<u>As. Ity</u> 03/08/23	<u>As. Ity</u> 03/08/23	
			<u>As. Ity</u> 05/08/23	<u>As. Ity</u> 05/08/23	
- What is Intensive properties give ex- - What is extensive properties give examp -	Now about the classification of properties of system		<u>As. Ity</u> 16/08/23	<u>As. Ity</u> 16/08/23	

TEACHERS

Date	Topic	Class	Subject	Topic (Concept)	Sub-Topic (Sub-Concept)	Learning Activities to be taken up	TLM to be used
23/08/23	Thermodynamic Concept & Terminology	1st Year	TE-7	Thermodynamic Concept & Terminology	Thermodynamic properties of a system	4- Entropy 5- Internal energy & unit of measurement 6- Enthalpy	
29/08/23	"	2nd		"	"	Intensive properties with Examples	
31/08/23	"	3rd		"	"	Extensive properties with Examples	
09/09/23	Thermodynamic processes	4th		Thermodynamic processes		Define the all processes - path - cycle - State	

LESSON NOTE

Evaluative Questions	Expected learning outcome	Project work to be assigned	Signature of the Teacher	Signature of the Headmaster	Remarks
9	10	11	12	13	14
- What is Phase System & classification of Phase System - What is equilibrium & classification of equilibrium system - What is pressure - Classification of pressure - What is gauge pressure & describe about the gauge pressure	- Non discussion about phase of substances & thermodynamic equilibrium - Quasi-static process - Properties of fluid & specific gravity discussion - Pressure of thermodynamic and - Gauge pressure discussion & diagram describe the problem solved		<u>De. H. S.</u> 23/08/23	<u>De. H. S.</u> 29/08/23	<u>De. H. S.</u> 31/08/23
- What is cycle operations - What is equilibrium condition	Define cycle of operation with example		<u>De. H. S.</u> 09/09/23		

LESSON NOTE

Evaluative Questions	Expected learning outcome	Project work to be assigned	Signature of the Teacher	Signature of the Headmaster	Remarks
9	10	11	12	13	14
Q1. $Q_1 \neq Q_2$ or $P_2 \neq P_1$ or $Q_1 \neq Q_2$ or $P_2 \neq P_1$ Q2. $Q_1 \neq Q_2$ or $P_2 \neq P_1$	Now discuss about path function with example Discuss		Rec. Lth 21/09/23 S. M. Khan		
Q3. System is a finite quantity of matter described by thermodynamic equilibrium?	Class test		Rec. Lth 26/09/23 S. M. Khan		
Q4. What do you mean by thermodynamic equilibrium?	Now the thermodynamic equilibrium of the thermodynamic equilibrium		Rec. Lth 26/09/23 S. M. Khan		
Q5. What is a quasi-static process?	All explain about quasi-static process		Rec. Lth 26/09/23 S. M. Khan		

TEACHERS

Date	Week Period	Class	Subject	Topic (Concept)	Sub-Topic (Sub-Concept)	Learning Activities to be taken up	TLM to be used
27/09/2023	4th 1st	2nd	TC-7			Work, heat & comparison between the two Example	
30/09/23	3rd	3rd		Law of Thermodynamics	Thermo-dynamic Law	State & Explain Zeroth Law of thermodynamic	
03/10/2023	4th	4th				State & Explain first law of thermodynamic	
05/10/2023							

LESSON NOTE

Evaluative Questions	Expected learning outcome	Project work to be assigned	Signature of the Teacher	Signature of the Headmaster	Remarks
9 What is work? Define heat.	10 Discussion about work, heat & comparison.	11	12	13	14
Define heat transfer	Types of Heat transfer • Conduction • Radiation • Convection All are Discuss		27/09/23	28/09/23	
What do you mean by Zeroth law of thermodynamic	Discuss about Zeroth law of thermodynamic with example.		23/10/23	26/10/23	
Explain the 1st law of thermodynamic for a closed system undergoing a cycle	• Discuss about first law of a closed system undergoing a cycle • Energy of a isolated system		25/10/23	26/10/23	

Date	Day	Class	Subject	Topic (Concept)	Sub-Topic (Sub-Concept)	Learning Activities to be taken up	TLM to be used
07/10/23	5th	1st	TE-7	"	"	Limitation of first law of thermodynamic	
11/10/23	2nd			"	Application of 1st law of thermodynamic to turbine & compressor	Steady flow energy equation & its application to turbine & compressor	
17/10/2023	3rd				Second law of thermodynamic	Clausius Statement & Kelvin Planck Statement	
18/10/2023	4th					Application of Second law in heat engine	

LESSON NOTE

Evaluative Questions	Expected learning outcome	Project work to be assigned	Signature of the Teacher	Signature of the Headmaster	Remarks
9	10	11	12	13	14
What are the limitation of first law of thermodynamic?	Discuss about $\Delta U = q + w$ ΔU is the change in internal energy of the system q - algebraic sum of		Reshith 07/10/23	S. K. Srinivasan	
- What is a steady flow process? - What do you mean by control volume? - Approach in analysis of flow processes?	Discuss about work transfer are two type - External work - Flow work		Reshith 11/10/23	S. K. Srinivasan	
What is Kelvin Clausius Statement?	Discuss about Statement of Second law of thermodynamic - Clausius Statement - Kelvin Planck Statement Discuss about application and in heat engine with Examp		Reshith 17/10/23	S. K. Srinivasan	
			Reshith 18/10/23	S. K. Srinivasan	

LESSON NOTE

Date	Class	Subject	Topic (Concept)	Sub-Topic (Sub-Concept)	Learning Activities to be taken up	TLM to be used
11/11/23	1st	TE-J	"	"	• Heat engine determination • Solve all type of problem	
25/11/23	2nd	"	"	"	• Refrigeration • Efficiency • COP • Solve simple numerical	
28/11/23	3rd	"	"	"	Class Test	
30/11/23	4th	"	3-Properties Law of perfect gases	"	• Boyle's Law • Charles Law	

Evaluative Questions	Expected learning outcome	Project work to be assigned	Signature of the Teacher	Signature of the Headmaster	Remarks
9	10	11	12	13	14
Describe about Heat engine with example & problem solve	Schematic diagram of Refrigerator & COP of the Refrigerator derive it.		Devi 25/11/23	S. 25/11/23	
Give the following statements of Second Law of thermodynamic a) Kelvin-Planck Statement b) Clausius statement	Class test		Devi 28/11/23	S. 28/11/23	
State & explain Boyle's Law • What is the concept of Charles Law	Statement of Boyle's Law & Statement of Charles Law describe it		Devi 30/11/23	S. 30/11/23	

TEACHERS

Date	Class	Subject	Topic (Concept)	Sub-Topic (Sub-Concept)	Learning Activities to be taken up	TLM to be used
1	2	3	4	5	6	7
7th 1st	1st	TE-J	"	"	• Dalton's Law of partial pressure, Gay Lussac Law	
2nd	2nd				• General gas equation • Characteristic gas constant • Universal gas constant	
3rd	3rd				Explain specific Heat of gas (CP & CV)	
4th	4th		"	"	Relation betn CP & CV	

LESSON NOTE

Evaluative Questions	Expected learning outcome	Project work to be assigned	Signature of the Teacher	Signature of the Headmaster	Remarks
9	10	11	12	13	14
1. What is Dalton's Law of partial pressure?	2. State Gay Lussac's Law.	3. Derive the equation for partial pressure.			
4. Define Universal Gas Constant.	5. Derive the equation for Universal Gas Constant.	6. Calculate the value of Universal Gas Constant.			
7. Define specific heat of gas.	8. Derive the equation for specific heat of gas.	9. Calculate the specific heat of gas.			
10. Derive the relation between CP and CV.	11. Calculate the value of CP and CV.	12. Derive the equation for CP and CV.			

TEACHERS

Date	Period	Class	Subject	Topic (Concepts)	Sub-Topic (Sub-Concepts)	Learning Activities to be taken up	TLM to be used
1	2	3	4	5	6	7	8
1st	1st	1st	TC-1	"	"	• Entropy of a gas • Work done during a non-flow process	
2nd	2nd	2nd	TC-1	"	"	• Isobaric process • Isobaric process explaining	
3rd	3rd	3rd	TC-1	"	"	• Isentropic process explaining • Polytropic process explaining	
4th	4th	4th	TC-1	"	"	• Solve simple problem on above the process	

LESSON NOTE

Evaluative Questions	Expected learning outcome	Project work to be assigned	Signature of the Teacher	Signature of the Headmaster	Remarks
9	10	11	12	13	14
Q.1. A gas expands isobarically from 100°C to 200°C. Calculate the work done by the gas. Q.2. A gas expands isochorically from 100°C to 200°C. Calculate the heat added to the gas. Q.3. A gas expands isothermally from 100°C to 200°C. Calculate the work done by the gas. Q.4. A gas expands adiabatically from 100°C to 200°C. Calculate the work done by the gas.	1. A gas expands isobarically from 100°C to 200°C. Calculate the work done by the gas. 2. A gas expands isochorically from 100°C to 200°C. Calculate the heat added to the gas. 3. A gas expands isothermally from 100°C to 200°C. Calculate the work done by the gas. 4. A gas expands adiabatically from 100°C to 200°C. Calculate the work done by the gas.				

TEACHERS

Date	Page	Unit	Subject	Topic (Concept)	Sub-Topic (Sub-Concept)	Learning Activities to be taken up	TLM to be used
1	2	3	4	5	6	7	8
9th	1st	1st	7c-7			Free Expansion & throttling process	
	2nd			Properties process of perfect gas	"	Class Test	
	3rd			Internal I.C Combustion Engine		Explaining & Classify I.C engine	
	4th			"		Terminology of I.C engine Such as bore & Dead Center	

LESSON NOTE

Evaluative Questions	Expected learning outcome	Project work to be assigned	Signature of the Teacher	Signature of the Headmaster	Remarks
9	10	11	12	13	14
1. Explain the process of free expansion & throttling process. 2. Define perfect gas. 3. List the properties of perfect gas. 4. Define internal combustion engine. 5. Define I.C engine. 6. Define bore & Dead Center.	1. Explain the process of free expansion & throttling process. 2. Define perfect gas. 3. List the properties of perfect gas. 4. Define internal combustion engine. 5. Define I.C engine. 6. Define bore & Dead Center.				

TEACHERS

Date	Period	Class	Subject	Topic (Concept)	Sub-Topic (Sub-Concept)	Learning Activities to be taken up	TLM to be used
1	2	3	4	5	6	7	8
			10th Ist TT-7	"	"	- Stroke engine explanation - Piston speed	
		2nd			Working principle of I.C. & S.I. engine	Working principle • 2-stroke engine • 4-stroke engine	
		3rd				Difference betn 2-stroke engine & 4-stroke engine	
		4th				Class Test	

LESSON NOTE

Evaluative Questions	Expected learning outcome	Project work to be assigned	Signature of the Teacher	Signature of the Headmaster	Remarks
9	10	11	12	13	14
1. What is a 2-stroke engine? 2. What is a 4-stroke engine? 3. What is the difference between 2-stroke and 4-stroke engines?					
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TEACHERS

1	2	3	4	5	6	7	8
Class	Period	Roll No.	Subject	Topic (Concept)	Sub-Topic (Sub-Concept)	Learning Activities to be taken up	TLM to be used
12th	1st		TE-3	Gas power cycle		Control cycle exploration p. Example	
						otto cycle Exploration with Example	
						Diesel cycle Exploration with Example	
						Dual cycle Exploration with Example	

LESSON NOTE

9	10	11	12	13	14
Evaluative Questions	Expected learning outcome	Project work to be assigned	Signature of the Teacher	Signature of the Headmaster	Remarks
1. What is the Otto cycle?					
2. What is the Diesel cycle?					
3. What is the Dual cycle?					
4. What is the Gas power cycle?					

TEACHERS

Date	Topic	Sub-Topic	Learning Activities to be taken up	TLM to be used
1	2	3	4	5
2	3	4	5	6
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89	90	91	92	93
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91	92	93	94	95
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93	94	95	96	97
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LESSON NOTE

Evaluative Questions	Expected learning outcome	Project work to be assigned	Signature of the Teacher	Signature of the Headmaster	Remarks
9	10	11	12	13	14
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82	83	84	85	86	87
83	84	85	86	87	88
84	85	86	87	88	89
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87	88	89	90	91	92
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89	90	91	92	93	94
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95	96	97	98	99	100

TEACHERS

Date	Class	Subject	Topic (Concept)	Sub-Topic (Sub-Concept)	Learning Activities to be taken up	TLM to be used
1	2	3	4	5	6	7
13th	1st	TE-I	"	"	Application of diff type of fuel	
	2nd				Heating value of fuel	
	3rd				Quality of I.C engine fuels octane number	
	4th				Cetane number	

LESSON NOTE

Evaluative Questions	Expected learning outcome	Project work to be assigned	Signature of the Teacher	Signature of the Headmaster	Remarks
9	10	11	12	13	14

TEA (CHILD)

Date	Topic	Class	Subject	Topic (Concept)	Sub-Topic (Sub-Concept)	Learning Activities to be taken up	TLM to be used
1	2	3	4	5	6	7	8
	14th	1st	TE-I			Class test	
		2nd					
		3rd					
		4th					

LESSON NOTE

Evaluative Questions	Expected learning outcome	Project work to be assigned	Signature of the Teacher	Signature of the Headmaster	Remarks
9	10	11	12	13	14

LESSON NOTE

[illegible]