

ACADEMIC SESSION: 2023-24(WINTER -2023)

DISCIPLINE:MECHANICAL ENGINEERING		Semester:3 RD	Name of the teaching faculty: SARAT KUMAR BISWAL	
SUBJECT: Thermal Engineering-1		Semester from date:01.08.2023 to 30.11.2023		
SL NO	DATE	CHAPTER	THEORY TOPIC NAME	NO OF PERIODS
1.	02.08.23	THERMODYNAMICS CONCEPT AND TERMINOLOGY	Thermodynamic Systems (closed, open, isolated)	1
2.	03.08.23		Thermodynamic properties of a system (pressure, volume, temperature, entropy, enthalpy, Internal energy and units of measurement).	1
3.	04.08.23		Intensive and extensive properties	1
4.	04.08.23		Define thermodynamic processes, path, cycle , state,	1
5.	09.08.23		Define path function, point function.	1
6.	10.08.23		Thermodynamic Equilibrium.	1
7.	11.08.23		Quasi-static Process.	1
8.	14.08.23		Conceptual explanation of energy and its sources	1
9.	16.08.23		Work , heat and comparison between the two.	1
10.	17.08.23		Mechanical Equivalent of Heat.	1
11.	18.08.23		Work transfer, Displacement work	1
12.	21.08.23	Work transfer, Displacement work	1	
13.	23.08.23	LAWS OF THERMODYNAMICS	State & explain Zeroth law of thermodynamics	1
14.	24.08.23		State & explain First law of thermodynamics.	1
15.	25.08.23		State & explain First law of thermodynamics.	1
16.	28.08.23		solve the simple problems above it	1
17.	31.08.23		Limitations of First law of thermodynamics	1
18.	01.09.23		Application of First law of Thermodynamics (steady flow energy equation)	1
19.	04.09.23		Application of First law of Thermodynamics to turbine and compressor)	1
20.	07.09.23		solve the simple problems above it	1
21.	08.09.23		Second law of thermodynamics (Clausius & Kelvin Plank statements).	1
22.	11.09.23		solve the simple problems above it	1
23.	13.09.23		Application of second law in heat engine, heat pump, refrigerator & determination of efficiencies & C.O.P	1
24.	14.09.23		solve the simple problems above it	1
25.	15.09.23		PROPERTIES PROCESS OF PERFECT GAS	Boyle's law, Charle's law, Avogadro's law, Dalton's law of partial pressure, Guy lussac law
26.	18.09.23	,General gas equation, characteristic gas constant, Universal gas constant.		1
27.	22.09.23	Explain specific heat of gas (Cp and Cv)		1
28.	25.09.23	Relation between Cp & Cv.		1
29.	27.09.23	Enthalpy of a gas.		1
30.	28.09.23	Work done during a non- flow process.		1
31.	02.10.23	Application of first law of thermodynamics to various non flow process (Isothermal, Isobaric process)		1

32.	04.10.23		Application of first law of thermodynamics to various non flow process (Isentropic and polytrophic process	1	
33.	05.10.23		Solve simple problems on above.	1	
34.	06.10.23		Free expansion & throttling process	1	
35.	09.10.23	INTERNAL COMBUSTION ENGINE	Explain & classify I.C engine.	1	
36.	11.10.23		Explain & classify I.C engine.	1	
37.	12.10.23		Terminology of I.C Engine such as bore, dead centers, stroke volume, piston speed & RPM.	1	
38.	13.10.23		Terminology of I.C Engine such as bore, dead centers, stroke volume, piston speed & RPM.	1	
39.	16.10.23		Explain the working principle of 2-stroke & 4- stroke engine C.I engine.	1	
40.	18.10.23		Explain the working principle of 2-stroke & 4- stroke engine S.I engine.	1	
41.	19.10.23		Differentiate between 2-stroke C.I & S.I engine.	1	
42.	20.10.23		Differentiate between 4- stroke engine C.I & S.I engine.	1	
43.	30.10.23		AIR STANDARD CYCLE	Carnot cycle	1
44.	01.11.23			Carnot cycle	1
45.	02.11.23	Otto cycle.		1	
46.	03.11.23	Otto cycle.		1	
47.	06.11.23	Solve simple numerical		1	
48.	08.11.23	Diesel cycle		1	
49.	09.11.23	Diesel cycle		1	
50.	10.11.23	Dual cycle		1	
51.	13.11.23	Dual cycle		1	
52.	15.11.23	Solve simple numerical		1	
53.	16.11.23	FUEL AND COMBUSTION	Define Fuel.	1	
54.	17.11.23		Types of fuel.	1	
55.	20.11.23		Types of fuel.	1	
56.	22.11.23		Application of different types of fuel.	1	
57.	23.11.23		Application of different types of fuel.	1	
58.	24.11.23		Heating values of fuel.	1	
59.	29.11.23		Quality of I.C engine fuels Octane number, Cetane number	1	
60.	30.11.23		Quality of I.C engine fuels Octane number, Cetane number	1	

TOTAL CLASSES

60

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31.7.23

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