Lesson Plan

Name of the Institute:	C. V. Raman Polytechnic
Department:	Mechanical Engineering
Semester/Division/Branch:	3rd Sem/ME
Subject Name with code:	Thermal Engineering-I (Th4)
Total No. of Class (Required):	60
Faculty Name:	Dr Shubhashree Mohapatra

Class No.	Brief Description of the Topic/Chapter to be taught	Remarks
1	Introduction to thermodynamics	
2	Thermodynamic Systems (closed, open, isolated)	
3	Thermodynamic properties of a system (pressure, volume, temperature, entropy)	
4	Thermodynamic properties of a system (enthalpy, Internal energy and units of measurement)	
5	Intensive and extensive properties	
6	Thermodynamic processes, path, cycle	
7	Thermodynamic state, path function, point function	
8	Thermodynamic Equilibrium	
9	Quasi-static Process	
10	Conceptual explanation of energy and its sources	
11	Work , heat and comparison between the two	
12	Latent heat, specific heat, sensible heat	
13	Mechanical Equivalent of Heat. Modes of heat transfer	
14	Work transfer, Displacement work	
15	State & explain Zeroth law of thermodynamics	
16	State & explain First law of thermodynamics	
17	Limitations of First law of thermodynamics	
18	Application of First law of Thermodynamics (steady flow energy equation)	
19	Application of First law of Thermodynamics (steady flow energy equation and its application to turbine and compressor)	
20	Second law of thermodynamics (Claucius & Kelvin Plank statements)	
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22	Application of second law in heat engine, heat pump, refrigerator & determination of efficiencies & C.O.P	

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24	Numericals on above	
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26	Laws of perfect gas	
27	Boyle's law, Charle's law, Avogadro's law	
28	Dalton's law of partial pressure, Guy lussac law, General gas equation	
29	Characteristic gas constant, Universal gas constant	
30	Explain specific heat of gas (Cp and Cv) Relation between Cp & Cv.	
31	Enthalpy of a gas.	
32	Work done during a non- flow process.	
33	Application of first law of thermodynamics to various non flow process (Isochoric)	
34	Application of first law of thermodynamics to various non flow process (Isobaric)	
35	Application of first law of thermodynamics to various non flow process (Isothermal)	
36	Application of first law of thermodynamics to various non flow process (Isentropic and polytrophic process)	
37	Solve simple problems on above	
38	Solve simple problems on above	
39	Free expansion & throttling process	
40	Explain & classify I.C engine	
41	Terminology of I.C Engine such as bore, dead centers, stroke volume, piston speed &RPM	
42	Explain the working principle of 2-stroke C.I engine	
43	Explain the working principle of 2-stroke S.I engine	
44	Explain the working principle of 4- stroke engine C.I engine	
45	Explain the working principle of 4- stroke engine S.I engine	
46	Differentiate between 2-stroke & 4- stroke engine C.I & S.I engine	
47	Carnot cycle	
48	Otto cycle	
49	Solve simple numerical	
50	Diesel cycle	
51	Diesel cycle	
52	Solve simple numerical	
53	Dual cycle	
54	Dual cycle	

55	Solve simple numerical	
56	Solve simple numerical	
57	Define Fuel. Types of fuel	
58	Application of different types of fuel	
59	Heating values of fuel	
60	Quality of I.C engine fuels Octane number, Cetane number	

Signature of the Faculty

Signature of the H.O.D