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 Brundaban Sahoo

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, Thermodynamic processes, path, cycle	
6	Thermodynamic state, path function, point function	
7	Thermodynamic Equilibrium	
8	Quasi-static Process	
9	Conceptual explanation of energy and its sources	
10	Work, heat and comparison between the two	
11	Latent heat, specific heat, sensible heat	
12	Mechanical Equivalent of Heat. Modes of heat transfer	
13	Work transfer, Displacement work	
14	Revision and doubt clearing	
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
25	Numericals on above
26	Laws of perfect gas Boyle's law, Charle's law, Avogadro's law
27	Dalton's law of partial pressure, Guy lussac law, General gas equation
28	Characteristic gas constant, Universal gas constant Explain specific heat of gas (Cp and Cv) Relation between Cp & Cv.
29	Enthalpy of a gas. Work done during a non- flow process
30	Application of first law of thermodynamics to various non flow process (Isochoric)
31	Application of first law of thermodynamics to various non flow process (Isobaric)
32	Application of first law of thermodynamics to various non flow process (Isothermal)
33	Application of first law of thermodynamics to various non flow process (Isentropic and polytrophic process)
34	Solve simple problems on above
35	Solve simple problems on above
36	Free expansion & throttling process
37	Revision and doubt clearing
38	Revision and doubt clearing
39	Revision and doubt clearing
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	Dual cycle
52	Solve simple numerical
53	Solve simple numerical

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

Faculty

HOD