Department: Mechanical Engineering
Semester: 3rd
No. of periods per week: 4
End semester exam: 80
Total Marks : 100

Subject: Thermal Engg-1
Total Periods: 60
Class test: 20

Sl. No.	Week	Period	Topic to be covered
1.	1st	1st	Thermodynamic Systems (closed, open, isolated)
2.		2nd	Thermodynamic properties of a system (pressure, volume, temperature
3.		3rd	entropy, enthalpy, Internal energy and units of measurement).
4.		4th	Intensive and extensive properties Define thermodynamic processes, path, cycle , state, path function, point function.
5.	2nd	1st	Thermodynamic Equilibrium. Quasi-static Process
6.		2nd	Conceptual explanation of energy and its sources
7.		3rd	Work , heat and comparison between the two. Mechanical Equivalent of Heat.
8.		4th	Work transfer, Displacement work
9.	3rd	1st	State & explain Zeroth law of thermodynamics.
10.		2nd	State & explain First law of thermodynamics. Limitations of First law of thermodynamics
11.		3rd	Application of First law of Thermodynamics(steady flow energy equation and its application to turbine and compressor)
12.		4th	Second law of thermodynamics (Clausius & Kelvin Planck statements).
13.	4th	1st	Application of second law in heat engine, heat pump, refrigerator & determination of efficiencies & C.O.P
14.		2nd	solve simple numerical
15.		3rd	Laws of perfect gas, Boyle's law, Charle's law, Avogadro's law,
16.		4th	Dalton's law of partial pressure, Guy lussac Law
17.	5th	1st	General gas equation, characteristic gas constant, Universal gas constant.
18.		2nd	Explain specific heat of gas (Cp and Cv) Relation between Cp & Cv.
19.		3rd	Enthalpy of a gas. Work done during a non- flow process.
20.		4th	Application of first law of thermodynamics to various non flow process (Isothermal, Isobaric, Isentropic and polytrophic process)
21.	6th	1st	Solve simple problems on above.
22.		2nd	Free expansion & throttling process.
23.		3rd	Explain & classify I.C engine.
24.		4th	Terminology of I.C Engine such as bore, dead centers, stroke volume, piston speed &RPM.

25.	7th	1st	Explain the working principle of 2-stroke engines
26.		2nd	Explain the working principle of 4- stroke engine S.I engine
27.		3rd	Explain the working principle of 2-stroke & 4- stroke engine C.I engine.
28.		4th	Differentiate between 2-stroke & 4-stroke engine C.I engine
29.	8th	1st	Differentiate between 2-stroke & 4-stroke engine S.I engine
30.		2nd	Study of valve timing diagram
31.		3rd	What is thermodynamic cycle
32.		4th	Carnot cycle
33.	9th	1st	p-v diagram with process.
34.		2nd	. Solve simple numerical
35.		3rd	Otto cycle.
36.		4th	p-v diagram with process
37.	10th	1st	. Solve simple numerical
38.		2nd	Diesel cycle
39.		3rd	p-v diagram with process
40.		4th	. Solve simple numerical
41.	11th	1st	Dual cycle
42.		2nd	p-v diagram with process
43.		3rd	. Solve simple numerical
44.		4th	Efficiency comparision between all
45.	12th	1st	Comparision between all cycles
46.		2nd	Define Fuel.Types of fuel
47.		3rd	Application of different types of fuel.
48.		4th	Do
49.	13th	1st	Do
50.		2nd	Heating values of fuel
51.		3rd	Quality of I.C engine fuels
52.		4th	Octane number, Cetane number
53.	14th	1st	Previous years paper discussion
54.		2nd	Previous years paper discussion
55.		3rd	Previous years paper discussion
56.		4th	Previous years paper discussion
57.	15th	1st	Revision
58.		2nd	Revision
59.		3rd	Revision
60.		4th	Revision

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