Discipline: Mech. Engg.	Semester: Third (3rd)	Name of the Faculty: Er Sanjay Kumar Sahoo
Subject: **Thermal Engineering -I**	**No. of days/week class allotted:** Five (5)	**Semester from Date:** 15.09.22 **to Date:** 15.12.22 **No. of Weeks:** 15
WEEK	**CLASS DAY**	**THEORY TOPICS**
1st	1st	Thermodynamic Systems (closed, open, isolated)
	2nd	Thermodynamic properties of a system (pressure, volume, temperature, entropy, enthalpy, Internal energy and units of measurement
	3rd	Intensive and extensive properties
	4th	Define thermodynamic processes, path, cycle , state, path function, point function
	5th	Thermodynamic Equilibrium.
2nd	1st	Quasi-static Process
	2nd	Conceptual explanation of energy and its sources
	3rd	Work, heat and comparison between the two.
	4th	Mechanical Equivalent of Heat.
	5th	Work transfer, Displacement work
3rd	1st	Review class
	2nd	**Laws of perfect gas**: Boyle's law, Charle's law, Avogadro's law, General gas equation,
	3rd	Dalton's law of partial pressure, Guy lussac law,

	4th	characteristic gas constant, Universal gas constant.
	5th	Explain specific heat of gas (Cp and Cv)
4th	1st	Relation between Cp & Cv
	2nd	Enthalpy of a gas.
	3rd	Work done during a non- flow process
	4th	Monthly test -01
	5th	Application of first law of thermodynamics to various non flow process (Isothermal, Isobaric, Isentropic and polytrophic process)
5th	1st	Application of first law of thermodynamics to various non flow process (Isentropic and polytrophic process)
	2nd	Solve simple problems on above.
	3rd	Free expansion & throttling process.
	4th	Review class
	5th	State & explain Zeroth law of thermodynamics.
6th	1st	State & explain First law of thermodynamics.
	2nd	Limitations of First law of thermodynamics
	3rd	Application of First law of Thermodynamics (steady flow energy equation)
	4th	Application to turbine
	5th	Application to compressor

7th	1st	Second law of thermodynamics (Claucius & Kelvin Plank statements).
	2nd	Application of second law in heat engine, refrigerator
	3rd	heat pump,
	4th	determination of efficiencies & C.O.P (solve simple numerical)
	5th	Monthly test -02
8th	1st	Review class
	2nd	Explain & classify I.C engine
	3rd	Terminology of I.C Engine such as bore, dead centers, stroke volume, piston speed &RPM
	4th	Explain the working principle of 4- stroke engine C.I
	5th	4-stroke engine S.I engine.
9th	1st	2- stroke engine C.I
	2nd	2- stroke engine S.I
	3rd	Differentiate between 2-stroke & 4- stroke engine C.I & S.I engine.
	4th	Review class
	5th	Carnot cycle
10th	1st	problem
	2nd	Otto cycle
	3rd	problem

	4th	Diesel cycle	
	5th	Monthly test -03	
11th	1st	problem	
	2nd	Dual cycle	
	3rd	Solve simple numerical	
	4th	Solve simple numerical	
	5th	Review class	
12th	1st	Define Fuel.	
	2nd	Types of fuel	
	3rd	Different types of fuel.	
	4th	Application	
	5th	Heating values of fuel.	
13th	1st	Review class	
	2nd	Review class	
	3rd	Review class	
	4th	Review class	
	5th	Review class	
14th	1st	Review class	
	2nd	Monthly test -04	
	3rd	Review class	
	4th	Review class	
	5th	Review class	
	1st	Review class	

	2nd	Review class
15th	3rd	Review class
	4th	Review class
	5th	Review class