GOVERNMENT POLYTECHNIC, KORAPUT

DEPARTMENT OF MECHANICAL ENGINEERING

Discipline: **MECHANICAL ENGG**	Semester: **3RD**	Name of the Teaching Faculty: MANORAMA SARABU.
Subject: THERMAL ENGG -1	No. of days/per week class allotted:4	Semester From date: 01/08/23 To Date: 30/11/23. No. of Weeks:15

COURSE OUTCOMES

After the completion of the course the students will develop ability towards.

1.Comprehending significance of thermodynamics properties in order to analyze a Thermodynamic system.
2. Comprehending & applying first & second law of thermodynamics in closed & open system.
3. Comprehending & applying gas laws applicable to perfect gas in order to determine thermodynamics properties
4. Comprehending the concept of I.C engine and gas power cycle & computing work done

Week	Class Day	Theory/Practical Topics
1ST	1ST	Introduction & overview of course
	2ND	Scope of thermodynamics, approaches of Thermodynamics, thermodynamics system
	3RD	Thermodynamics properties, Thermodynamics system
	4TH	State, path, process, cycle, processes
2ND	1ST	Reversible & irreversible process,path function, point function
	2ND	Thermodynamics equilibrium, concept of continum
	3RD	Quasistatic process
	4TH	Energy & its sources
3RD	1ST	Heat transfer & work transfer
	2ND	Heat transfer & work transfer
	3RD	Displacement work, mechanical equivalent of heat
	4TH	Numericals related displacement work
4TH	1ST	Zeroth law of thermodynamics, first law of thermodynamics
	2ND	First law of thermodynamics,
	3RD	Limitations of first law of thermodynamics, pmm1
	4TH	Steady flow energy equation
5TH	1ST	Steady flow energy equation for compressor, turbine
	2ND	Numericals related steady flow energy equation
	3RD	Numericals related steady flow energy equation
	4TH	Second law of thermodynamics, pmm2
6TH	1ST	Heat engine, efficiency, numerical
	2ND	Refrigerator, heat pump, cop
	3RD	Numericals
	4TH	Numericals
7TH	1ST	Law's of perfect gas
	2ND	Specific heat capacity, cp , cv, relationship between them

	3RD	Numericals
	4TH	Enthalpy of gas, entropy
8TH	1ST	Workdone during nonflow process
	2ND	Workdone during nonflow process

	3RD	Numericals
	4TH	Numericals
9TH	1ST	Applications of first law of thermodynamics to nonflow process
	2ND	Continued
	3RD	Numericals
	4TH	Free expansion & throttling process
10TH	1ST	Ic engine, classification
	2ND	Parts of ic engine
	3RD	Terminology of ic engine
	4TH	Performance parameters of ic engine
11TH	1ST	2 stroke petrol engine, 4-stroke petrol engine
	2ND	2-stroke diesel engine, 4 -stroke diesel engine
	3RD	Difference between petrol & diesel engine, 2-stroke & 4-stroke
	4TH	Valve timing diagram, port timing diagram
12TH	1ST	Carnot cycle
	2ND	Carnot cycle
	3RD	Otto cycle
	4TH	Otto cycle
13TH	1ST	Diesel cycle
	2ND	Diesel cycle
	3RD	Dual cycle
	4TH	Dual cycle
14TH	1ST	Numericals
	2ND	Numericals
	3RD	Fuel & types of fuel
	4TH	Applications of different types of fuel
15TH	1ST	Heating value of fule
	2ND	Octane number & cetane number
	3RD	Revision
	4TH	Revision

LEARNING RESOURCES:

01 R.S. Khurmi Thermal Engineering S.Chand

02 A.R.Basu Thermal Engineering Dhanpat Rai

03 A.S. Sarao Thermal Engineering Satya Prakash

04 P.K.Nag Engineering Thermodynamics TMH

Sign. Of Faculty concerned

signature Of HOD

Principal