



GOVERNMENT POLYTECHNIC, KORAPUT
DEPARTMENT OF MECHANICAL ENGINEERING

Discipline: MECHANICAL ENGG	Semester: 3RD	Name of the Teaching Faculty: B. SAJ SANTOSH
Subject: THERMAL ENGG -1	No. of days/per week class allotted: 4	Semester From date: 02/9/20 To Date: 29/3/22 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
1 ST	1 ST	Introduction & overview of course
	2 ND	Scope of thermodynamics, approaches of Thermodynamics, thermodynamics system
	3 RD	Thermodynamics properties, Thermodynamics system
	4 TH	State, path, process, cycle, processes
2 ND	1 ST	Reversible & irreversible process, path function, point function
	2 ND	Thermodynamics equilibrium, concept of continuum
	3 RD	Quasistatic process
	4 TH	Energy & its sources
3 RD	1 ST	Heat transfer & work transfer
	2 ND	Heat transfer & work transfer
	3 RD	Displacement work, mechanical equivalent of heat
	4 TH	Numericals related displacement work
4 TH	1 ST	Zeroth law of thermodynamics, first law of thermodynamics
	2 ND	First law of thermodynamics,
	3 RD	Limitations of first law of thermodynamics, pmm1
	4 TH	Steady flow energy equation
5 TH	1 ST	Steady flow energy equation for compressor, turbine
	2 ND	Numericals related steady flow energy equation
	3 RD	Numericals related steady flow energy equation
	4 TH	Second law of thermodynamics, pmm2
6 TH	1 ST	Heat engine, efficiency, numerical
	2 ND	Refrigerator, heat pump, cop
	3 RD	Numericals
	4 TH	Numericals
7 TH	1 ST	Law's of perfect gas
	2 ND	Specific heat capacity, cp, cv, relationship between them

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

M. Sanjiv Kumar

Sign. Of Faculty
concerned

Sharmila Sabar
signatureOf HOD

[Signature]
Principal