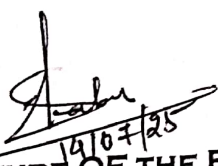


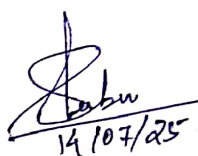
<b>Discipline:</b> Mechanical Engineering	<b>Semester :</b> 3 <sup>rd</sup> Semester 2025-2026 Dt-15/07/2025 To 15/11/2025	<b>Name of the Teaching Faculty:</b> Mrs. Swagatika Babu ( Sr.Lect. Mech. Engg)
<b>Subject: TE 1</b>	<b>No. of Days/week</b> <b>Class Allotted: 45</b>	<b>No of weeks:</b> <b>18</b>
<b>week</b>	<b>Class Day</b>	<b>Theory Topics</b>
1 <sup>st</sup>	1 <sup>st</sup>	Thermodynamic Systems (closed, open, isolated) ; Thermodynamic properties of a system (pressure, volume, temperature, entropy, enthalpy, Internal energy and units of measurement) ;
	2 <sup>nd</sup>	Intensive and extensive properties ; Define thermodynamic processes, path, cycle , state, path function, point function
	3 <sup>rd</sup>	Thermodynamic Equilibrium ; Quasi-static Process
2 <sup>nd</sup>	1 <sup>st</sup>	Laws of thermodynamics (statements only)
	2 <sup>nd</sup>	Brief description of energy Sources: Classification of energy sources: Renewable Non-Renewable
	3 <sup>rd</sup>	Fossil fuels (CNG & LPG)
3 <sup>rd</sup>	1 <sup>st</sup>	Solar Energy: Flat plate and concentrating collectors & its applications (working principles of Solar Water Heater, Photovoltaic Cell, Solar Distillation)
	2 <sup>nd</sup>	Continue...
	3 <sup>rd</sup>	Definitions of Wind Energy; Tidal Energy; Ocean Thermal Energy; Geothermal Energy; Biogas, Biomass, Bio- diesel; Hydraulic Energy, Nuclear Energy; Fuel cell.
4 <sup>th</sup>	1 <sup>st</sup>	Assumptions made in air standard cycle analysis; Brief description of Carnot, Otto and Diesel cycles with P-V and T-S diagrams;
	2 <sup>nd</sup>	Continue...
	3 <sup>rd</sup>	Internal and external combustion engines; advantages of I.C. engines over external combustion engines;
5 <sup>th</sup>	1 <sup>st</sup>	classification of I.C. engines; neat sketch of I.C. engine indicating component parts
	2 <sup>nd</sup>	Function of each part and materials used for the component parts - Cylinder, crank case, crank pin, crank, crank shaft, connecting rod, wrist pin, piston, cooling pins cylinder heads, exhaust valve, inlet valve
	3 <sup>rd</sup>	Working of four-stroke and two stroke petrol and diesel engines; Comparison of two stroke and four stroke engines

6 <sup>th</sup>	1 <sup>st</sup>	Continue...
	2 <sup>nd</sup>	Continue...
	3 <sup>rd</sup>	Comparison of C.I. and S.I. engines; Valve timing and port timing diagrams for four stroke and two stroke engines.
7 <sup>th</sup>	1 <sup>st</sup>	Continue...
	2 <sup>nd</sup>	Fuel system of Petrol engines; Principle of operation of simple carburetor
	3 <sup>rd</sup>	Zenith carburetors; Fuel system of Diesel engines; Types of injectors and fuel pumps
8 <sup>th</sup>	1 <sup>st</sup>	Simple Cooling system: air cooling, water cooling system with thermo siphon method of circulation and water cooling system with radiator and forced circulation (description with line diagram).
	2 <sup>nd</sup>	Continue...
	3 <sup>rd</sup>	Comparison of air cooling and water cooling system
9 <sup>th</sup>	1 <sup>st</sup>	Ignition systems – Battery coil ignition and magneto ignition (description and working, Comparison of two systems
	2 <sup>nd</sup>	Types of lubricating systems used in I.C. engines with line diagram
	3 <sup>rd</sup>	Continue...
10 <sup>th</sup>	1 <sup>st</sup>	Types of governing of I.C. engines – hit and miss method, quantitative method, qualitative method and combination methods of governing; their applications; Objective of super charging
	2 <sup>nd</sup>	Continue...
	3 <sup>rd</sup>	Brake power; Indicated power; Frictional power; Brake and Indicated mean effective pressures.
11 <sup>th</sup>	1 <sup>st</sup>	Brake and Indicated thermal efficiencies; Mechanical efficiency; Relative efficiency
	2 <sup>nd</sup>	Performance test; Morse test; Heat balance sheet
	3 <sup>rd</sup>	Methods of determination of B.P., I.P. and F.P.; Simple numerical problems on performance of I.C. engines.
12 <sup>th</sup>	1 <sup>st</sup>	Continue...
	2 <sup>nd</sup>	Problem practice
	3 <sup>rd</sup>	Functions of air compressor; Uses of compressed air; Types of air compressors; Single stage reciprocating air compressor - its construction and working (with line diagram) using P-V diagram;
13 <sup>th</sup>	1 <sup>st</sup>	Continue...
	2 <sup>nd</sup>	Multi stage compressors – Advantages over single stage compressors; Rotary compressors: Centrifugal compressor, axial flow type compressor and vane type compressors.



15 <sup>th</sup>	1 <sup>st</sup>	Continue...
	2 <sup>nd</sup>	Continue...
	3 <sup>rd</sup>	Refrigeration; Refrigerant; COP; Air Refrigeration system: components working & applications..
16 <sup>th</sup>	1 <sup>st</sup>	Vapour Compression system: components, working & applications
	2 <sup>nd</sup>	Continue...
	3 <sup>rd</sup>	
17 <sup>th</sup>	1 <sup>st</sup>	Air conditioning; Classification of Air- conditioning systems
	2 <sup>nd</sup>	Comfort and Industrial Air-Conditioning; Window Air- Conditioner; Summer Air-Conditioning system, Winter Air-Conditioning system, Year-round Air-Conditioning system.
	3 <sup>rd</sup>	revision
18 <sup>th</sup>	1 <sup>st</sup>	revision
	2 <sup>nd</sup>	revision
	3 <sup>rd</sup>	revision

  
 14/07/25  
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