

Orrisa School Of Engineering And Polytechnic, Banthapalli

LESSON PLAN (2023-24)

Discipline: Mechanical Engineering Semester: 4th	Name Of the Teaching Faculty: ER KUNI BEHERA
Subject: Thermal Engineering-II(Th-4)	Semester starts FromDate:02.01.2024 to Date: 23.04.2024 No. Of Weeks:16
Week	Theory/Practical Topics
1st	1.Performance of Engine
	Introduction
	Define mechanical efficiency, Indicated thermal efficiency
2nd	Relative efficiency, Brake thermal efficiency
	Overall efficiency Mean effective pressure & specific fuel consumption.
	Define air-fuel ratio & calorific value of fuel.
3rd	Work out problems to determine efficiencies & specific fuel consumption.
	Solve Numerical
	Solve Numerical
4th	2.Air Compressor
	Explain functions of compressor & industrial use of compressor air
	Classify air compressor
5th	principle of operation.
	Describe Parts and working principle of reciprocating Air compressor.
	Explain the terminology of reciprocating compressor
	Terminology such as bore, stroke, pressure ratio free air delivered & Volumetric efficiency.
	Derive the work done of single stage compressor.
6th	Derive the work done of single stage compressor without clearance
	Derive the work done of single stage compressor with clearance
	Work done of Two stage compressor without clearance.
	Solve Numerical
7th	Solve Numerical
	3.Properties of Steam
	Difference between gas & vapors. Formation of steam.
	Formation of steam.
8th	Representation on P-V, T-S, H-S, & T-H diagram.
	Definition & Properties of Steam.
	Use of steam table & mollier chart for finding unknown properties.
	Nonflow & flow process of vapor.
	P-V, T-S & H-Diagram.

9 th	P-V, T-S & H-S Diagram.
	Determine the changes in properties
	Determine the changes in properties
10 th	Solve Numerical
	Solve Numerical
	4. Steam Generator Classification & types of Boilers.
11 th	Important terms for Boiler.
	Comparison between firetube & Water tube Boiler.
	Description & working of common boilers (Cochran, Lancashire, Babcock & Wilcox Boiler)
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	Boiler Draught (Forced, induced & balanced)
12 th	Boiler Draught (Forced, induced & balanced)
	Boiler mountings & accessories.
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	5. Steam Power Cycles Carnot cycle with vapor.
13 th	Derive work & efficiency of the cycle.
	Rankine cycle.
	Representation in P-V, T-S & h-s diagram.
	Derive Work & Efficiency.
14 th	Effect of Various end conditions in Rankine cycle.
	Reheat cycle & regenerative Cycle.
	Solve simple numerical on Carnot vapor Cycle & Rankine Cycle.
	Solve Numerical
15 th	6. Heat Transfer Modes of Heat Transfer (Conduction, Convection, Radiation).
	Fourier law of heat conduction and thermal conductivity (k). Newton's laws of cooling.
	Radiation heat transfer (Stefan, Boltzmann & Kirchhoff's law) only statement, no derivation & no numerical problem.
	Solve Numerical
	Black body Radiation, Definition of Emissivity, absorptivity, & transmissibility.

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