

BLACK DIAMOND SCHOOL OF ENGINEERING, JHARSUGUDA

LESSON PLAN

Session (2022-2023)

Discipline: Mechanical Engineering	Semester: 4 TH , Summer/2023	Name of the Teaching Faculty: Basudev Mishra Lecturer
Subject: Thermal Engineering-II, Theory-4	No. of Days/Week: 04	Start Date: 13/02/2023 End Date: 23/05/2023

Week	Class Day	Theory Topics
1st	1st	Revision the basic of I.C Engine and it's working.
	2nd	Explain Indicated power, Brake Power and frictional power of an I.C engine.
	3rd	Define Mechanical, Indicated thermal and Relative efficiencies of an I.C engine.
	4th	Define Break thermal efficiency, Volumetric efficiency and Overall efficiency of I.C engine.
2nd	1st	Define Mean effective pressure, Specific fuel consumption and Air-fuel ratio for an I.C engine.
	2nd	Classroom Problem
	3rd	Classroom Problem
	4th	<i>Assignment Evaluation/Class test</i>
3rd	1st	Define Compressor; explain its function, types and industrial use of compressed air.
	2nd	Classify Compressor and principle of operation.
	3rd	Explain the Terminology of Reciprocating air compressor.
	4th	Describe the parts and working principle of a reciprocating air compressor.
4th	1st	Derive the expression of indicated work for a single acting compressor without clearance.
	2nd	Define mean effective pressure, power and Mechanical efficiency.
	3rd	Derive the expression of indicated work for a single acting compressor with clearance.

	4th	Explain actual Indicator diagram for a compressor.
5th	1st	Explain the limitation of Single stage compressor and also explain the multi stage compressor and its advantage.
	2nd	Classroom Problem
	3rd	Classroom Problem
	4th	<i>Assignment Evaluation/Class test</i>
6th	1st	Explain the formation of steam and differentiate between gas and vapours.
	2nd	Define pure substance and its phases and explain the phase change phenomena of a pure substance.
	3rd	State and Explain the Terminology of a pure substance.
	4th	Explain the property diagram i.e. P-V, T-V and P-V-T diagram
7th	1st	Explain Critical point, Triple point and T-S and h-S diagram.
	2nd	Explain the Steam table and Mollier chart for finding the unknown properties.
	3rd	Explain the Enthalpy change during the formation of steam.
	4th	Explain the latent heat, Sensible heat, latent heat of fusion and Enthalpy of Vaporization.
8th	1st	Explain the wet steam, dry steam and superheated steam and advantage of superheating the steam.
	2nd	Classroom Problem
	3rd	Classroom Problem
	4th	<i>Assignment Evaluation & Class Test</i>
9th	1st	Define Boiler and classification of boiler.
	2nd	Explain principal part and their function of a boiler.
	3rd	Define characteristic of a good boiler and factor affecting the selection of boiler.
	4th	Explain the comparison between fire and water tube boiler.
10th	1st	Description and working of Cochran boiler.
	2nd	Description and working of Lancashire boiler.
	3rd	Description and working of Babcock and Wilcox boiler.
	4th	Explain the classification and function of a boiler draught'
11th	1st	Describe the function of Forced, Induced draught and Balanced draught.
	2nd	Explain about Boiler Mountings and Accessories.
	3rd	Review class
	4th	Classroom Problem

12 th	1st	Define Vapor power cycle and explain performance parameters of vapor power cycle.
	2nd	Explain Carnot vapor power cycle, Derive the work and efficiency of the cycle.
	3rd	Explain principal component and their function of vapour power plant.
	4th	Define Rankine cycle with P-V, T-S, and h-s diagram
13th	1st	Derive the work done and efficiency of Rankine cycle
	2nd	Describe the effect of various end condition in Rankine cycle
	3rd	Explain Reheat cycle and Regenerative cycle.
	4th	Classroom Problem
14th	1st	Define the modes of heat transfer i.e. Conduction, convection and Radiation.
	2nd	Explain Fourier's law of heat conduction and thermal conductivity.
	3rd	Explain Newton's law of cooling Stefan Boltzmann's law and Kirchhoff's law.
	4th	Explain black body radiation and emissive power of a black body and grey body.
15th	1st	Define Emissivity, Absorptivity and Reflectivity.
	2nd	<i>Assignment Evaluation & Class Test</i>
	3rd	<i>Discussion on Previous year question paper</i>
	4th	<i>Discussion on Previous year question paper</i>

Signature of Concern Teacher