

**GOVERNMENT POLYTECHNIC JAJPUR**

At/ Po: Ragadi, Block: Korei, Dist.: Jajpur, Odisha- 755019

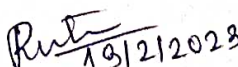
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**DEPARTMENT OF MECHANICAL**

**LESSON PLAN (2022-23)**

Discipline: <b>MECHANICAL</b>	<b>SEMESTER: 4TH</b>	Name of the Teaching faculty: <b>RUTUPARNA SWAIN</b>
<b>SUBJECT: TE II (TH-4)</b>	No of Days/Week class allotted: 4	Semester starts from Date: <b>14.02.2023 To 23.05.2023</b> No of weeks: 15
1st	1st	<b>CHAPTER 1. Performance of I.C engine</b> Revision the basic of I.C Engine and its 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
2nd	1st	Define Mean effective pressure, Specific fuel consumption and Air-fuel ratio for an
	2nd	Review class
	3rd	Numerical
	4th	Numerical
3rd	1st	<b>CHAPTER 2. Air Compressor</b> 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	Review class
	3rd	Numerical
	4th	Numerical
6th	1st	<b>CHAPTER 3. Properties of Steam</b> 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	Review class
	3rd	Numerical
	4th	<i>Assignment Evaluation &amp; Class Test</i>
9th	1st	<b>CHAPTER 4. Steam Generator</b> 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	Numerical
12th	1st	<b>CHAPTER 5. Steam Power Cycles</b> 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	Numerical
14th	1st	<b>CHAPTER 6. Heat Transfer</b> 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 Kirchoff'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 &amp; Class Test</i>
	3rd	<i>Discussion on Previous year question paper</i>
	4th	<i>Discussion on Previous year question paper</i>

  
 Signature of Faculty

<u>Sl No.</u>	<u>Reference Book</u>	<u>Author Name</u>	<u>Publisher Name</u>
1	Thermal Engineering	R.S. Khurmi	S.Chand
2	Thermal Engineering	A.R.Basu	Dhanpat Rai
3	Thermal Engineering	A.S. Sarao	Satya Prakash
4	Engineering Thermodynamics	P.k.Nag	IMH