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| **LESSON PL** | | | **AN-4th SEMESTER (2022)** | | | |
| **Subject**- **THERMAL ENGINEERING-II** | | | **(TH-4)** | | | |
| **Name of the Faculty**- **KABIRAJ SAHU.**  **NO. OF WEEKS-15** | | | **Semester from date 10.03.2022 to**  **date 10.06.2022** | | |  |
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|  | **CHAPTER/UNIT** | **COURSE TO BE COVERED** | | **CLASSES REQUIRED** | **REMARKS (IF ANY**) |  |
|  | **Chapter-1** | **Performance of I.C engine** | | **08** |  |  |
|  | 1.1 | Define mechanical efficiency, Indicated thermal efficiency, Relative Efficiency, brake **thermal efficiency** | | **2** |  |  |
|  | **1.1** | **Overall efficiency ,Mean effective pressure &specific fuel consumption.** | | **2** |  |  |
|  | **1.2** | **Define air-fuel ratio & calorific value of fuel.** | | **1** |  |  |
|  | **1.3** | **Work out problems to determine efficiencies & specific fuel consumption.** | | **3** |  |  |
|  | **Chapter-2** | **Air Compressor** | | **12** |  |  |
|  | **2.1** | **Explain functions of compressor & industrial use of compressor air** | | **1** |  |  |
|  | **2.2** | **Classify air compressor & principle of operation.** | | **1** |  |  |
|  | **2.3** | **Describe the parts and working principle of reciprocating Air compressor** | | **2** |  |  |
|  | **2.4** | **Explain the terminology of reciprocating compressor such as bore, stroke,**  **pressure ratio free air delivered &Volumetric efficiency.** | | **2** |  |  |

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|  | **2.5** | **Derive the work done of single stage & two stage compressor with and without**  **clearance.** | **3** |  |
|  | **2.6** | **Solve simple problems (without clearance only)** | **3** |  |
|  | **Chapter-3** | **Properties of Steam** | **12** |  |
|  | **3.1** | **Difference between gas & vapours.** | **1** |  |
|  | **3.2** | **Formation of steam.** | **1** |  |
|  | **3.3** | **Representation on P-V, T-S, H-S, & T-H**  **diagram.** | **1** |  |
|  | **3.4** | **Definition & Properties of Steam.** | **1** |  |
|  | **3.5** | **Use of steam table & mollier chart for finding unknown properties.** | **2** |  |
|  | **3.6.** | **Non flow & flow process of vapour** | **2** |  |
|  | **3.7.** | **P-V, T-S & H-S, diagram** | **1** |  |
|  | **3.8** | **Determine the changes in properties & solve simple numerical** | **3** |  |
|  | **Chapter-4** | **Steam Generator** | **12** |  |
|  | **4.1** | **Classification & types of Boiler.** | **1** |  |
|  | **4.2** | **Important terms for Boiler.** | **1** |  |
|  | **4.3.** | **Comparison between fire tube & Water tube Boiler** | **2** |  |
|  | **4.4** | **Description & working of common boilers (Cochran, Lancashire, Babcock &**  **Wilcox Boiler)** | **4** |  |
|  | **4.5** | **Boiler Draught (Forced, induced & balanced)** | **2** |  |
|  | **4.6** | **Boiler mountings & accessories** | **2** |  |
|  | **Chapter-5** | **Steam Power Cycles** | **08** |  |

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|  | **5.1, 5.2** | **Carnot cycle with vapour. Derive work & efficiency of the cycle.** | **1** |  |
|  | **5.3, 5.3.1** | **Rankine cycle. Representation in P-V, T- S & h-s diagram.** | **1** |  |
|  | **5.3.2** | **Derive Work & Efficiency.** | **1** |  |
|  | **5.3.3** | **Effect of Various end conditions in Rankine cycle.** | **1** |  |
|  | **5.3.4.** | **Reheat cycle & regenerative Cycle** | **2** |  |
|  | **5.4** | **Solve simple numerical on Carnot vapour Cycle & Rankine Cycle.** | **2** |  |
|  | **Chapter-6** | **Heat Transfer** | **08** |  |
|  | **6.1** | **Modes of Heat Transfer (Conduction, Convection, Radiation).** | **2** |  |
|  | **6.2** | **Fourier law of heat conduction and thermal conductivity (k).** | **1** |  |
|  | **6.3** | **Newton’s laws of cooling.** | **1** |  |
|  | **6.4** | **Radiation heat transfer (Stefan, Boltzmann & Kirchhoff’s law) only statement,**  **no derivation & no numerical problem.** | **2** |  |
|  | **6.5** | **Black body Radiation, Definition of Emissivity, absorptivity, & transmissibility** | **2** |  |